LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 2 of 2

2012

Bate Stamp Numbers
00113609 – 00116269

Prepared for
Department of the Army
Longhorn Army Ammunition Plant

1976 – 2012

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 2 of 2

2012

Note: Volume 2, Year 2012, A., B., C., D., and E. are listed Out of Date in Sequence and should have been inserted in Years 1994, 1999, 2005, and 2007 respectively.

A. Title: FAX – Miscellaneous UST File Material, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): U.S. Army Corps of Engineers
Recipient: Connie Dungvent
Date: February 3, 1994
Bate Stamp: 00113609 - 00113637

B. Title: Report – Closure Report for Brine Pond (Surface Impoundment) at Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): Complete Environmental Service
Recipient: U.S. Army, Texas Natural Resource Conservation Commission
Date: April 29, 1999
Bate Stamp: 00113638 - 00113740

C. Title: Report – Final Environmental Condition of Property III (ECOP III), Longhorn Army Ammunition Plant Karnack, Texas
Author(s): U.S. Army
Recipient: All Stakeholders
Date: August 15, 2005
Bate Stamp: 00113741 - 00113777

D. Title: Report – Final Environmental Condition of Property IV (ECOP IV), Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): U.S. Army
Recipient: All Stakeholders
Date: March 26, 2007
Bate Stamp: 00113778 - 00113814

E. Title: Notice of Registration – Longhorn Army Ammunition Plant, Unit Numbers 004, 007 and 008
Author(s): Texas Commission on Environmental Quality
Recipient: U.S. Army
Date: May 8, 2007
Bate Stamp: 00113815

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 2 of 2

2012

F.	Title:	Dispute Resolution under Federal Facilities Agreement (FFA) and Response to Comments on Records of Decision (RODs) Sites LHAAP-16 and LHAAP-17, and for MMRP Sites LHAAP-001-R and LHAAP-003-R, Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	U.S. Army, U.S. Environmental Protection Agency, Texas Commission on Environmental Quality
	Recipient:	U.S. Army, U.S. Environmental Protection Agency, Texas Commission on Environmental Quality
	Date:	February 15, 2012
	Bate Stamp:	00113816 – 00113915
G.	Title:	Table – Monitoring Wells Plugging and Abandonment Information, Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	ETTL Engineers and Consultants
	Recipient:	U.S. Army
	Date:	February 23, 2012
	Bate Stamp:	00113916 – 00113948
H.	Title:	Meeting Minutes – Longhorn AAP Monthly Managers' Meeting
	Author(s):	Shaw Environmental, Inc.
	Recipient:	All Stakeholders
	Date:	March 27, 2012
	Bate Stamp:	00113949 – 00113954
I.	Title:	Report – Well Installation and Sampling Completion Report, Chemical Laboratory (LHAAP-37), Longhorn Army Ammunition Plant, Karnack, Texas; Attachment - Chemical Data Quality Assurance Report, LHAAP-35B(37)
	Author(s):	Cherokee Nation, Cherokee CRC
	Recipient:	U.S. Army Corps of Engineers
	Date:	April 11, 2012
	Bate Stamp:	00113955 – 00114037
J.	Title:	Charter – Longhorn Army Ammunition Plant Restoration Advisory Board Guidelines and Operating Procedures
	Author(s):	Longhorn Army Ammunition Plant Restoration Advisory Board
	Recipient:	U.S. Army
	Date:	April 19, 2012
	Bate Stamp:	00114043 – 00114048

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 2 of 2

2012

F.	Title:	Dispute Resolution under Federal Facilities Agreement (FFA) and Response to Comments on Records of Decision (RODs) Sites LHAAP-16 and LHAAP-17, and for MMRP Sites LHAAP-001-R and LHAAP-003-R, Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	U.S. Army, U.S. Environmental Protection Agency, Texas Commission on Environmental Quality
	Recipient:	U.S. Army, U.S. Environmental Protection Agency, Texas Commission on Environmental Quality
	Date:	February 15, 2012
	Bate Stamp:	00113816 – 00113915
G.	Title:	Table – Monitoring Wells Plugging and Abandonment Information for Sites LHAAP-48 and LHAAP-35C(53), Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	ETTL Engineers and Consultants
	Recipient:	U.S. Army
	Date:	February 23, 2012
	Bate Stamp:	00113916 – 00113948
H.	Title:	Meeting Minutes – Longhorn AAP Monthly Managers' Meeting
	Author(s):	Shaw Environmental, Inc.
	Recipient:	All Stakeholders
	Date:	March 27, 2012
	Bate Stamp:	00113949 – 00113954
I.	Title:	Report – Well Installation and Sampling Completion Report, Chemical Laboratory (LHAAP-37), Longhorn Army Ammunition Plant, Karnack, Texas; Attachment - Chemical Data Quality Assurance Report, LHAAP-35B(37)
	Author(s):	Cherokee Nation, Cherokee CRC
	Recipient:	U.S. Army Corps of Engineers
	Date:	April 11, 2012
	Bate Stamp:	00113955 – 00114037
J.	Title:	Charter – Longhorn Army Ammunition Plant Restoration Advisory Board Guidelines and Operating Procedures
	Author(s):	Longhorn Army Ammunition Plant Restoration Advisory Board
	Recipient:	U.S. Army
	Date:	April 19, 2012
	Bate Stamp:	00114043 – 00114048

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 2 of 2

2012

K.	Title:	Meeting Minutes – Longhorn AAP Monthly Managers' Meeting
	Author(s):	Shaw Environmental, Inc.
	Recipient:	All Stakeholders
	Date:	April 19, 2012
	Bate Stamp:	00114038 – 00114042
L.	Title:	Meeting Minutes – Longhorn AAP Monthly Managers' Meeting
	Author(s):	Shaw Environmental, Inc.
	Recipient:	All Stakeholders
	Date:	May 21, 2012
	Bate Stamp:	00114049 – 00114053
M.	Title:	Meeting Minutes – Longhorn AAP Monthly Managers' Meeting
	Author(s):	Shaw Environmental, Inc.
	Recipient:	All Stakeholders
	Date:	June 20, 2012
	Bate Stamp:	00114054 – 00114121
N.	Title:	Meeting Minutes – Longhorn AAP Monthly Managers' Meeting
	Author(s):	Shaw Environmental, Inc.
	Recipient:	All Stakeholders
	Date:	July 19, 2012
	Bate Stamp:	00114122 – 00114129
O.	Title:	Email - EPA Response to U.S. Army Letter of June 14, 2012 Groundwater Treatment Plant status and proposal for interim GWTP operation without use of catalytic oxidizer at Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	U.S. Army
	Recipient:	U.S. Environmental Protection Agency, Texas Commission on Environmental
	Date:	July 23, 2012
	Bate Stamp:	00114130 – 00114161

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 2 of 2

2012

P.	Title:	Report - Final Remedial Action Operation Summary Report, Years 1 and 2, Landfill 12 (LHAAP-12), Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	Shaw Environmental, Inc.
	Recipient:	U.S. Army Corps of Engineers
	Date:	July 27, 2012
	Bate Stamp:	00114162 – 00115849
Q.	Title:	Report - Final Remedial Action Operation Summary Report, Years 3 and 4, Landfill 12 (LHAAP-12), Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	Shaw Environmental, Inc.
	Recipient:	U.S. Army Corps of Engineers
	Date:	July 27, 2012
	Bate Stamp:	00115850 – 00116068
R.	Title:	Report - Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatement Plant, Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	Shaw Environmental, Inc.
	Recipient:	U.S. Army Corps of Engineers
	Date:	August 6, 2012
	Bate Stamp:	00116069 - 00116269

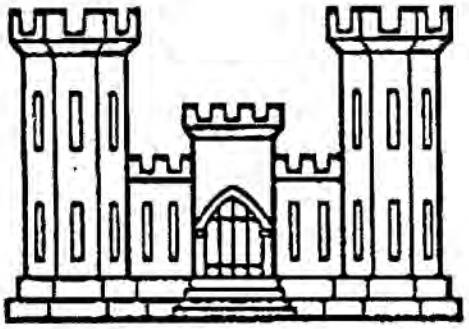
DocumentID
1994a
Company
LHAAP
Description
Miscellaneous UST File Material. Facility File EQ 5.37.

FEB 03 '94 10:56AM CESWF AO E

00-764
EQ 5.37

LHAAP 1994a

00113610



DATE 3 Feb 94

PAGES 23
(including header)

FACSIMILE HEADER SHEET

TO: Connie Dunavent	OFFICE:
FROM: Gary Westby	OFFICE: Corps of Engineers (CESWF-AO-E)

Here is the UST info. we have on the job completed last year. I hope it's enough.

TRPH
150
BTEX

OFFICE PHONE: (318) 676-3365 FAX: (318) 676-3370

U.S. ARMY CORPS OF ENGINEERS
FORT WORTH DISTRICT
EASTERN AREA OFFICE
280 MILLER ROAD
BOSSIER CITY, LA 71112-2505

TEXAS INDUSTRIAL WASTE CONTROL, INC.

UNDERGROUND STORAGE TANK
CERTIFICATE OF DISPOSAL

DATE: 10-21-92

SITE LOCATION: LAAP

PROJECT NAME: Longhorn Army Ammo. Plant

To Whom It May Concern: PROJECT NUMBER: 250

The Underground Storage Tanks listed below have been removed from the Site listed above by us (TIWC). The following activities took place to purge the tanks of flammable vapors:

- [ ] Dry Ice was induced in the tanks at a ratio of 15 pounds per 1000 gallon capacity.
- [x] Tanks were blown free of flammable vapors by the use of manhole blowers.
- [x] Tanks were pumped of residual product ~~and steam cleaned~~.
- [ ] Tanks were cut open and residual product/sludge was removed.
- [ ] Petroleum Dispersant was added to the tank contents to encapsulate the hydrocarbons.
- [x] Tanks were marked warning against re-use for human or animal consumption.

	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7
Size	1000	1000					
Product	U	D					
%LEL *	0%	0%					

U=Unleaded G=Gasoline D=Diesel K=Kerosene WO=Waste Oil

* LEL is the Lower Explosion Limit

I hereby certify that to the best of my knowledge the above is true, accurate and complete.

Wally Bradley — Printed Name

Wally Bradley — Signature

Wally Bradley EW Supv. — Title

10-21-92 — Date

TANK ACCEPTANCE:

I hereby certify that the above listed tanks have been accepted by me and to the best of my knowledge the above is true, accurate and complete.

DISPOSAL FACILITY:

Name: Texas Scrap & Salvage

Address: 100 Ward St
Mansfield TX 76063

Phone: (903) 935-1891

Guy Smith — Printed Name

Guy Smith — Signature

10/21/92 — Date

TEXAS INDUSTRIAL WASTE CONTROL, INC.
UNDERGROUND STORAGE TANK
CERTIFICATE OF DISPOSAL

DATE: 10-29-92

SITE LOCATION: LAAP.
PROJECT NAME: LAAP.
PROJECT NUMBER: 250

To Whom It May Concern:

The Underground Storage Tanks listed below have been removed from the Site listed above by us (TIWC). The following activities took place to purge the tanks of flammable vapors:

- [ ] Dry Ice was induced in the tanks at a ratio of 15 pounds per 1000 gallon capacity.
- [X] Tanks were blown free of flammable vapors by the use of manhole blowers.
- [X] Tanks were pumped of residual product and [redacted].
- [ ] Tanks were cut open and residual product/sludge was removed.
- [ ] Petroleum Dispersant was added to the tank contents to encapsulate the hydrocarbons.
- [X] Tanks were marked warning against re-use for human or animal consumption.

	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6	Tank 7
Size	17K	12K					
Product	U	D					
%LEL *	0%	0%					

U=Unleaded G=Gasoline D=Diesel K=Kerosene WO=Waste Oil

* LEL is the Lower Explosion Limit

I hereby certify that to the best of my knowledge the above is true, accurate and complete.

Wally Bradley
Printed Name

Wally Bradley
Signature

Envir. Supvr.
Title

10-29-92
Date

TANK ACCEPTANCE:

I hereby certify that the above listed tanks have been accepted by me and to the best of my knowledge the above is true, accurate and complete.

DISPOSAL FACILITY:

Name: Texas Scrap & Salvage
Address: 100 Ward St

Phone: (903) 935-7851

Guy Smith
Printed Name

Guy Smith
Signature

10-29-92
Date

00113613

TWC-LPST SITE DIRECTIVE DOCUMENTATION

SITE NAME Longhorn Army Ammo. Plant UST ID NO. 0005555

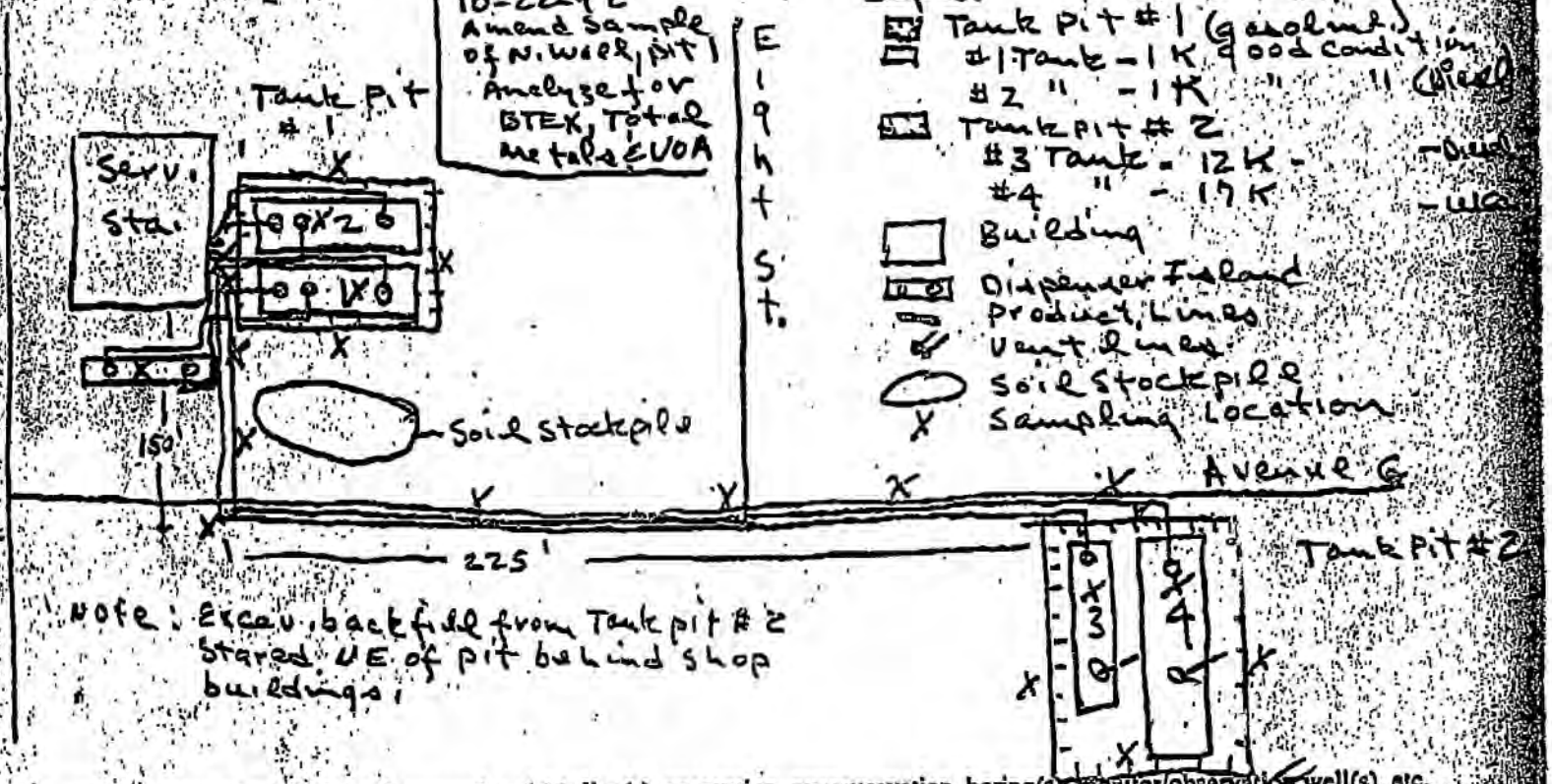
SITE ADDRESS Intersection of Hwy 134 & Spur 449, Kaufman, TX LPST ID NO. (P)

TRACKING NO. (P)

INSPECTION DATE 10-20-92 INSPECTOR H.L. "Bud" Jones

The purpose of this form is to document field communications made between the TWC and PST owners/operators/representatives.

SITE DIAGRAM: Not to Scale North ↑



Show location(s) of original (replacement) tank(s), line(s), excavation, overexcavation, boring(s), monitor/observation well(s), etc.

Samples
Tank pit #1
1 - Comp Tank bottom 1
2. " #2 Tank bottom
3. Comp N. Tank hold wall
4. " W. " "
5. " S. " "
6. Comp E. Tank wall
7. " Dispenser Island
8-14 Composites of pipe Chase
15 - Comp - Stockpile
16 Comp. Tank bottom of pit #2
17 " " " #4 "
18-21 Comp N, S, W, E walls pit #2
22-24 Comp. Soil backfill Tank Pit #2
Analyse for: TPH, BTEX, Total Lead
Under Tank Pads 1 & 4
30. water sample - Pit #2

This site documentation is intended to identify the release response activities. Site-specific Corrective Action Directive (CAD) letters will be issued by the TWC following the reporting of a release. Regulatory guidance will be supplied by the TWC throughout the course of the project.

This document reflects the assessment of site conditions by the TWC and is not intended to limit the scope of remediation necessary. In order to be reimbursed by TWC, an owner or operator must be eligible under TWC rules and the items performed must be allowable and reasonable under the TWC rules. This document alone does not mean a person is eligible or that any costs incurred are allowable or reasonable.

H.L. "Bud" Jones TWC Rep
TWC Field Inspector

10-20-92
Date

T.A. Todd
Received by Owner/Operator/Representative

10/20/92
Date

TWC-0091 (10-10-90)

TEXAS INDUSTRIAL WASTE CONTROL INC.
3500 Sunrise Road
Round Rock, Texas 78664
(512) 255-6924 FAX (512) 255-0013

Client: Longhorn Army Ammunition Plant
Marshall, Tx

TPH Analysis Date: 10/28/92
Date Received: 10/23/92
Date Sampled: 10/22/92
Extraction Date: 10/27/92-10/28/92

Project Manager: Jon Short
Chain of Custody #: 1885
Job #: 250
Received By: Ewing Evans

Sample #	Sample Description	Sample Matrix	BTEX Analysis Date	MBE (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl Benzene (ppb)	p,o,m Xylenes (ppb)	Total BTEX (ppm)	TRPH (ppm)
S1	Westwall, 3 pt comp @ 9'	Soil	10/28/92	34	83	14	338	510	0.99	123
S2	Southwall, 3 pt comp @ 9'	Soil	10/28/92	39	500	110	1171	1519	3.30	75
S3	Eastwall, 3 pt comp @ 9'	Soil	10/28/92	ND	33	ND	21	25	0.08	35
S4	Belly under slab, 4 pt comp @ 11'	Soil	10/28/92	ND	19	ND	11	15	0.05	45
S5	Northwall, 3 pt comp @ 9'	Soil	10/28/92	59	576	76	1257	2433	4.35	1972
S6	Pit # 1 stockpile, 5 pt comp	Soil	10/28/92	109	612	963	1162	4094	6.80	286
S7	Pit # 1 stockpile, 5 pt comp	Soil	10/28/92	231	290	504	1240	5035	7.07	224

SPIKE, % RECOVERY	69	115	119	132	121	98
SPIKE DUPLICATE, % VARIANCE	7	10	2	14	5	91
CALIBRATION STANDARD, %	78	91	88	89	103	2
BLANK	ND	ND	ND	ND	ND	ND

ND = Non Detect BMQL = Below Method Quantitation Limit

File Name: 1685MARS

Analyst: Louis Tim Peterson

Methods: EPA 5030-8020 (BTEX) and 9071-418.1 (TRPH)

FEB 03 '94 10:58AM CESWF AO E P.5

00113615

JOB # 250 | CLIENT # | TEXAS INDUSTRIAL WASTE CONTROL, INC. | CofC #: 1685

CHAIN OF CUSTODY

Phone:(512) 255-9924 Fax :(512) 255-0013

SITE: Longhorn Army Ammunition Plant
ADDRESS: Marshall, TX.

LAB: TIWC
ADDRESS:

Special Instructions:

Other = Total Metals 5-5&6

SAMPLE NO.	LOCATION DESCRIPTION	DATE TAKEN	TIME TAKEN	BTEX	TPH	TCLP Pb	TOT Pb	TOX	TOTAL METALS	OTHER
S-1	3 part Comps West Wall @ 9'	10/22	2:32	X	X					
S-2	3 part Comps S. Wall @ 9'		2:35	X	X					
S-3	3 part Comps E. Wall @ 9'		2:38	X	X					
S-4	4 part Comps Berm Slope @ 1'		2:41	X	X		X			
S-5	3 part Comps N. Wall @ 9'		2:50	X					X	
S-6	5 part Comps Pit #1 Stockpile		3:15	X	X				X	
S-7	5 part Comps Pit #1 Stockpile	10/22	3:20	X	X					
	Shipped to Core Labs - P.O.#2207									
	10-26-92 (include Hg in total metals)									

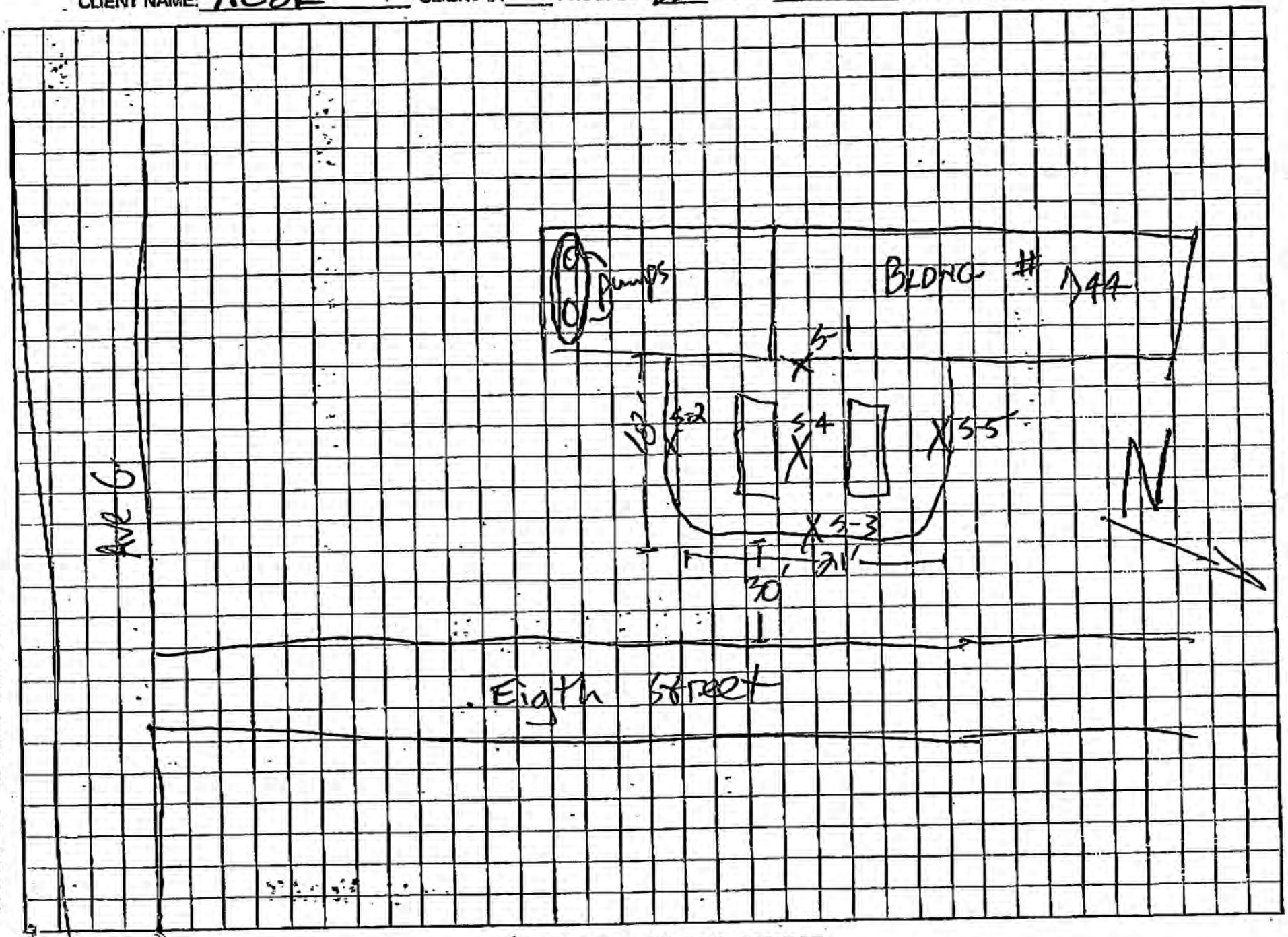
SAMPLER W. Bradley

Relinquished by	Received by	DATE	TIME
Wally Bradley	Ewing Evans	10-23-92	12:54 pm

SEND RESULTS TO: Texas Industrial Waste Control
3500 Sunrise Road
Round Rock, Texas 78664
ATTENTION:

00113616

CLIENT NAME: ACoE CLIENT #: PROJECT #: 30 DATE: 10/22 DRAFTER: TT SCALE: NTS



SCALE = WIDTH OF ONE SQUARE

P.7

FEB 03 '94 10:59AM CESWF AO E

TEXAS INDUSTRIAL WASTE CONTROL INC.
3530 Sunrise Road
Round Rock, Texas 78664
(512) 255-6924 FAX (512) 255-0013

Client: Longhorn Army Ammunition Plant
Marshall, Tx

TPH Analysis Date: 11/6/92
Date Received: 11/2/92
Date Sampled: 10/29/92-10/30/92

Project Manager: Joe Short
Chain of Custody #: 1094
Job #: 250
Received By: Ewing Evans

Sample #	Sample Description	Sample Matrix	BTEX Analysis Date	MIBE (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl Benzene (ppb)	p,o,m Xylenes (ppb)	Total BTEX (ppm)	TRPH (ppm)
S8	Pipe chase, 4 part comp	Soil	11/2/92	ND	8	ND	ND	10	0.02	109
S9	Pipe chase, 4 part comp	Soil	11/2/92	ND	7	ND	ND	9	0.02	78
S10	Pipe chase, 4 part comp	Soil	11/2/92	ND	13	ND	ND	17	0.03	45
S11	Pipe chase, 4 part comp	Soil	11/2/92	ND	18	ND	ND	24	0.04	58
S12	Pipe chase, 4 part comp	Soil	11/2/92	ND	12	9	ND	15	0.04	68
S13	Pipe chase, 4 part comp	Soil	11/2/92	ND	6	10	ND	8	0.03	64
S14	Pipe chase, 4 part comp	Soil	11/2/92	ND	5	ND	ND	10	0.02	36
S15	Pipe chase, 4 part comp	Soil	11/3/92	ND	43	30	ND	59	0.14	33
S16	Pipe chase, 4 part comp	Soil	11/3/92	ND	218	ND	116	179	0.51	31
S17	Pipe chase, 4 part comp	Soil	11/3/92	7	37	5	16	10	0.07	32

Quality Assurance

							11/6/92
	SPIKE, % RECOVERY	87	95	101	115	124	91
11/2/92	SPIKE DUPLICATE, % VARIANCE	3	3	5	5	4	7
	CALIBRATION STANDARD, %	80	105	97	100	112	99
	BLANK	ND	ND	ND	ND	ND	ND
	SPIKE, % RECOVERY	87	93	98	100	114	
11/3/92	SPIKE DUPLICATE, % VARIANCE	11	8	66	0	3	
	CALIBRATION STANDARD, %	102	87	92	78	99	
	BLANK	ND	ND	ND	ND	ND	

ND = Non Detect BMQL = Below Method Quantitation Limit

File Name: 1094LAB

Analyst: Gustavo Martinez

Methods: EPA 5030-8020 (BTEX) and 9071-418.1 (TRPH)

FEB 03 '94 11:00AM CESWF AO E FIELD OFFICE TEL NO:903-679-4314 #103 P.8
FROM TIWC, INC. ROUND ROCK, TEXAS 11.09.1992 14156 P. 6

00113618

JOB #	CLIENT #
250	

TEXAS INDUSTRIAL WASTE CONTROL, INC.

CHAIN OF CUSTODY

COC #: 1694

Phone:(512) 255-9924 Fax:(512) 255-0013

SITE: LHAP
ADDRESS: Marshall Tx

LAB: T Tale
ADDRESS: PO Box 8
Lewis Lake Tx

Special instructions: Pipe Chase Area
Lot 2 to Lot 1, Samples taken
@ every 50', TNC Director

SAMPLE NO.	LOCATION DESCRIPTION	DATE TAKEN	TIME TAKEN
S-8	06 Pipe Chase Upstream	10-29-92	1:01
S-9	06 " "	10-29-92	1:12
S-10	11 E " "	10-29-92	1:15
S-11	11 E " "	10-29-92	1:21
S-12	11 E " "	10-29-92	1:30
S-13	11 E " "	10-29-92	1:33
S-14	11 E 11-4 "	10-29-92	1:40
S-15	11 E 11-4 "	10-29-92	1:45
S-16	11 E 11-4 "	10-30-92	
S-17	11 E 11-4 "	10-30-92	

ANALYZE FOR

TPH	BTEX	Total Metals	RCRA				
X	X						
X	X						
X	X						
X	X						
X	X						
X	X						
X	X						
X	X						
X	X						
X	X	X					
		8 RCRA Metals					
Grab Waste		TCLP 1311-8					

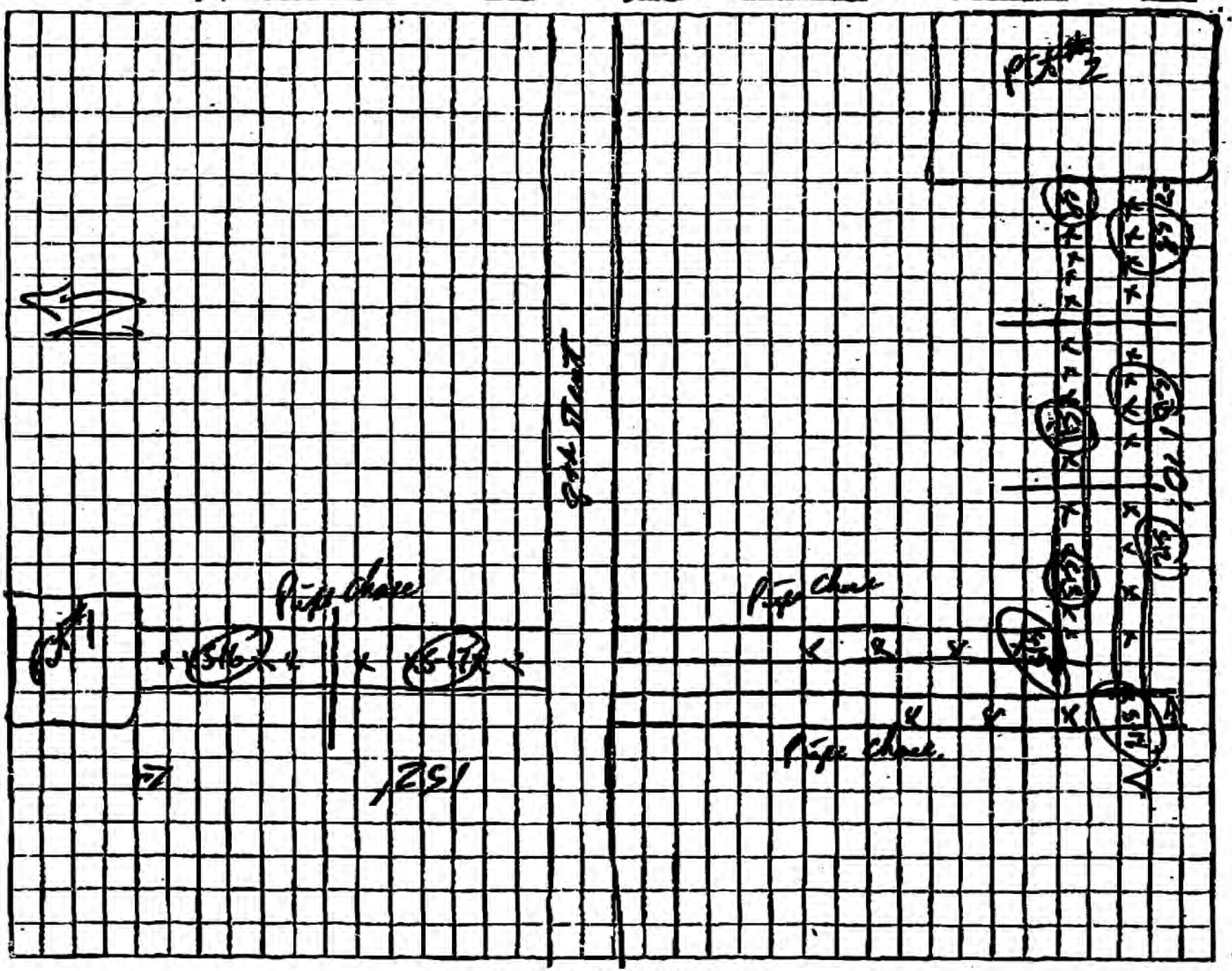
SAMPLER Wally Bradley

Relinquished by	Received by	DATE	TIME
Wally Bradley	[signature]	11-2-92	8:45am

SEND RESULTS TO: Texas Industrial Waste Control
3500 Sunrise Road
Round Rock, Texas 78664
ATTENTION:

00113619

CLIENT NAME: LAHF CLIENT #: PROJECT #: 230 DATE: 10-15-92 DRAFTER: TTull SCALE:



SCALE = WIDTH OF ONE SQUARE

FEB 03 '94 11:00AM CESWF AO E FIELD OFFICE TEL NO:903-679-4314 #103 P.10
FROM TTUCK, INC. ROUND ROCK, TEXAS 11.03.1992 14:58 P.8

TEXAS INDUSTRIAL WASTE CONTROL INC.
3600 Sunrise Road
Round Rock, Texas 78664
(512) 255-9324 FAX (512) 255-0013

Client: Longhorn Army Ammunition Plant
Marshall, Tx

TPH Analysis Date: 11/6/92
Date Received: 11/2/92
Date Sampled: 10/30/92

Project Manager: Jon Short
Chain of Custody #: 1695
Job #: 250
Received By: Ewing Evans

Sample #	Sample Description	Sample Matrix	BTEX Analysis Date	MIBE (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl Benzene (ppb)	p,p,m Xylenes (ppb)	Total BTEX (ppm)	TRPH (ppm)
S18	5 part comp, stockpile # 11	Soil	11/3/92	ND	16	ND	19	143	0.19	149
S19	5 part comp, stockpile # 11	Soil	11/3/92	ND	9	6	5	15	0.04	32
S20	5 part comp, stockpile # 9	Soil	11/3/92	22	157	63	119	696	1.29	113
S21	5 part comp, stockpile # 9	Soil	11/4/92	21	58	29	28	334	0.45	454
S22	5 part comp, stockpile # 8	Soil	11/4/92	ND	11	8	ND	17	0.04	19
S23	5 part comp, stockpile # 8	Soil	11/4/92	ND	5	ND	ND	7	0.01	28
S24	5 part comp, stockpile # 7	Soil	11/4/92	ND	6	ND	ND	7	0.01	32
S25	5 part comp, stockpile # 7	Soil	11/4/92	ND	9	ND	6	30	0.05	109
S26	5 part comp, stockpile # 6	Soil	11/4/92	ND	6	ND	ND	9	0.02	25
S27	5 part comp, stockpile # 6	Soil	11/4/92	ND	10	34	18	52	0.12	7
S28	5 part comp, stockpile # 5	Soil	11/4/92	ND	2	7	22	13	0.05	23
S29	5 part comp, stockpile # 5	Soil	11/3/92	21	15	ND	35	23	0.07	18
S30	5 part comp, stockpile # 4	Soil	11/5/92	ND	7	ND	4	8	0.02	24
S31	5 part comp, stockpile #4	Soil	11/5/92	ND	13	ND	7	11	0.03	19
S32	5 part comp, stockpile # 3	Soil	11/5/92	ND	6	ND	ND	9	0.02	59
S33	5 part comp, stockpile # 3	Soil	11/5/92	ND	37	ND	21	32	0.09	44
S34	5 part comp, stockpile # 2	Soil	11/5/92	ND	18	12	19	18	0.06	5
S35	5 part comp, stockpile # 2	Soil	11/5/92	ND	14	ND	8	12	0.03	28
S36	5 part comp, stockpile # 1	Soil	11/5/92	ND	6	ND	ND	7	0.01	141
S37	5 part comp, stockpile # 1	Soil	11/5/92	ND	9	ND	ND	8	0.02	24

ND = Non Detect BRDL = Below Method Quantitation Limit

File Name: 1695.AAP

Analyst: Kristen Katsma

Methods: EPA 5030-8020 (BTEX) and 9071-418.1 (TRPH)

P.11
FEB 03 '94 11:01AM CESWF AQ E
NOV-09-'92 MON 15:22 ID:TIWC FIELD OFFICE TEL NO:903-679-4314 #103 P02
FROM TIWC, INC. ROUND ROCK, TEXAS 11.09.1992 14153
P. 2

00113621

JOB #	CLIENT #	TEXAS INDUSTRIAL WASTE CONTROL, INC.	CofC #:
250		**CHAIN OF CUSTODY**	16.95

Phone:(512) 255-9924 Fax :(512) 255-0013

SITE: Longhorn Army Ammunition Plant
ADDRESS:

LAB: Texas Industrial Waste Control
ADDRESS: 3500 Sunrise Rd
Round Rock, Tx.

Special Instructions:

SAMPLE NO.	LOCATION DESCRIPTION	DATE TAKEN	TIME TAKEN	ANALYZE FOR: BTEX	TPH	TCLP Pb	TOT Pb	TOX	OTHER	OTHER
S-18	Spent Lime Sludge Pile #11	10-30-92	9:45 AM	X	X					
S-19	Spent Lime Sludge Pile #11	10-30-92	9:50	X	X					
S-20	Spent Lime Sludge Pile #9	10-30-92	9:55	X	X					
S-21	Spent Lime Sludge Pile #9	10-30-92	9:40	X	X					
S-22	Spent Lime Sludge Pile #9	10-30-92	9:05	X	X					
S-23	Spent Lime Sludge Pile #9	10-30-92	9:10	X	X					
S-24	Spent Lime Sludge Pile #7	10-30-92	9:15	X	X					
S-25	Spent Lime Sludge Pile #7	10-30-92	9:20	X	X					
S-26	Spent Lime Sludge Pile #6	10-30-92	9:25	X	X					
S-27	Spent Lime Sludge Pile #6	10-30-92	9:30	X	X					
S-28	Spent Lime Sludge Pile #5	10-30-92	9:35	X	X					
S-29	Spent Lime Sludge Pile #5	10-30-92	9:40	X	X					
S-30	Spent Lime Sludge Pile #4	10-30-92	9:45	X	X					
S-31	Spent Lime Sludge Pile #4	10-30-92	9:50	X	X					
S-32	Spent Lime Sludge Pile #3	10-30-92	9:55	X	X					
S-33	Spent Lime Sludge Pile #3	10-30-92	10:00	X	X					
S-34	Spent Lime Sludge Pile #2	10-30-92	10:05	X	X					
S-35	Spent Lime Sludge Pile #2	10-30-92	10:10	X	X					
S-36	Spent Lime Sludge Pile #1	10-30-92	10:15	X	X					
S-37	Spent Lime Sludge Pile #1	10-30-92	10:20	X	X					

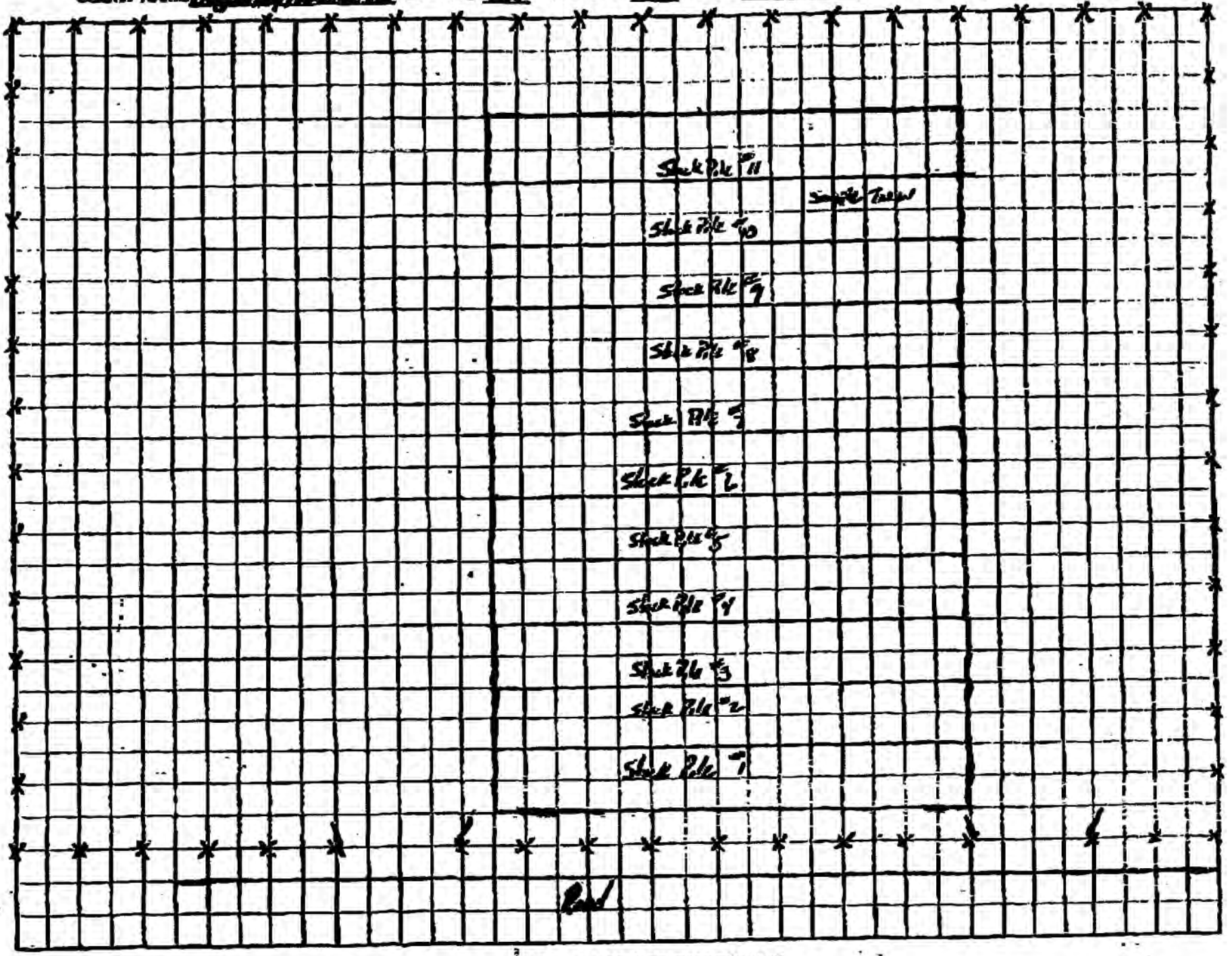
SAMPLER Wally Beadle

Relinquished by	Received by	DATE	TIME
Wally Beadle		11-2-92	8:45 am

SEND RESULTS TO: Texas Industrial Waste Control
3500 Sunrise Road
Round Rock, Texas 78664
ATTENTION:

00113622

CLIENT NAME: [illegible] CLIENT #: 256 PROJECT: ___ DATE: _____ DRAFTER: _____ SCALE: ___



SCALE = WIDTH OF ONE SQUARE

FEB 03 '94 11:02AM CESI/E. RO_E FIELD OFFICE TEL NO:903-679-4314 #103 P.13
FROM TIUC, INC. ROUND ROCK, TEXAS 11.09.1992 14:54 P. 4

TEXAS INDUSTRIAL WASTE CONTROL INC.
3500 Sunrise Road
Round Rock, Texas 78664
(512) 255-9924 FAX (512) 255-0013

Longhorn Army Ammunition Plant
Marshall, Tx
Job # 250
Chain of Custody # 1695

QUALITY ASSURANCE REPORT

	MTBE	BENZENE	TOLUENE	ETHYL BENZENE	P/M/O XYLENES	TPPH
11/3/92						
SPIKE,%RECOVERY	87	93	98	103	114	81
DUPLICATE,%VARIANCE	11	9	15	0	9	2
STANDARD,%	102	87	92	78	89	88
BLANK	ND	ND	ND	ND	ND	ND
11/4/92						
SPIKE,%RECOVERY	84	89	92	95	104	
DUPLICATE,%VARIANCE	3	1	6	7	6	
STANDARD,%	99	97	110	111	117	
BLANK	ND	ND	ND	ND	ND	
11/5/92						
SPIKE,%RECOVERY	98	99	129	92	109	91
DUPLICATE,%VARIANCE	16	15	20	5	4	1
STANDARD,%	99	91	92	73	98	88
BLANK	ND	ND	ND	ND	ND	ND

ND = Non Detect BMDL = Below Method Quantitation Limit File Name: 1550ADC Analyst: Scott Latenti

EPA 5030-8020 (BTEX) and 9071-418.1 (TPH)

FEB 03 '94 11:02AM CESWF-RO-E FIELD OFFICE TEL NO:903-679-4314 #103 P.14

FROM TIUC, INC. ROUND ROCK, TEXAS 11.03.1992 14:55 P. 5

TEXAS INDUSTRIAL WASTE CONTROL INC.
3500 Sunrise Road
Round Rock, Texas 78664
(512) 255-9924 FAX (512) 255-0013

Client: Longhorn Amunition Plant
Karnack, Tx

TRPH Analysis Date: 12/18/92
Date Received: 12/16/92
Date Sampled: 12/17/92
Extraction Date: 12/18/92

Project Manager: Jon Short
Chain of Custody #: 1729
Job #: 250
Received By: Kristin Latimer

Sample #	Sample Description	Sample Matrix	TRPH (ppm)
S38	Stockpile # 1 @ right side	Soil	93
S39	Stockpile # 7 @ left side	Soil	71
S40	Stockpile # 9 @ left side	Soil	366
S41	Stockpile # 9 @ right side	Soil	51
S42	Stockpile # 11 @ right side	Soil	89

SPIKE, % RECOVERY	112
SPIKE DUPLICATE, % RECOVERY	108
SPIKE DUPLICATE, % VARIANCE	2
CALIBRATION STANDARD, %	105
BLANK	ND

Method Detection Limits for:

Analyst:

EPA 3550/418.1 (TRPH)

<3.00 ppm = ND ND = Non Detect

3.00-8.99 ppm = BMQL BMQL = Below Method Quantation Limit

FN: 1729Long

FEB 03 '94 11:02AM CESWF AO E

00113625

CHAIN OF CUSTODY

Phone:(512) 255-9924 Fax :(512) 255-0013

SITE: LONGHORN AMMUNITION

ADDRESS: KARNACK TX 75661

LAB: T.I.W.C

ADDRESS: 3500 SUNRISE ROUND ROCK TX. 78664

Special Instructions:

SAMPLE NO.	LOCATION DESCRIPTION	DATE TAKEN	TIME TAKEN	ANALYZE FOR: TPH 1550-1Rx
$38	STOCKPILE 1 R. SIDE	12-17	11:30AM	X
$39	" " 7 L. SIDE	12-17	11:35AM	X
$40	" " 9 L. SIDE	12-17	11:40AM	X
$41	" " 9 R. SIDE	12-17	11:45AM	X
$42	" " 11 R. SIDE	12-17	11:50AM	X
$38-42 COMPOSITE OF STOCKPILE 1 SIDES		12-17	12:00	X

SAMPLER Don Murphy

Relinquished by	Received by	DATE	TIME
D. Murphy	K Lehmann	12/18/92	1530

SEND RESULTS TO: Texas Industrial Waste Control
3500 Sunrise Road
Round Rock, Texas 78664
ATTENTION:

00113626

CLIENT NAME: Lockheed Engineering & Sciences Co. CLIENT #: PROJECT: DATE: DRAFTER: DRAFTER: SCALE: SCALE: 1"

FEB 03 '94 11:03AM CESWF AO E P.17
FROM TIPS, INC. ROUND ROCK, TEXAS 12/16/1992 15:16 P

S43 Comp. of Stockpile

Stock Pile #11
Stock Pile #10
Stock Pile #9
Stock Pile #8
Stock Pile #7
Stock Pile #6
Stock Pile #5
Stock Pile #4
Stock Pile #3
Stock Pile #2
Stock Pile #1

Simple Tarp

42
41
40
39
38

Road

SCALE = WIDTH OF ONE SQUARE
SCALE = WIDTH OF ONE SQUARE

00113627

Western Waste Industries
WASTE DISPOSAL SERVICES GROUP

Ticket No.: 72339-TEX

Western Waste Industries
Texarkana Landfill #5
RT.1 BOX 387E
TEXARKANA, AR 75502

Time: 12:43
Date: 01/07/93
Operator: TW

VEHICLE ID: 3645
MATERIAL ID: 642 - Contaminated Soil
CUSTOMER ID: 2803

Generator: LH ARMY AMM.
Manifest No.: 1371

Texas Industrial Waste Control
3500 Sunrise Road
Round Rock, TX 78664

David Hall

Cubic Yards 20.00

Description: T-007

Transaction Type: Credit

00113628

Manifest # 1371

Service Order #

CLASS II / III NONHAZARDOUS INDUSTRIAL WASTE MANIFEST

Section I - Generator

Generator Name: LONGHORN ARMY AMMUN. PLANT TWC Reg. #: N/A

Gererator Address: KARNACK, TX Waste Code: N/A

Generator Phone: (318) 226-5365 WWI Approval No.: T-007

Waste Description: LPST- CONTAMINAT'D SOIL

Waste Generation Location: LONGHORN ARMY AMMUN. PLANT, KARNACK

Container Volume 20 Cu. Yds. X Gal. / Drums / Other

Job Number: 250

Generator's Signature

Contractors Name: TX INDUSTRIAL WASTE CONTROL Contractors Phone: (512) 255-9924

Section II - Transporter

Transporter Name: TX INDUSTRIAL WASTE CONTROL TWC Reg. #: 75161

Address: 3500 SUNRISE RD, ROUND ROCK, TX Truck #: T-9

Phone #: (512) 255-9924 Date: 1 7 93

Contact Person: MARY ELLEN HEAVNER

Driver Name: (Print) David Hall

Signature:

Section III - Disposal Facility

WESTERN WASTE INDUSTRIES
RT. 1, BOX 387E
Texarkana, Ark. 75502
(501) 653-2727

ADPC: S-0146

Landfill Authorized Signature

Date Received: 1-7-93

00113629

Western Waste Industries

WASTE DISPOSAL SERVICES GROUP

Ticket No.: 72293-TEX

Western Waste Industries
Texarkana Landfill #5
RT.1 BOX 387E
TEXARKANA, AR 75502

Time: 14:06
Date: 01/06/93
Operator: DP

VEHICLE ID: T9
MATERIAL ID: 642 - Contaminated Soil
CUSTOMER ID: 2803

Generator: LONGHORN AAP
Manifest No.: 1370

Texas Industrial Waste Control
3500 Sunrise Road
Round Rock, TX 78664

Cubic Yards 20.00

Transaction Type: Credit

00113630

Manifest # 1370

Service Order #_____

CLASS II / III NONHAZARDOUS INDUSTRIAL WASTE MANIFEST

Section I - Generator

Generator Name: LONGHORN ARMY AMMUN. PLANT TWC Reg. #: N/A

Gererator Address: KARNACK, TX Waste Code: N/A

Generator Phone: (318) 226-5365 WWI Approval No.: T-007

Waste Description: LPST - CONTAMINATED SOIL

Waste Generation Location: LONGHORN ARMY AMMUN. PLANT, KARNACK

Container Volume 20 Cu. Yds. X Gal. ____ Drums ____ Other ____

Job Number: 250

Generator's Signature

Contractors Name: TX INDUSTRIAL WASTE CONTROL Contractors Phone: (512) 255-9924

Section II - Transporter

Transporter Name: TX INDUSTRIAL WASTE CONTROL TWC Reg. #: 75161

Address: 3500 SUNRISE RD ROUNDROCK, TX Truck #: T-9

Phone #: (512) 255-9924 Date: 1-6-93

Contact Person: MARY ELLEN HEAVNER

Driver Name: (Print) David Heard

Signature: David Heard

Section III - Disposal Facility

WESTERN WASTE INDUSTRIES
RT. 1, BOX 387E
Texarkana, Ark. 75502
(501) 653-2727

ADPC: S-0146

Landfill Authorized Signature

Date Received: 1-6-93

00113631

Western Waste Industries

WASTE DISPOSAL SERVICES GROUP

Ticket No.: 72228-TEX

Western Waste Industries
Texarkana Landfill #5
RT.1 BOX 387E
TEXARKANA, AR 75502

Time: 14:33
Date: 01/05/93
Operator: TW

VEHICLE ID: T-6
MATERIAL ID: 642 - Contaminated Soil
CUSTOMER ID: 2803

Generator: LONGHORN AAP
Manifest No.: 1368

Texas Industrial Waste Control
3500 Sunrise Road
Round Rock, TX 78664

Cubic Yards 20.00

Description: T-007 JOB# 250

Transaction Type: Credit

00113632

Manifest # 1368

Service Order #

CLASS II / III NONHAZARDOUS INDUSTRIAL WASTE MANIFEST

Section I - Generator

Generator Name: LONGHORN ARMY AMMUN. PLANT TWC Reg. #: N/A

Gererator Address: KARNACK, TX Waste Code: N/A

Generator Phone: (318) 226-5365 WWI Approval No.: T-007

Waste Description: LPST - CONTAMINATED SOIL

Waste Generation Location: LONGHORN ARMY AMMUN. PLANT, KARNACK

Container Volume 20 Cu. Yds. X Gal. ____ Drums ____ Other ____

Job Number: 250

Generator's Signature

Contractors Name: TX INDUSTRIAL WASTE CONTROL Contractors Phone: (512) 255-9924

Section II - Transporter

Transporter Name: TX INDUSTRIAL WASTE CONTROL TWC Reg. #: 75161

Address: 3500 SUNRISE RD, ROUND ROCK, TX Truck #: T-9

Phone #: (512) 255-9924 Date: 1-5-93

Contact Person: MARY ELLEN HEAVNER

Driver Name: (Print)

Signature:

Section III - Disposal Facility

WESTERN WASTE INDUSTRIES
RT. 1, BOX 387E
Texarkana, Ark. 75502
(501) 653-2727

ADPC: S-0146

Landfill Authorized Signature

Date Received: 01-05-93

WESTERN WASTE INDUSTRIES
Waste Disposal Service Group
Rt. 1, Box 387E • Texarkana, Ark. 75502 • (501) 653-2727 • Fax No. (501) 653-2532

WHITE-ORIGINAL YELLOW-WWI FACILITY PINK-TRANSPORTER GOLD-GENERATOR'S FIRST COPY

00113633

NO. DAAA09-78-C3004 REAL PROPERTY RECORD

UNIT OF MEASURE = GAL INV CODE 38 3000 CATEGORY CODE 12450

INV DATES 4/2/81 8/31/83 12/3/82 1/16/90 / / / / / /

REC ID	DATE	VOUCH NO	DESCRIPTION	CAP-AREA	COST	CUMULATIVE COST
01	12/19/42		BALANCE FORWARD	12,000.0		8,076.00
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						

OD-764
EQ 5.3J

TOTAL CAPACITY/AREA 12,000.0

BLDG/FACIL 724A

ITEM DESC TANK, GASOLINE STORAGE

THIOKOL [redacted] CORPORATION

REAL PROPERTY RECORD
DAAA09-C-71-0265 38 3000 01

FORM T-40-19

REMARKS: 12,000 gals copy

LOCATION 724-A

GOV'T Code NO. 12450

DATE	POSTING REFERENCE	DRAWING NUMBER	DESCRIPTION	COST	CUMULATIVE COST
4/8/74	Balance	Fw'd From Old Card			8,076.0
4-8-74			Lmw		
10/27/77			Lmw		
4-2-81			Lmw		

ITEM TANK, STORAGE, GASOLINE

BLDG. NO. 724-A

00113634

NO. DAAA09-78-C3004 REAL PROPERTY RECORD

UNIT OF MEASURE = GAL INV CODE 38 3000 CATEGORY CODE 12450

INV DATES 4/2/81 8/31/83 12/3/86 1/16/90 / / / / / /

REC ID	DATE	VOUCH NO	DESCRIPTION	CAP-AREA	COST	CUMULATIVE COST
01	03/11/75		BALANCE FORWARD	17,130.0		16,740.05
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						

TOTAL CAPACITY/AREA 17,130.0

ITEM DESC TANK, GASOLINE STORAGE

BLDG/FACIL 724B

THIOKOL CORPORATION
NO. DAAA09-71-C-0265

REAL PROPERTY RECORD 38-3000 FORM TLD 6-146 (10-74)

REMARKS: 17,130 Capy.

LOCATION 716 Area

GOV'T. CODE NO. 12450

DATE	POSTING REFERENCE	DRAWING NUMBER	DESCRIPTION	COST		CUMULATIVE COST	
3/11/75	R+I 58177		Tank, TNT US #3-825-2, S/N	7,100	00	7,100	00
			3312, 9' X 36' L				
3/31/75	ACV13573		Frt.	684	00	7784	00
7/31/75	ACV14007		W.O. 4326-5-15000	334	94	8118	94
1/28/76	ACV11643			8621	11	16,740	05
3/1/76	R43723		Discription Change only				
3/1/76			Inv.				
10/27/77			Inv.				
4-2-81			Inv				

ITEM Vehicle Fuel Storage Gasoline BLDG. NO. 724 B

00113635

NO. DAAA09-78-C3004 REAL PROPERTY RECORD

UNIT OF MEASURE = GAL INV CODE 38 3000 CATEGORY CODE 12450

INV DATES 4/2/81 8/31/83 12/3/86 1/16/90 / / / / / /

REC ID	DATE	VOUCH NO	DESCRIPTION	CAP-AREA	COST	CUMULATIVE COST
01	11/30/42		BALANCE FORWARD	1,000.0		562.00
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						

TOTAL CAPACITY/AREA 1,000.0

ITEM DESC TANK, GASOLINE STORAGE

BLDG/FACIL 724D1

THIOKOL [redacted] CORPORATION

REAL PROPERTY RECORD DAAA09-71-C-0265 38 3000 01

FORM T-40-19

REMARKS: 1,000 gal. capy

LOCATION 724-D1

GOV'T Code NO. 12450

DATE	POSTING REFERENCE	DRAWING NUMBER	DESCRIPTION	COST	CUMULATIVE COST
4/8/74	Balance	Fw'd From Old Card			562.00
4-8-74			Lnw		
10/27/77			Lnw		
4-2-81			Lnw		

ITEM TANK, STORAGE, GASOLINE

BLDG. NO. 724-D1

00113636

NO. DAAA09-78-C3004 REAL PROPERTY RECORD

UNIT OF MEASURE = GAL INV CODE 38 3000 CATEGORY CODE 12450

INV DATES 4/2/81 8/31/83 12/3/82 1/16/90 / / / / / /

REC ID	DATE	VOUCH NO	DESCRIPTION	CAP-AREA	COST	CUMULATIVE COST
01	12/19/42		BALANCE FORWARD	1,000.0		562.00
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						

TOTAL CAPACITY/AREA 1,000.0

BLDG/FACIL 724D2

ITEM DESC TANK, GASOLINE STORAGE

THIOKOL [redacted] CORPORATION REAL PROPERTY RECORD FORM T-40-19

DAAA09-71-C-0265 38 3000 01

REMARKS: 1,000 gal. capy.

LOCATION 724-D2

GOV'T Code NO. 12450

DATE	POSTING REFERENCE	DRAWING NUMBER	DESCRIPTION	COST	CUMULATIVE COST
4/8/74	Balance	Fw'd From Old Card			562.00
4-8-74			Inv		
11/27/77			Inv		
4-2-81			Inv		

ITEM TANK, STORAGE, GASOLINE

BLDG. NO. 724-D2

00113637

NO. DAAA09-78-C3004 REAL PROPERTY RECORD

UNIT OF MEASURE = GAL INV CODE 38 3000 CATEGORY CODE 12470

INV DATES 6/30/83 6/16/86 10/3/89 / / / / / / / /

REC ID	DATE	VOUCH NO	DESCRIPTION	CAP-AREA	COST	CUMULATIVE COST
01	01/04/78		BALANCE FORWARD	10,000.0		19,590.00
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						

TOTAL CAPACITY/AREA 10,000.0

ITEM DESC TANK, FUEL OIL STORAGE

BLDG/FACIL 703C1

THIOKOL CORPORATION
NO. DAAA09-71-C-0265

REAL PROPERTY RECORD 38 3000

FORM TLD 6-146 (10-74)

REMARKS: 10,000 gal.

LOCATION 703-C-1

GOV'T. CODE NO. ~~12480~~ 12470

DATE	POSTING REFERENCE	DRAWING NUMBER	DESCRIPTION	COST	CUMULATIVE COST
1/4/78	R-45814			19,590 00	19,590 00
1/9/78			Inv.		
12/10/80			Inv		

ITEM TANK, STORAGE Diesel Oil

BLDG. NO. 703-C-1

Robert J. Huston, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
Kathleen Hartnett White, *Commissioner*
Jeffrey A. Saitas, *Executive Director*

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

May 17, 2002

Mr. William R. Corrigan
Environmental Manager
Complete Environmental Service
P.O. Box 170
Karnack, Texas 75661

Re: Approval of Closure Final Report - Risk Reduction Standard No. 2
Brine Pond (Surface Impoundment)
Longhorn Army Ammunition Plant
Harrison County, Texas
TNRCC SWR No. 30990
TNRCC Wastewater Permit No. 02713
EPA ID No. TX213820529

Dear Mr. Corrigan:

The Texas Natural Resource Conservation Commission (TNRCC) received your Final Report dated April, 1999 indicating that closure activities have been completed in accordance with the TNRCC Risk Reduction Standard (RRS) No. 2, pursuant to Title 30 Texas Administrative Code (TAC) Chapter 335 Subchapters A and S.

In order to attain RRS No. 2, all industrial solid waste and municipal hazardous waste and waste residues must be removed or decontaminated to health based standards and criteria. Contaminants allowed to remain in place in media of concern (i.e., soil, ground water, surface water, air) must not exceed the health based clean up levels as specified in 30 TAC §335.556.

The TNRCC has completed a review of the Final Report. The Final Report contains documentation indicating that cleanup at the Brine Pond (Surface Impoundment) unit previously included in the plant wastewater treatment facility permit has attained RRS No. 2 such that no post-closure care or engineering control measures are required. Both the treatment facility and the permit issued to it have been terminated. Based upon the information contained in the Final Report and other information available to staff, it appears that the cleanup has achieved RRS No. 2. The Final Report also contains a document that was filed in Harrison County to fulfill the requirements of 30 TAC §335.560(b) relating to deed certification. Therefore, the TNRCC releases Longhorn Army Ammunition Plant from post-closure care responsibilities for the former Brine Pond.

Please be aware that it is the continuing obligation of persons associated with a site to ensure that municipal hazardous waste and industrial solid waste are managed in a manner which does not cause the discharge or imminent threat of discharge of waste into or adjacent to waters in the state, a nuisance, or the endangerment of the public health and welfare as required by 30 TAC §335.4. If the actual closure fails to comply with these requirements, the burden remains upon Longhorn Army Ammunition Plant to take any necessary and authorized action to correct such conditions. A TNRCC field inspector may review your Final Report and conduct a closure inspection of the site.

Questions concerning this letter should be directed to me at (512) 239-1675. When responding by mail, please submit an original and one copy of all correspondence and reports to the Corrective Action Section at Mail Code MC-127 with an additional copy submitted to the TNRCC Region 05 Office in Tyler. The TNRCC Solid Waste Registration Number and unit description should be referenced in all submittals.

Sincerely,

Ernest W. Heyer, Project Manager
Team I, Corrective Action Section
Remediation Division
Texas Natural Resource Conservation Commission

EH/eh

cc: Waste Program Manager, TNRCC Region 05 Office, Tyler

Wastewater Permitting Section, MC - 148

00113640

05/22/02 WED 15:22 FAX 903 679 3357 001

****
*** TX REPORT ***
****

TRANSMISSION OK

TX/RX NO	2625
CONNECTION TEL	13184595114
CONNECTION ID	
ST. TIME	05/22 15:20
USAGE T	02'16
PGS.	3
RESULT	OK

Complete Environmental Service
Hwy. 134 @ Spur 449 - P.O. Box 170 - Karnack, Texas 75661
Ph 903-679-3448 Fax 903-679-3357 E-mail ces@shreve.net

FAX COVER SHEET

LONGHORN ARMY AMMN. PLANT
GROUNDWATER TREATMENT PLANT
PH.# (903)679-3448
FAX# 903-679-3357
(E-Mail Address: ces@shreve.net)

DATE SENT: 5-22-02

TO: DAVID TOLBERT

COMPANY: SMALL - CR

FAX NUMBER: 1-318-459-5114

PHONE NUMBER: 1-318-459-5109

SENDER NAME: Bill Corrigan

SUBJECT/ COMMENTS: David
Provided is the final closure approval for the "Brine Pond". I will get it removed off of the registration. It is closed to RRS with no post closure care.

Sincerely

Bill Corrigan

00113641

Complete Environmental Service
Hwy. 134 @ Spur 449 - P.O. Box 170 - Karnack, Texas 75661
Ph 903-679-3448 Fax 903-679-3357 E-mail ces@shreve.net

FAX COVER SHEET

LONGHORN ARMY AMMN. PLANT
GROUNDWATER TREATMENT PLANT
PH.# (903)679-3448
FAX# 903-679-3357
(E-Mail Address: ces@shreve.net)

DATE SENT: 5-22-02

TO: DAVID TOLBERT

COMPANY: SMALL - CR

FAX NUMBER: 1-318-459-5104

PHONE NUMBER: 1-318-459-5109

SENDER NAME: Bill Corrigan

SUBJECT/ COMMENTS: David,
Provided is the final closure approval for the "Brine Pond". I will get it removed off of the registration. It is closed to RCRA with no post closure care.

Sincerely,

Bill Corrigan

NUMBER OF PAGES (Including Cover Sheet) 3

IF THERE ARE ANY PROBLEMS WITH THIS FAX TRANSMISSION, PLEASE CALL (903) 679-3448 IMMEDIATELY. THANK YOU.

Complete Environmental Service
Hwy. 134 @ Spur 449 - P.O. Box 170 - Karnack, Texas 75661
Ph 903-679-3448 Fax 903-679-3357 E-mail ces@shreve.net

March 25, 2002

Mr. Ata Rahman
Texas Natural Resource Conservation Commission
Industrial & Hazardous Waste Remediation Division
Building F, M.C. 127
Post Office Box 13087
Austin, TX 78711

Subject: Closure of Surface Impoundment at Longhorn Army Ammunition Plant
TNRCC Solid Waste Registration No. 30990, Waste Management Unit
NOR No. 004

Re: 1) Letter dated 29 April 1999 to TNRCC concerning closure of NOR 004

Dear Mr. Rahman:

On behalf of David Tolbert, Commander's Representative at Longhorn AAP, I am submitting three copies of the closure report for NOR Unit 004, a surface impoundment/brine pond at Longhorn AAP.

Closure of the surface impoundment took place in 1998, and the closure report was subsequently mailed to the TNRCC in 1999. Evidently the report was misplaced, because there is no record of any correspondence from the TNRCC.

Please review the report and I will be available at (903) 679-3448 should you have any questions about this submittal.

Sincerely,

Bill Corrigan
Complete Environmental Service

cc: SIOLL-CR, Mr. David Tolbert
TNRCC Region V Office, Mr. Mike Brashear

Complete Environmental Service
Hwy. 134 @ Spur 449 - P.O. Box 170 - Karnack, Texas 75661
Ph 903-679-2062 Fax 903-679-2056 E-mail billr@prysm.net

April 29, 1999

Mr. Richard Clarke
Texas Natural Resource Conservation Commission
Industrial & Hazardous Waste Division
Building F, M.C. 127
Post Office Box 13087
Austin, TX 78711

Subject: Closure of Surface Impoundment at Longhorn Army Ammunition Plant

Re: LHAAP Wastewater Discharge Permit 02713
TNRCC Solid Waste Registration No. 30990, Unit No. 004
Letter Dated April 7, 1998 from SIOLH-OR to Mr. Richard Clarke.
Longhorn AAP Sewage Treatment Plant Closure Plan dated August 1997.

Dear Mr. Clark:

On behalf of Ira Nathan, Chief Engineer at Longhorn AAP, I am submitting three copies of the closure report for NOR Unit 004, a surface impoundment/brine pond at Longhorn AAP.

Closure of the surface impoundment proceeded in accordance with the approved closure plan for the "Sewage Treatment Plant and Associated Waste Management Units" and in accordance with our March 16, 1998 meeting.

Please review the report and I will be available at (903) 679-2062 should you have any questions about this submittal.

Sincerely,

Bill Corrigan

Bill Corrigan
Complete Environmental Service

cc: SIOLH-OR, Mr. Ira Nathan
TNRCC Region V Office, Mr. Mike Brashear,
Ft. Worth COE Eastern Office, Mr. Oscar Linebaugh

Complete
Environmental Service
Hwy. 134 @ Spur 449 - P.O. Box 170 - Karnack, Texas 75661
Ph 903-679-3448 Fax 903-679-3357 E-mail ces@shreve.net

March 25, 2002

Mr. Ata Rahman
Texas Natural Resource Conservation Commission
Industrial & Hazardous Waste Remediation Division
Building F, M.C. 127
Post Office Box 13087
Austin, TX 78711

Subject: Closure of Surface Impoundment at Longhorn Army Ammunition Plant
TNRCC Solid Waste Registration No. 30990, Waste Management Unit
NOR No. 004

Re: 1) Letter dated 29 April 1999 to TNRCC concerning closure of NOR 004

Dear Mr. Rahman:

On behalf of David Tolbert, Commander's Representative at Longhorn AAP, I am submitting three copies of the closure report for NOR Unit 004, a surface impoundment/brine pond at Longhorn AAP.

Closure of the surface impoundment took place in 1998, and the closure report was subsequently mailed to the TNRCC in 1999. Evidently the report was misplaced, because there is no record of any correspondence from the TNRCC.

Please review the report and I will be available at (903) 679-3448 should you have any questions about this submittal.

Sincerely,

Bill Corrigan
Complete Environmental Service

cc: SIOLL-CR, Mr. David Tolbert
TNRCC Region V Office, Mr. Mike Brashear

Complete Environmental Service
Hwy. 134 @ Spur 449 - P.O. Box 170 - Karnack, Texas 75661
Ph 903-679-2062 Fax 903-679-2056 E-mail billr@prysm.net

April 29, 1999

Mr. Richard Clarke
Texas Natural Resource Conservation Commission
Industrial & Hazardous Waste Division
Building F, M.C. 127
Post Office Box 13087
Austin, TX 78711

Subject: Closure of Surface Impoundment at Longhorn Army Ammunition Plant

Re: LHAAP Wastewater Discharge Permit 02713
TNRCC Solid Waste Registration No. 30990, Unit No. 004
Letter Dated April 7, 1998 from SIOLH-OR to Mr. Richard Clarke.
Longhorn AAP Sewage Treatment Plant Closure Plan dated August 1997.

Dear Mr. Clark:

On behalf of Ira Nathan, Chief Engineer at Longhorn AAP, I am submitting three copies of the closure report for NOR Unit 004, a surface impoundment/brine pond at Longhorn AAP.

Closure of the surface impoundment proceeded in accordance with the approved closure plan for the "Sewage Treatment Plant and Associated Waste Management Units" and in accordance with our March 16, 1998 meeting.

Please review the report and I will be available at (903) 679-2062 should you have any questions about this submittal.

Sincerely,

Bill Corrigan

Bill Corrigan
Complete Environmental Service

cc: SIOLH-OR, Mr. Ira Nathan
TNRCC Region V Office, Mr. Mike Brashear,
Ft. Worth COE Eastern Office, Mr. Oscar Linebaugh

CLOSURE REPORT

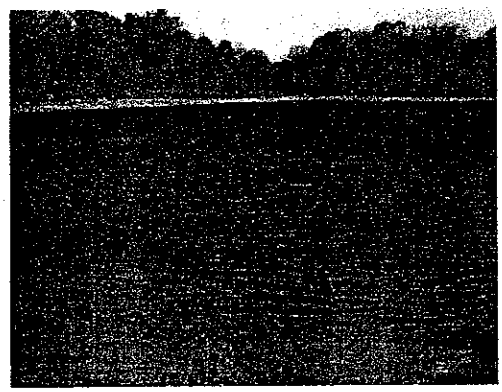
For

BRINE POND
(SURFACE IMPOUNDMENT)

At

Longhorn Army Ammunition Plant
Karnack, Texas

EPA ID No. TX6213820529
Solid Waste Registration No. 30990
NOR Unit Number 004



Surface Impoundment
March 1998

Surface Impoundment
April 1999

TABLE OF CONTENTS

PAGE

1.0 INTRODUCTION 1

2.0 EXECUTIVE SUMMARY 1

3.0 BACKGROUND INFORMATION 1
- 3.1 Location of Longhorn Army Ammunition Plant 1
- 3.2 Location of Surface Impoundment 401-B 1
- 3.3 Description of Surface Impoundment 401-B 4
- 3.4 Description of Wastestreams 4

4.0 CORPS OF ENGINEERS (COE) PHASE I SAMPLING ACTIVITIES 4

5.0 PHASE II CLOSURE ACTIVITIES 4
- 5.1 Narrative of Closure Events 6
- 5.2 Metes and Bounds Survey 7

6.0 CONCLUSIONS 7

DRAWINGS

2-1 Location of Longhorn Army Ammunition Plant
2-2 Location of Surface Impoundment Site 401-B

APPENDIX

A. Closure Plan for Sewage Treatment Plant and Associated Non-Hazardous Waste Management Units, August, 1997
B. Corps of Engineers Report of Phase I Sampling Activities
C. Industrial Solid Waste Certification of Industrial Remediation
D. Survey and Field Notes of Stabilization Pond Tract of Land
E. Letters and Correspondence
F. Surface Impoundment Fact Sheet and Supporting Documentation

1. INTRODUCTION

Longhorn Army Ammunition Plant (LHAAP) has been declared excess by the U.S. Army and there is no further use for permitted waste management units. To satisfy regulatory requirements, each of these units will undergo closure. A surface impoundment used to collect brine from the water softeners at the boiler house was managed on the LHAAP solid waste notice of registration as unit number 004. This unit was permitted in the LHAAP water discharge permit 02713 to discharge water into the LHAAP sewage treatment plant.

A closure plan dated August 1997 and entitled "Closure Plan for Sewage Treatment Plant and Associated Non-Hazardous Waste Management Units" was written in order to meet the requirements of Texas Wastewater Discharge permit number 02713. This closure includes the requirements for the closure of an onsite surface impoundment.

This report documents the closure of that surface impoundment located at Longhorn Army Ammunition Plant. The report documents the sampling activities and work done by the Ft. Worth District Corps of Engineers (COE) and subcontractors performing work for the COE.

2. EXECUTIVE SUMMARY

In accordance with the approved closure plan the surface impoundment was emptied of all water. The water was processed through the sewage treatment plant. Prior to emptying, the water was sampled and analyzed for contaminants, and biomonitoring performed on the water. Soil samples were collected prior to closure of the impoundment. Samples verified that any contamination from sodium chloride was within acceptable limits for closure.

Earthen berms around the perimeter of the pond were pushed into the pond and leveled to grade. At the request of the TNRCC the ground was sloped to drain and prevent collection of water on the site.

The site was closed to the attainment of Risk Reduction Standard Number 2: Closure to Ground-Water Protection Standard for Residential Use. In accordance with these rules, a survey of the area and description of the unit was filed at the Harrison County Courthouse.

3. BACKGROUND INFORMATION

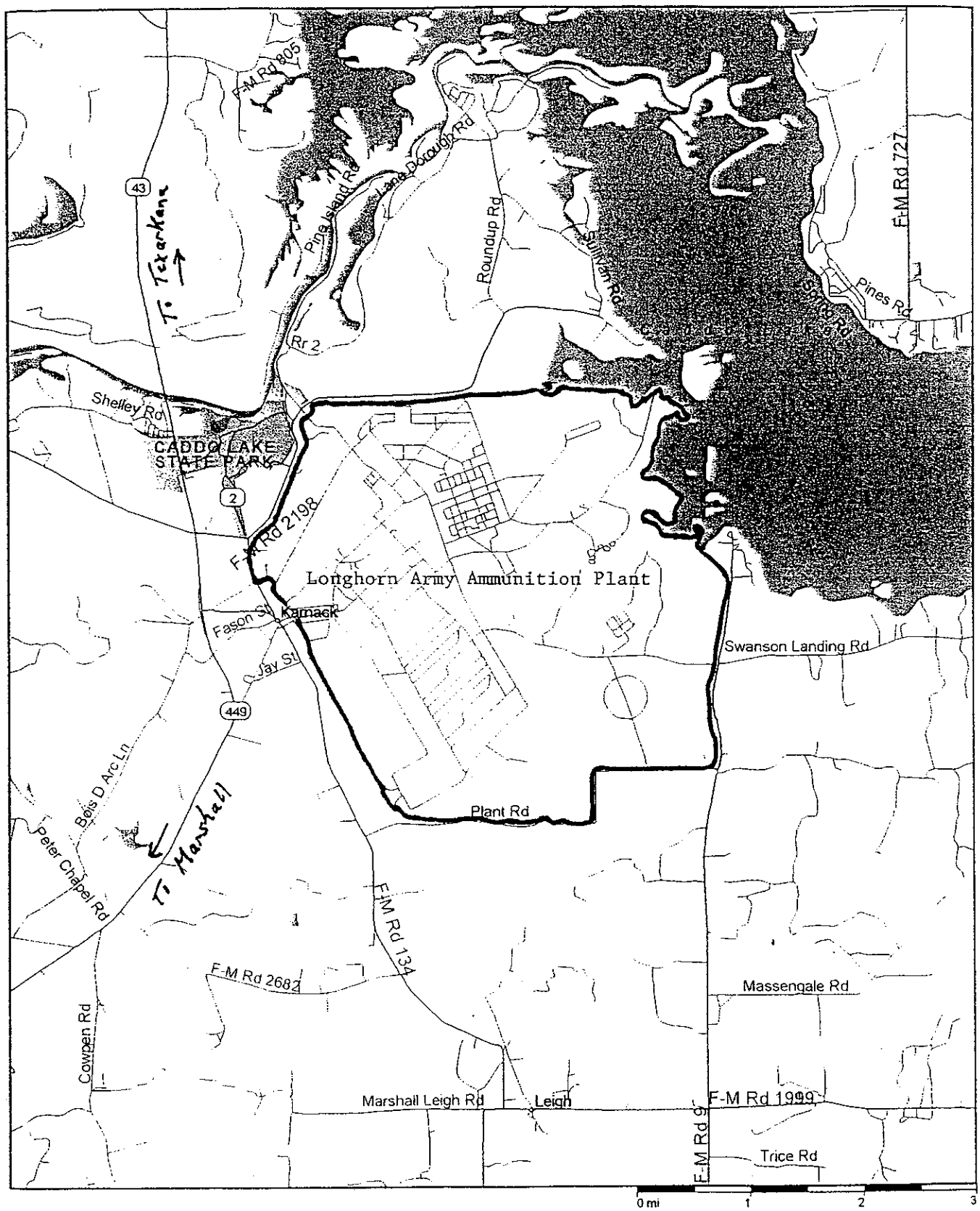
3.1 Location of Longhorn Army Ammunition Plant

Longhorn Army Ammunition Plant (LHAAP) is located in the northeast corner of Harrison County, Texas, approximately 3.6 miles from the Louisiana border. LHAAP is bordered by Caddo Lake, Caddo Lake State Park, and the small town of Karnack. The plant is located approximately 30 miles west of Shreveport, Louisiana, with the nearest major city being Marshall, Texas, 15 miles to the southwest. Figure 1-1 illustrates the location of LHAAP. The installation has a total area of approximately 8,493 acres. State Highways 43 and 134 access the installation.

3.2 Location of Surface Impoundment 401-B

The surface impoundment location is east of the Security office building 710 and located near the central portion of LHAAP. It is on the inside corner of 60th street and Avenue P.

Longhorn Army Ammunition Plant



Streets98

Copyright © 1988-1997, Microsoft Corporation and/or its suppliers. All rights reserved. Please visit our web site at http://maps.expedia.com.

3.3 Description of Surface Impoundment 401-B

Surface Impoundment 401-B is designated as waste management unit number 004 in the Longhorn AAP Solid Waste Notice of Registration Number 30990.

The surface impoundment was a lined 5.7-acre site. The impoundment was trapezoid shaped, 870 feet long, 338 feet wide at one end and 252 feet wide at the other end. It was roughly 6 feet deep. Beneath the pond was a layer of approximately one-foot of clay and a black plastic liner underneath the clay liner.

3.4 Description of Wastestreams

The following wastestreams are listed in the Longhorn AAP Notice of Registration as being stored in surface impoundment 401-B.

Waste Number 00321991 Brine Solution

Brine consisted of salt water backwash from the water softeners/filters used to soften the water before it was sent to the boilers. The impoundment received between 50,000 and 100,000 gallons/year of brine from the water softeners at the boilerhouse.

4.0 CORPS OF ENGINEERS (COE) PHASE I SAMPLING ACTIVITIES

In accordance with the approved closure plan "Phase I Sampling Activities", the surface impoundment water and soil was sampled to determine the concentration of known contaminants. Sediment thickness was also measured. There was no measurable sediment other than the one-foot deep clay liner that was placed over the plastic liner.

The COE performed the sample collection and data evaluation. A copy of their report which includes a description of the sampling procedures, data evaluation, work done, and sediment and water sample results is included as Appendix B.

5.0 PHASE II CLOSURE ACTIVITIES

In Austin on March 16, 1998, LHAAP representatives and TNRCC representatives met in a meeting to discuss solutions to the closure of the surface impoundment. LHAAP representatives presented a fact sheet concerning the surface impoundment, which presented sampling data and results from biomonitoring toxicity testing, as well as a recommendation that the pond remain intact for closure. The fact sheet and supporting documentation is located in Appendix F.

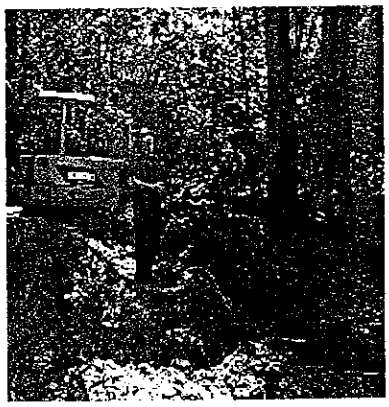
In lieu of leaving the pond intact, it was decided at the March 16, 1998 meeting to perform Option 2 of Section 8.1 in the *Closure Plan for the Sewage Treatment Plant*. Option 2 included removing all of the water from the unit, leaving the sludge in place, and leveling the pond to grade and sloped to prevent collection of water.

In accordance with the approved Sewage Treatment Plant Closure Plan, the surface impoundment was closed prior to the remainder of the sewage treatment plant. This was done in order that the sewage plant could be utilized to treat the water from the surface impoundment. The pH in the surface impoundment was adjusted as necessary to meet the requirements of the NPDES permit, and the water was then discharged from the surface impoundment into the sewage treatment plant. Three-hundred gallons of sodium hydroxide solution were used to adjust the pH from a average level of 5.5 to an average level of 6.9 in the surface impoundment.

While the surface impoundment was being pumped into the sewage treatment plant, efforts were to clear and grub trees that had grown on the berm.

When the surface impoundment was emptied of all water the berm at the deepest end of the impoundment was slotted to prevent collection of rain water. Once this was accomplished efforts were then to bulldoze the berm into the impoundment.

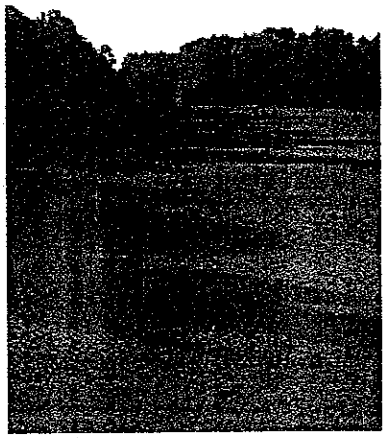
Debris Piles on West Side of Surface Impoundment Piled for Burning



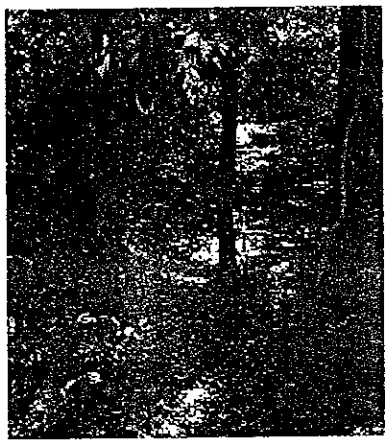
One of the LHAAP Sewage Plant Operators Inspecting the Trench From the Surface Impoundment to a Nearby Creek.

The weather was very dry during the months of June and July so work to push in the berms of the surface impoundment proceeded very quickly. As soon as the berms were pushed in, three thousand cubic yards of fill material were hauled in to help to fill in the lowest areas of the impoundment. All of this material was graded smooth with a motor grader to drain rainwater from the surface impoundment. It was decided that rather than to haul in fifteen to twenty thousand more yards of fill material, the grade of the area would be sloped towards the center of the impoundment and to drain out the west side. On the west side of the surface impoundment towards the center, is a dry creek bed that used to drain the area of the surface impoundment prior to it being constructed. This creek bed made an excellent method to drain the area and also restore the area to its previous state.

The entire area was planted with a grass mixture of winter rye, fescue, and oats. There was also one ton of 8-8-8 fertilizer spread over the area to help the grass get started. The area has been closely monitored for six months and has drained properly.



A Dry Surface Impoundment



The Old Creek Bed Where The Runoff from the Previous Location of the Surface Impoundment Now Drains

5.1 Narrative of Closure Events

Following are brief summaries of activities that have taken place during the closure of the surface impoundment.

- **December 3, 1998** – Notification of Sampling Activity at LHAAP. December 11, 1997 – Corps of Engineers samples sediment and water at surface impoundment.
- **January 11, 1998** – The pH level of surface impoundment was checked and was 5.5.
- **January 12, 13, & 14, 1998** – Began adjusting pH in surface impoundment by adding sodium hydroxide (35%). Added 300 gallons.
- **January 15, 1998** – The pH of surface impoundment checked at various places. The pH level varied from 5.9 to 6.8
- **January 20, 1998** – The pH levels at surface impoundment leveled out to 6.9 throughout surface impoundment. The pH levels were adequate for transferring to the LHAAP sewage treatment plant.
- **January 21, 1998** – Began pumping water from surface impoundment to sewage treatment plant using one 3" trash pump.
- **February 16, 1998** – Installed two additional 3" trash pumps to pump water from surface impoundment to sewage treatment plant.
- **March 16, 1998** – Meeting at TNRCC between TNRCC representatives and LHAAP representatives.
- **March 17, 1998** – Corps of Engineers samples sediment at surface impoundment.
- **April 7, 1998** – Letter from LHAAP to TNRCC summarizing closure requirements discussed in March 16 meeting.
- **May 18, 1998** – Began clearing and grubbing stumps and trees at site.
- **May 19, 1998** – Culvert installed for access road to surface impoundment.
- **May 20, 1998** – Slot cut through berm of surface impoundment to prevent collection of rainwater.
- **June 22, 1998** – Began pushing in berms of surface impoundment.
- **July 1998** – Began hauling fill to low areas of surface impoundment. Fill material smoothed out and graded.
- **August 1998** – Surface impoundment area fertilized and seeded with native grass mix.

5.2 Metes and Bounds Survey

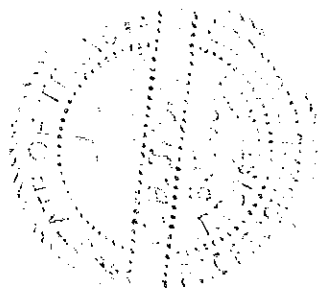
The area of the surface impoundment was surveyed and a metes and bounds description prepared with a plat of the area. Each of the four-corners of the previous location of the surface impoundment was marked with1/2" iron stakes. The survey, property description, and waste management unit "Notice of Registration" information has been filed at the Harrison County Courthouse, in accordance with the requirements of 30 TAC 335.569 Appendix III. A copy of the information filed for record is provided in Appendix D.

6.0 CONCLUSIONS

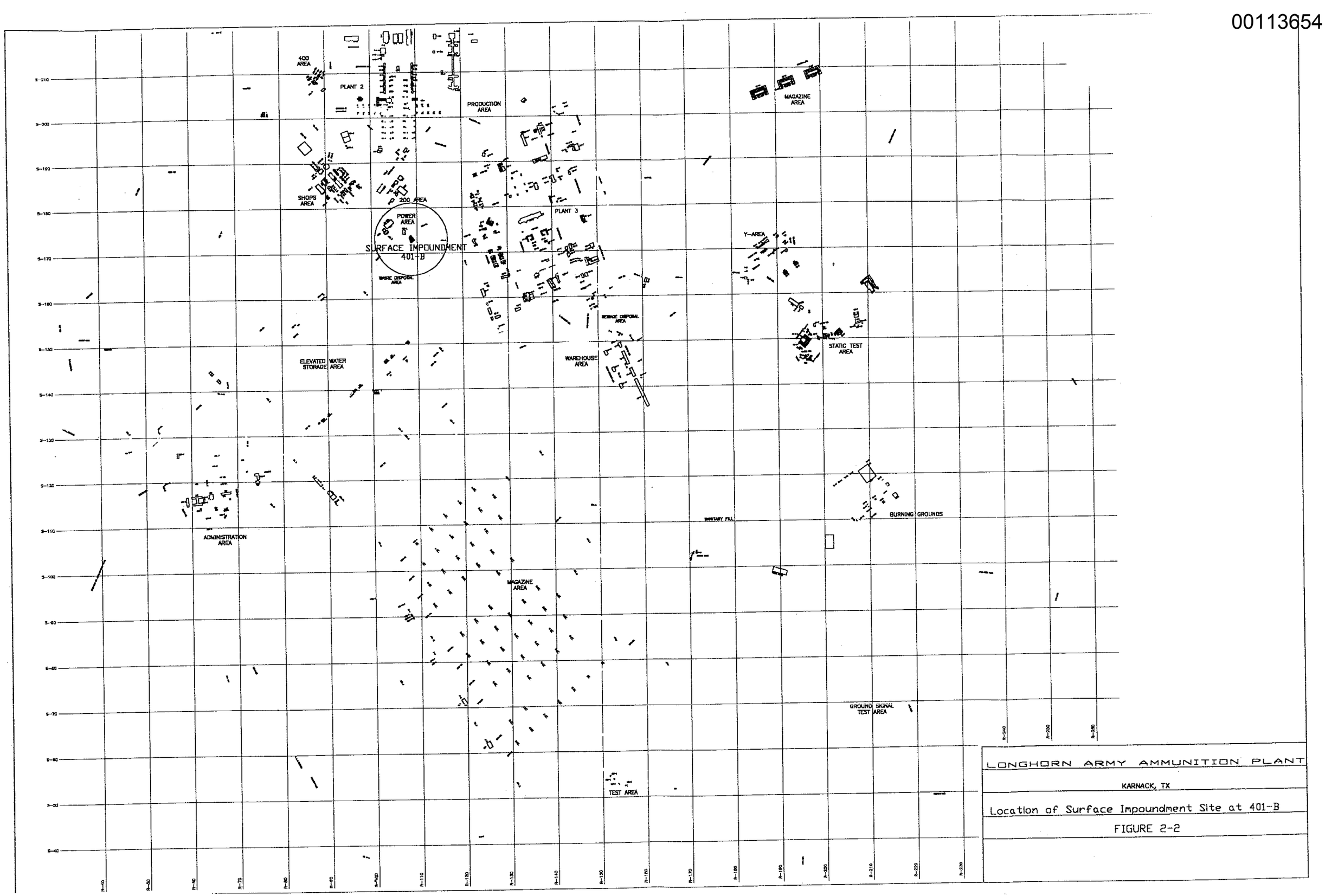
Activities to close the surface impoundment known as facility 401-B have been completed in accordance with the approved closure plan dated August 1997. All of the requirements as stated in 30 TAC Chapter 335, and the requirements of Longhorn AAP NPDES Permit 02713 have been met.

U.S. Army Representative: David Dolbert Date: 27 Apr 99

Licensed Professional Engineer: Wayne Howard Date: 27 April 99



00113654



LONGHORN ARMY AMMUNITION PLANT

KARNACK, TX

Location of Surface Impoundment Site at 401-B

FIGURE 2-2

APPENDIX A

Closure Plan for Sewage Treatment Plant and Associated Non-Hazardous Waste Management Units August, 1997

TABLES

page number

T-1 SEWAGE TREATMENT PLANT EQUIPMENT AND PROCESSES 2
T-2 LIFT STATIONS..... ..5
T-3 USEPA APPROVED ANALYTICAL METHODS..... ..8
T-4 STABALIZATION POND SAMPLE ANALYSIS REQUIREMENTS 14
T-5 DUNBAR FILTERS SAMPLE ANALYSIS REQUIREMENTS 16
T-6 SEWAGE TREATMENT PLANT SAMPLE ANALYSIS REQUIREMENTS 18
T-7 SLUDGE DRYING BED SAMPLE ANALYSIS REQUIREMENTS 18
T-8 WASTEWATER COLLECTION LINES PLUGGING LOCATIONS 20
T-9 SLUDGE DRYING BEDS SOIL ANALYSIS REQUIREMENTS 21

FIGURES

STP-1 SEWAGE TREATMENT PLANT PROCESS SCHEMATIC..... ..4
SB-1 STABILIZATION POND SAMPLING GRID 15
DF-1 DUNBAR FILTER SAMPLING LOCATIONS.....17

APPENDIX 1

SAMPLE CONTAINER, PRESERVATION & ANALYSIS REQUIREMENTS 23

APPENDIX 2

SUMMARY STATISTICS OF SURFACE SAMPLE POPULATIONS TO BE USED
FOR RISK ASSESSMENT EVALUATIONS.....24

DRAWING LIST

WASTEWATER COLLECTION AND TREATMENT PLAN
DWG NO. 18-05-10, SHEET 1 AND 2 OF 4,

SANITARY SEWER & SEPTIC TANKS KEY MAP
DWG NO. LIEU4-0750

IMPROVE SEWAGE TREATMENT PLANT, FACILITY 401-B (BRINE POND)
DWG NO. T00700, SHEETS 6 AND 8 OF 20

MOD SEWAGE TREATMENT PLANT RESTORATION (SITE PLAN)
DWG NO. 5892772, SHEET 1 OF 5

SANITARY SEWER DISPOSAL PLANT (DUNBAR FILTER DETAILS)
DWG NO. R-T14-SD 3.0, 3.1, & 3.2

1.0 PURPOSE FOR SEWAGE TREATMENT PLANT CLOSURE

Longhorn Army Ammunition Plant has been formally excessed by the United States Army, United States Department of Defense. There is no further use for the Sewage Treatment Plant (STP) at Longhorn AAP by the Army. As specified in the "Operational Requirements" of Longhorn's Wastewater Treatment Facility Permit No. 02713, a closure plan has been developed in accordance with the "Closure Guidance Documents" received from the TNRCC Office of Waste Management & Pollution Cleanup in Austin. Operational Requirements also require the notification of the Executive Director in care of the Commission Wastewater Permits Section, in writing of any closure activity at least 90 days prior to conducting such activity. This closure plan has been prepared to satisfy the closure plan requirements of the permit. Its submittal to the Municipal Wastewater Permits Team in Austin shall serve as notification of the Army's intent to close the STP at Longhorn.

Closure/clean-up of the STP is subject to the conditions of Longhorn's NPDES and State permits under authority of the Federal Water Pollution Control Act and Chapter 26 of the Texas Water Code. The closure is also subject to closure requirements of the Texas Solid Waste Disposal Act. Closure of the STP will include closure of associated sludge drying beds, stabilization pond, and four Dunbar filter beds. Closure activities shall consist of sampling to determine the nature of wastes to be removed from the facility and the extent any contaminants released from the facility, removal of all wastes, decontamination of all structures, and plugging of sewage lines in strategic locations. The goal of the STP closure is to ensure that the system can be left in place without contributing to groundwater and/or surfacewater pollution.

2.0 CLOSURE ACTIVITIES OVERVIEW

Closure activities for the STP and associated waste management units will consist of two phases. The first phase (Phase I) will consist of sampling waste management units and suspected contaminated areas to determine the nature of any wastes to be treated and removed during closure, as well as to determine whether a release of contaminants has occurred to the environment from these units. The second phase (Phase II) will be the actual closure of the STP and associated waste management units. It will consist of removal of the wastes identified during the first phase activities, plugging of sewage lines, and decontamination of all structures to be left at the sight. Results obtained from the Phase I sampling activities will be used to modify the Phase II closure plan activities for TNRCC approval should they indicate conditions significantly different from those assumed in this document.

3.0 DESCRIPTION OF STP AND ASSOCIATED STRUCTURES

The STP plant was originally constructed in 1942 simultaneously with the construction of LHAAP. The plant has been extensive modified and upgraded since then, including conversion of one of the bar screen channels into a grit chamber, addition of a barminutor, an upgrade from Dunbar Filters to Rotating Biological Contactors (RBC's), addition of an Anaerobic Digester, a Sludge Digester, a dechlorinator, and construction of a chlorine contact chamber.

During the times when LHAAP was active, the Central Sewage Treatment Plant (STP) served most of the installation. This included the Administration Area, Plants 2 & 3, the Maintenance Area, Property, Y-Area, and the HMX & Static Test area. The STP received mostly domestic wastewater, however it also received stormwater, boiler blowdown, laundry wastes, vehicle wash rack wastes, and effluent from film development at the X-ray facility. Manufacturing wastewater was treated at a separate treatment unit by evaporation and did not utilize the STP.

3.1 Sewage Treatment Plant

The STP is currently regulated under two discharge permits. The EPA regulates the outfall (EPA No. 001D) from the STP under a National Pollutant Discharge Elimination System(NPDES) Permit number TX0000035. The Texas Natural Resource Conservation Commission regulates the outfall (TNRCC No. 001) from the STP under State permit number 02713. The STP is registered by the TNRCC Industrial & Hazardous Waste Division on Notice of Registration Number 026.

The STP has a designed hydraulic capacity of 0.5 million gallons per day (mgd). Treated effluent from the STP is discharged into North Bayou and subsequently into Goose Prairie on Caddo Lake.

A process schematic diagram of the STP is shown in Figure STP-1. Table T-1 below lists the major equipment utilized at the STP. Following Table T-1 is a brief description of how the equipment is utilized.

TABLE T-1
SEWAGE TREATMENT PLANT EQUIPMENT & PROCESSES

Equipment	Process
• Grit Chamber	Grit Removal
• Bar Screen & Barminutor	Comminution
• 3-each 200 gpm Lift Pumps	Influent Pumping
• Imhoff Tank	Anaerobic Treatment & Primary Clarifier
• Rotating Biological Contactors (RBC's) Treatment	Aerobic Treatment
• Clarifier	Sedimentation & Floatation
• Sludge Digester	Aerobic Digestion
• Parshall Flume	Flow & Volume Measurement
• Chlorination	Disinfection
• Chlorination Contact Chamber	Retention time
• DeChlorination Chamber	Detoxification
• Dunbar Filters	Emergency Sewage Bypass
• 3-each Sludge Drying Beds	Sludge Dewatering

Grit Chamber - In this chamber the velocity of the influent is reduced causing heavy particles, such as sand, to settle out while allowing organic solids to pass through. The size of the grit chamber is 14'L x 2'W x 2'DP. The grit chamber is designated as structure number 13-G.

Bar Screen & Barminutor - The bar screen is a vertical screen to catch large particles to large for the pumps. The barminutor, a rotating drum with sharp teeth with moves up and down the screen, catches large particles and breaks them up so that they will pass through the screen. The effluent the passes into the wet well.

3-each 200 gpm Lift Pumps - The lift pumps transfer effluent from the wet well to the Imhoff Tank. The wet well is 16 feet by 10 feet. Each pump is a Swaby 200 gpm pump. They are controlled so that one, two, or three pumps operate, depending on the flow rate of the influent. The pumps operate on a float control.

Imhoff Tank - In the Imhoff tank, suspended solids drop out and pass through a slot into the digestion chamber where anaerobic digestion of the sewage occurs. The sludge that is formed accumulated in the digestion chamber of the tank. The lower chamber of the Imhoff Tank consists of two equal-sized compartments separated by a cross wall. Each compartment has a volume of approximately 25,000 gallons beginning 2 feet below the slot. The Imhoff Tank is 54'L x 23'W x 29'DP. The Imhoff Tank drawing number is R-14-SD 2.0. The Imhoff Tank is designated as structure number 13-G.

Rotating Biological Contactors (RBC's) Treatment - Three RBC's are used as secondary treatment for the wastewater received from the Imhoff Tank. The wastewater is routed in series through RBC number 1 and the into RBC number 2 and/or number 3.

Clarifier - Also called a Settling Tank, or Sedimentation Basin. A tank in which the treated wastewater is held for a period of time , during which the heavier solids settle to the bottom and the lighter materials float to the surface. Sludge from the Clarifier and the lighter solids are drawn off to the Aerobic Digester.

Aerobic Digester - Also called a Sludge Digester. The Aerobic Digester gets sludge from the Clarifier. Sludge from the Aerobic Digester is drawn off to the sludge drying beds. Water from the Aerobic Digester is cycled to the Imhoff Tank.

Chlorination (Disinfection) - Chlorine is supplied from 150 pound cylinders and injected into the effluent downstream from the flow measurement.

DeChlorination - Sodium bisulfite is added to the STP effluent as a last process step. The sodium bisulfite is add to the dechlorination chamber immediately after the chlorine contact chamber.

Parshall Flume - The flow rate and volume of the effluent exiting the treatment processes and immediately prior to chlorination is measured at the Parshall Flume. The flume has a 6 inch throat. Based on the flow rate, chlorine is injected into the effluent.

Chlorination Contact Chamber - The chlorine contact chamber is 24'L x 10'W x 7.5' DP and has five over and under baffles. It serves the purpose of reducing the velocity of the effluent and ensuring that the chlorine mixes with the effluent.

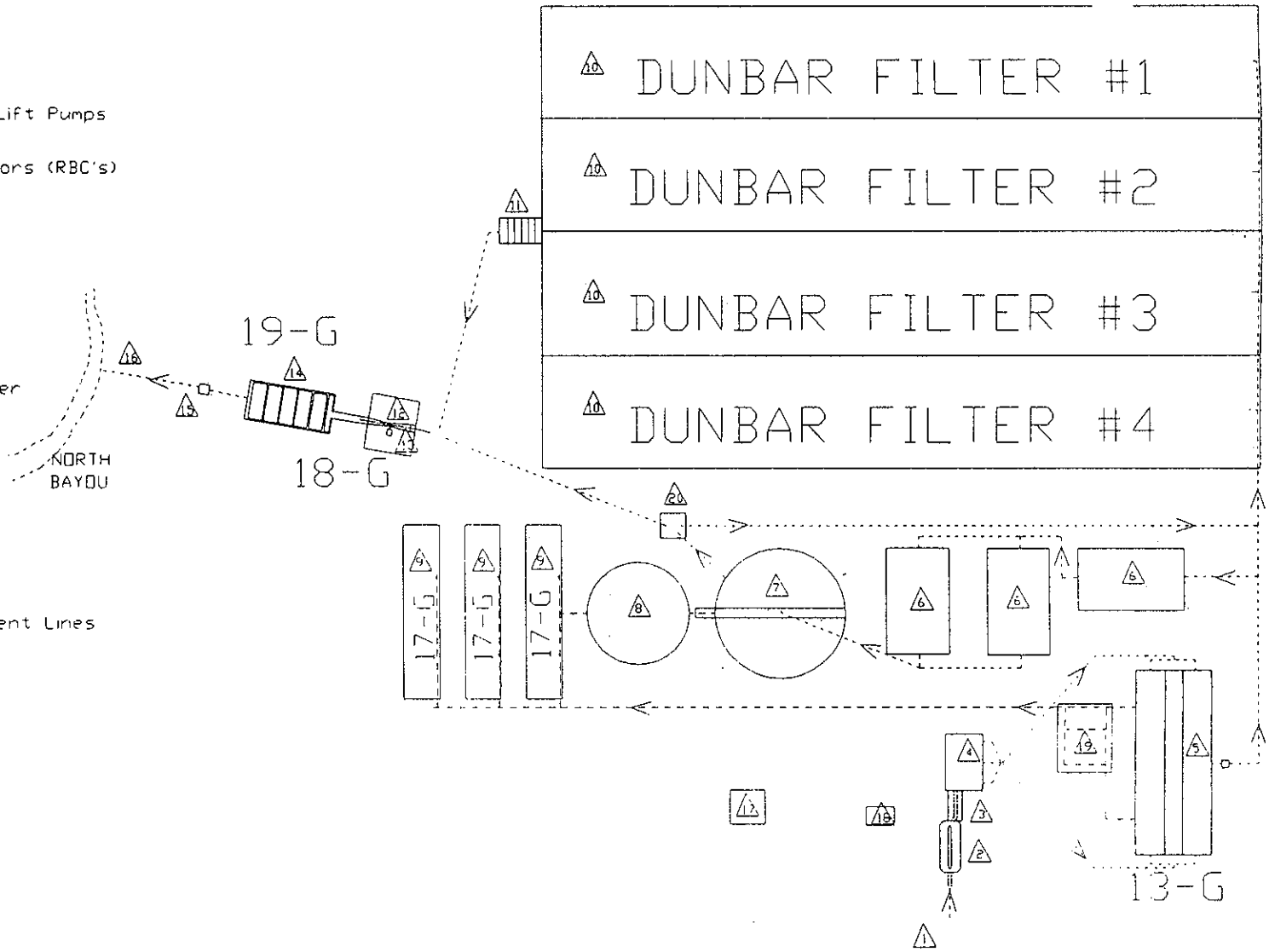
Dunbar Filters - Four each sand filter beds utilized when the STP was originally designed. The filter beds are only now used for emergency bypass during periods of high flow.

3-each Sludge Drying Beds - See Section 3.5

Outfall 001 - Effluent flows from the STP in an 8-inch pipe approximately 100 feet to discharge into North Bayou.

1. Influent
2. Grit Chamber
3. Bar Screen & Barminutor
4. Pumpwell/ 3-each 200 GPM Lift Pumps
5. Imhoff Tank
6. Rotating Biological Contactors (RBC's)
7. Clarifier
8. Sludge Digester
9. Sludge Drying Beds
10. Dunbar Filters
11. Step Aerator
12. Parshall Flume
13. Chlorination Well
14. Chlorination Contact Chamber
15. Dechlorination Chamber
16. Outfall 001D
17. Blower Station
18. Emergency Generator
19. Sludge Pump Station
20. Lift Station

--------- Sludge Lines
..... Wastewater Treatment Lines



LONGHORN AAP
SEWAGE TREATMENT PLANT
PROCESS SCHEMATIC

DATE: Apr 97 | SCALE: 1" = 5'

0011366

3.2 Wastewater Collection System

The wastewater collection system connects the Administration Area, Plants 2 & 3, the Maintenance Area, Property, Y-Area, and the HMX & Static Test area to the Central Sewage Treatment Plant. There are approximately 15 miles of sewage collection lines. The collection system is comprised of pipelines constructed of cast iron, transite, clay, and PVC. Most of the main sewer lines are 6" to 15" in diameter and are clay or transite pipe. Much of the wastewater collection system relies on gravity to feed the wastewater to the STP.

Nine lift stations (see dwg. 18-05-10, sheet are utilized to lift the wastewater to a higher elevation so that it can flow into the Central Sewage Plant. Lift stations are described in Table T-2.

TABLE T-2
LIFT STATIONS

Plant 2 (Horseshoe Area): Collects wastewater from Horseshoe area and wastewater is discharged by gravity to 48-G.
Mod-Area (P-112): Collects wastewater from the Mod/P-area. Quite a bit of infiltration into this branch of the collection system. Wastewater is transferred by gravity to lift station 48-G.
Plant 3 (48-G): Collects wastewater from lift stations at P-112 and the Horseshoe. Wastewater is transferred by gravity to lift station 22-G.
22-G: Collects wastewater from lift station 48-G and sends it directly to the STP.
16-Y (A-5-1): Collects wastewater from the Y-area. Wastewater discharged by gravity feed to lift station 4-Y(A-3).
HMX Area 25-T (A-9): Collects wastewater from buildings 23-T and 25-T. Wastewater is discharged through a 2" force main to lift station 8-T(A-6).
Static Test Area 34-T (A-9-A): Collects wastewater from Static Test area. Wastewater is discharged to lift station 8-T(A-6).
8-T (A-6): Collects wastewater from lift stations A-9 and A-9-A. Wastewater is discharged directly to the STP.
4-Y (A-3): Collects wastewater from lift station 16-Y(A-5-1) and 8-T(A-6). Wastewater is transferred by gravity feed to the STP.

3.3 Stabilization Pond

The Stabilization Pond is a lined 5.7 acre surface impoundment that received between 50,000-100,000 gallons/year of brine from the water softeners at the "Powerhouse". Brine consisted of salt water backwash from the water softeners/filters used to soften the water before it was sent to the boilers. The stabilization pond waters are permitted to be discharged through the Longhorn AAP STP in accordance with the NPDES permit.

The pond is trapezoid shaped, 870 feet long, 338 feet wide at one end and 252 feet wide at the other end. It is roughly 6 feet deep. It is designated as Longhorn Structure Number - 401-B and as TNRCC Notice of Registration Number 004.

3.4 Dunbar Filters

The four Dunbar filters to be closed are located at the sewage treatment plant. The filters are parallel to each other and are part of the same structure. The Dunbar filters were the original treatment process utilized at the Longhorn AAP STP and they have not been routinely used in the recent past. The filters are occasionally utilized during storm events as an emergency bypass to capture water overflow from the RBC's.

Each bed is 209 feet long by 32.5 feet wide by 5.5 feet deep. Each filter bed is encased by 8-inch thick concrete walls and by a clay floor that is sloped to a drain. The filters contain 1.3 feet of sand and 2 feet of gravel. The filters are valved so that each one may be used independently of the others or in parallel. The effluent from each bed is discharged through a valve to a chute that drains into a five step waterfall that is 12 feet long by 5.5 feet wide and utilized as an aeration chamber. The effluent then flows to the chlorination building 18-G.

The Dunbar filters received large quantities of domestic sewage mixed with X-ray development effluent containing silver, copper, and zinc. Previous sampling for known contaminants silver, copper, and zinc, concluded that the following levels of these materials are present in the sand and gravel.

DUNBAR FILTER SAND ANALYSIS
SAMPLED AUGUST 15, 1994

	Total Silver (ppb)	Total Zinc (ppb)	Total Copper (ppb)
West Dunbar	47,000	90,200	5,400
Middle Dunbar	32,809	191,400	7,450
East Dunbar	11,400	155,600	6,130
	Silver (TCLP- ppb)		
West Dunbar	20		
Middle Dunbar	10		
East Dunbar	10		

3.5 Sludge Drying Beds

There are 3-each sludge drying beds at the sewage treatment plant. Each drying bed is 18'8"'W x 50'L x 2'9"DP. The base of each bed is composed of plastic blocks with slats in them that allow water to pass through to underdrains. The originally designed gravel and sand filter media was replaced with the plastic blocks. The water is returned to the influent well to be pumped back into the Imhoff tank. Sludge generated in the grit chamber, Imhoff tank, and Aerobic Digester may be transferred into the drying beds. Only the sludge in the aerobic Digester is pumpable into the drying beds. The sludge bed drawing number is R-T14-SD.5.0. The sludge beds are designated as structure number 17-G.

4.0 CHEMICAL DATA ACQUISITION

All samples will be collected, handled and analyzed in accordance with EPA SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods which satisfies the requirements of 40 CFR Part 261.

Samples of sludge and water will be collected and analyzed for constituents as described in the Phase I Sampling Activities part of this closure plan.

Samples of soil will be collected and analyzed for constituents as described in the Phase II Sampling Activities part of this closure plan.

Samples required by the NPDES permit will be collected in accordance with the permit.

Samples will be shipped via overnight commercial carrier or laboratory carrier to the laboratory. The samples will be analyzed in accordance with the analytical methods stated in Appendix I. Samples should be held by the chemical laboratory for additional analysis until they receive instructions by the contractor to dispose of the samples. For further information on sample container and preservation requirements please refer to Appendix II.

4.1 Data Quality Objectives

Listed in Table T-3 are constituents of concern and the action levels which may determine a course of action for closure. These levels are obtained from the Texas Risk Reduction Rules, the Longhorn AAP NPDES permit, 40 CFR Part 261 (RCRA Toxicity Characteristics for Hazardous Waste.), Soil Background Concentration Report, March 1995, and 30 TAC 335.521 Table 1.

TABLE T-3
USEPA APPROVED ANALYTICAL METHODS

DUNBAR FILTERS

PARAMETER	SAND MEDIA SAMPLES REQUIRED METHOD	ACTION LEVEL
Totals:		
Volatiles	EPA-8260A Gas Chromatographic/ Mass Spectroscopic Methods	40 CFR 261.30 & 30 TAC 335.521, Table 1
Arsenic	EPA-6010A Inductive Coupled Plasma	100 mg/kg
Barium	EPA-6010A Inductive Coupled Plasma	2000.0 mg/kg
Chromium	EPA-6010A Inductive Coupled Plasma	100.0 mg/kg
Silver	EPA-6010A Inductive Coupled Plasma	100.0 mg/kg
Selenium	EPA-6010A Inductive Coupled Plasma	20.0 mg/kg
Cadmium	EPA-7131 (AA Furnace Technique)	20.0 mg/kg
Lead	EPA-7421 (AA Furnace Technique)	100.0 mg/kg
Mercury	(solid) EPA-7471 Manual Cold Vapor Technique	4.0 mg/kg
Copper	EPA-6010A Inductive Coupled Plasma	0.035 mg/kg
Zinc	EPA-6010A Inductive Coupled Plasma	0.269 mg/kg
TRPH	EPA-418.1	10.0 mg/kg
SPLP Extract (Method 1312)		
Arsenic	EPA-6010A Inductive Coupled Plasma	30 TAC 335.568
Barium	EPA-6010A Inductive Coupled Plasma	#GW
Chromium	EPA-6010A Inductive Coupled Plasma	
Silver	EPA-6010A Inductive Coupled Plasma	
Selenium	EPA-6010A Inductive Coupled Plasma	
Cadmium	EPA-7131 (AA Furnace Technique)	
Lead	EPA-7421 (AA Furnace Technique)	
Mercury	(solid) EPA-7471 Manual Cold Vapor Technique	
Copper	EPA-6010A Inductive Coupled Plasma	
Zinc	EPA-6010A Inductive Coupled Plasma	

PARAMETER	CLAY LINER SAMPLES REQUIRED METHOD	ACTION LEVEL
Totals:		
Volatiles	EPA-8260A Gas Chromatographic/ Mass Spectroscopic Methods	40 CFR 261.30 & 30 TAC 335.521, Table 1
Arsenic	EPA-6010A Inductive Coupled Plasma	0.5 mg/kg
Barium	EPA-6010A Inductive Coupled Plasma	161.8 mg/kg
Chromium	EPA-6010A Inductive Coupled Plasma	'16.7 mg/kg
Silver	EPA-6010A Inductive Coupled Plasma	1.3 mg/kg
Selenium	EPA-6010A Inductive Coupled Plasma	0.5 mg/kg
Cadmium	EPA-7131 (AA Furnace Technique)	1.25 mg/kg
Lead	EPA-7421 (AA Furnace Technique)	14.6 mg/kg
Mercury	(solid) EPA-7471 Manual Cold Vapor Technique	0.25 mg/kg
Copper	EPA-6010A Inductive Coupled Plasma	0.035 mg/L
Zinc	EPA-6010A Inductive Coupled Plasma	0.269 mg/L
TRPH	EPA-418.1	10.0 mg/kg

TABLE T-3 (continued)

SPLP Extract (Method 1312)		
Arsenic	EPA-6010A Inductive Coupled Plasma	30 TAC 335.568
Barium	EPA-6010A Inductive Coupled Plasma	#GW
Chromium	EPA-6010A Inductive Coupled Plasma	
Silver	EPA-6010A Inductive Coupled Plasma	
Selenium	EPA-6010A Inductive Coupled Plasma	
Cadmium	EPA-7131 (AA Furnace Technique)	
Lead	EPA-7421 (AA Furnace Technique)	
Mercury	(solid) EPA-7471 Manual Cold Vapor Technique	
Copper	EPA-6010A Inductive Coupled Plasma	
Zinc	EPA-6010A Inductive Coupled Plasma	

SLUDGE DRYING BEDS

	SOLID WASTE SAMPLES	
PARAMETER	REQUIRED METHOD	ACTION LEVEL
Totals:		
Volatiles	EPA-8260A Gas Chromatographic/ Mass Spectroscopic Methods	40 CFR 261.30 & 30 TAC 335.521, Table 1
Arsenic	EPA-6010A Inductive Coupled Plasma	100 mg/kg
Barium	EPA-6010A Inductive Coupled Plasma	2000.0 mg/L
Chromium	EPA-6010A Inductive Coupled Plasma	100.0 mg/L
Silver	EPA-6010A Inductive Coupled Plasma	100.0 mg/L
Selenium	EPA-6010A Inductive Coupled Plasma	20.0 mg/L
Cadmium	EPA-7131 (AA Furnace Technique)	20.0 mg/L
Lead	EPA-7421 (AA Furnace Technique)	100.0 mg/L
Mercury	(solid) EPA-7471 Manual Cold Vapor Technique	4.0 mg/L
Copper	EPA-6010A Inductive Coupled Plasma	0.035 mg/L
Zinc	EPA-6010A Inductive Coupled Plasma	0.269 mg/L
TRPH	EPA-418.1	10.0 mg/kg
TCLP Extract (Method 1311)		
Copper	EPA-6010A Inductive Coupled Plasma	0.035 mg/L
Chromium	EPA-6010A Inductive Coupled Plasma	0.680 mg/L
Silver	EPA-6010A Inductive Coupled Plasma	0.002 mg/L
Zinc	EPA-6010A Inductive Coupled Plasma	0.269 mg/L
Lead	EPA-7421 (AA Furnace Technique)	0.005 mg/L

SLUDGE DRYING BEDS

	SOIL SAMPLES	
PARAMETER	REQUIRED METHOD	ACTION LEVEL
Totals:		
Volatiles	EPA-8260A Gas Chromatographic/ Mass Spectroscopic Methods	30 TAC 335.568 GWP-Res.
Arsenic	EPA-6010A Inductive Coupled Plasma	0.5 mg/kg
Barium	EPA-6010A Inductive Coupled Plasma	161.8 mg/kg
Chromium	EPA-6010A Inductive Coupled Plasma	16.7 mg/kg
Silver	EPA-6010A Inductive Coupled Plasma	1.3 mg/kg
Selenium	EPA-6010A Inductive Coupled Plasma	0.5 mg/kg
Cadmium	EPA-7131 (AA Furnace Technique)	1.25 mg/kg
Lead	EPA-7421 (AA Furnace Technique)	14.6 mg/kg
Mercury	(solid) EPA-7471 Manual Cold Vapor Technique	0.25 mg/kg

TABLE T-3 (continued)

SPLP Extract (Method 1312)		
Arsenic	EPA-6010A Inductive Coupled Plasma	30 TAC 335.568
Barium	EPA-6010A Inductive Coupled Plasma	#GW
Chromium	EPA-6010A Inductive Coupled Plasma	
Silver	EPA-6010A Inductive Coupled Plasma	
Selenium	EPA-6010A Inductive Coupled Plasma	
Cadmium	EPA-7131 (AA Furnace Technique)	
Lead	EPA-7421 (AA Furnace Technique)	
Mercury	(solid) EPA-7471 Manual Cold Vapor Technique	

SEWAGE TREATMENT PLANT IMHOFF TANK

PARAMETER	SOLID WASTE SAMPLES REQUIRED METHOD	ACTION LEVEL
Totals:		
Volatiles	EPA-8260A Gas Chromatographic/ Mass Spectroscopic Methods	40 CFR 261.30 & 30 TAC 335.521, Table 1
Arsenic	EPA-6010A Inductive Coupled Plasma	100 mg/kg
Barium	EPA-6010A Inductive Coupled Plasma	2000.0 mg/kg
Chromium	EPA-6010A Inductive Coupled Plasma	100.0 mg/kg
Silver	EPA-6010A Inductive Coupled Plasma	100.0 mg/kg
Selenium	EPA-6010A Inductive Coupled Plasma	20.0 mg/kg
Cadmium	EPA-7131 (AA Furnace Technique)	20.0 mg/kg
Lead	EPA-7421 (AA Furnace Technique)	100.0 mg/kg
Mercury	(solid) EPA-7471 Manual Cold Vapor Technique	4.0 mg/kg
Copper	EPA-6010A Inductive Coupled Plasma	0.035 mg/L
Zinc	EPA-6010A Inductive Coupled Plasma	0.269 mg/L
TRPH	EPA-418.1	10.0 mg/kg
TCLP Extract (Method 1311)		
Copper	EPA-6010A Inductive Coupled Plasma	0.035 mg/L
Chromium	EPA-6010A Inductive Coupled Plasma	0.680 mg/L
Silver	EPA-6010A Inductive Coupled Plasma	0.002 mg/L
Zinc	EPA-6010A Inductive Coupled Plasma	0.269 mg/L
Lead	EPA-7421 (AA Furnace Technique)	0.005 mg/L

ROTATING BIOLOGICAL CONTACTORS

PARAMETER	SOLID WASTE SAMPLES REQUIRED METHOD	ACTION LEVEL
Totals:		
Arsenic	EPA-6010A Inductive Coupled Plasma	100 mg/kg
Barium	EPA-6010A Inductive Coupled Plasma	100.0 mg/kg
Chromium	EPA-6010A Inductive Coupled Plasma	100.0mg/kg
Silver	EPA-6010A Inductive Coupled Plasma	100.0 mg/kg
Selenium	EPA-6010A Inductive Coupled Plasma	20.0 mg/kg
Cadmium	EPA-7131 (AA Furnace Technique)	20.0 mg/kg
Lead	EPA-7421 (AA Furnace Technique)	100.0 mg/kg
Mercury	(solid) EPA-7471 Manual Cold Vapor Technique	4.0 mg/kg
Copper	EPA-6010A Inductive Coupled Plasma	0.035 mg/L
Zinc	EPA-6010A Inductive Coupled Plasma	0.269 mg/L

TABLE T-3 (continued)

TCLP Extract (Method 1311)		
Copper	EPA-6010A Inductive Coupled Plasma	0.035 mg/L
Chromium	EPA-6010A Inductive Coupled Plasma	0.680 mg/L
Silver	EPA-6010A Inductive Coupled Plasma	0.002 mg/L
Zinc	EPA-6010A Inductive Coupled Plasma	0.269 mg/L
Lead	EPA-7421 (AA Furnace Technique)	0.005 mg/L

STABILIZATION POND

WATER . SLUDGE, and SOIL SAMPLES

PARAMETER	REQUIRED METHOD	ACTION LEVEL
Totals:		
Chloride	EPA-9252A (Titrimetric, Mercuric Nitrate)	300 mg/L
Sodium	EPA-7770 (Atomic Absorption, Direct Aspiration)	N/A
pH	EPA-9040B (Electrometric measurement)	6-9

4.2 Collection and Handling of Samples

Before each sample collection, the samplers will don a new pair of plastic gloves to avoid any chance of contaminating or affecting the sample. Decontamination procedures will be employed to prevent cross contamination during sampling.

Water samples will be collected using a colliwasa, weighted jar, dipper, or similar technique. Water sample locations and sample numbers will be recorded on a plot plan.

Soil samples will be collected using a stainless steel auger and/or a split spoon. Soil sample locations will be marked with a wooden stake. Soil samples will be collected at the depths specified in each section. The sample number and depth sampled will be marked on the stake with a permanent marker. Soil may be placed into a stainless steel bowl and mixed for homogeneity with a stainless steel spoon. Samples collected for volatile compounds should not be mixed because volatiles will be lost.

Samples containers will be sealed and labeled, and placed into ziplock bags. The containers will then placed in an ice chest on ice. A chain-of-custody form will be completed and placed into a ziplock bag into the ice chest and the ice chest will be sealed.

4.3 Field Sampling

The following quality assurance/quality control procedures will be utilized to ensure that all data and decisions based on this data is technically sound.

1. Field Duplicates: Field duplicates(QA and QC) samples will be collected for 10% of the field samples collected.
2. Equipment Blanks: Equipment blanks will be used to determine the effectiveness of field cleaning procedures as well as to determine whether sampling equipment is causing cross contamination of samples. Equipment blanks will be collected for 5% of the samples collected.

4.4 Offsite Laboratory

The offsite laboratory will employ the following measures to ensure that data quality objectives are met.

1. Matrix Spikes: A matrix spike and matrix spike duplicate will be used to document the precision of a given sample matrix. A minimum of one matrix spike and matrix spike duplicate shall be analyzed for every 5% of samples received.
2. The laboratories quality assurance report will be provided with each set of data.

4.5 Specific Data Objectives

The purpose of collecting samples of waste and of soil is for the following:

1. Collect the information necessary to classify wastes.
2. Determine if there has been a release of contaminants at waste management units.
3. Determine if the concentration of the contaminants in soil samples collected exceed background levels at the waste management unit area.

If there has been a release of waste from a waste management unit, additional soil samples will be needed to determine the following:

1. Define extent of contamination resulting from a release of waste from the waste management unit.
2. Determine if the contamination resulting from a release of waste at the waste management unit exceeds Risk Reduction No. 2.
3. Determine metes and bounds coordinates of the contaminated locations to delineate the contaminated area for a Deed Certification in the county deed records in accordance with Risk reduction Standard Number 2.

5.0 WASTE CHARACTERIZATION

All waste to be disposed from the closure activities described in this plan must be classified in accordance with 30 TAC 335 Subchapter R requirements. These requirements specify first determining whether the waste is a listed hazardous waste as defined by 40 CFR 261, Subpart D. Process knowledge of this sewage treatment facility eliminates characterizing any of the waste present as a listed waste. Therefore, in accordance with 30 TAC 335, Subchapter R requirements, the waste will be determined if it is characteristically hazardous as defined by 40 CFR 261, Subpart C.

Constituents monitored for in samples of waste from waste management units vary according to the wastes known to have been processed through the particular unit. Waste will be analyzed using the TCLP and/or for totals in accordance with 30 TAC 335.511(b). The TCLP will be the predominant method utilized to classify waste. Totals will also be run on some waste samples in order to verify that leachate from STP process unit decontamination permit requirements will not be exceeded during waste removal from STP process units. The TCLP concentrations for these constituents will then be compared to those listed in 40 CFR 261.24. If waste concentrations are less than the regulatory concentrations, the waste will be determined as Class 1 non-hazardous waste. Once a hazard class has been determined for a particular wastestream, an appropriate waste classification code will be assigned and registered with the TNRCC prior to the disposal of the waste.

All hazardous waste or class 1 nonhazardous waste shipments to offsite facilities will be accompanied by a manifest. Wastes shipped offsite will be to permitted Treatment, Storage, and/or Disposal facilities.

5.1 Biosolids

Wastes such as sand, gravel, and other materials with a high specific gravity and materials such as rags generated during preliminary treatment of domestic sewage, generated from the Grit Chamber, Imhoff Tank, RBC's, Sludge Drying Beds, or other areas of the STP, to be decontaminated and closed, must be disposed of in accordance with 40 CFR 258, relating to Municipal Solid Waste Landfills.

5.2 Rinsewater

All water used in the decontamination of STP process units or associated waste management units will disposed of in the Longhorn AAP Sewage Treatment Plant and discharged in accordance with the wastewater discharge permit.

6.0 SOIL INVESTIGATION PLAN

The objective of the soil sampling plan is to verify if contamination has occurred from a release of waste at a waste management unit. If a release has occurred, further samples may be required to define the extent of contamination that may have occurred during past use and to ensure that each waste management unit area meets the numeric levels of TAC Risk Reduction Standard Number 2 groundwater protection standard for residential use. Provided the area meets the criteria of Risk Reduction Standard 2, it will be surveyed and closed in accordance with 30 TAC 335.560. If the area does not meet the criteria of Risk Reduction Standard 2, the area will be further evaluated and a plan forwarded to the TNRCC for closure to industrial standards or remediation and closure.

Samples of clay will be collected from areas beneath the Dunbar Filters as verification samples. From these samples a determination will be made if contaminants have been released from the Dunbar Filters. The same principle applies to the Sludge Drying Beds. However, verification samples from the Sludge Drying Beds will be collected from the perimeter of the beds rather than beneath the beds. The Sludge Drying Beds have a concrete base and sides and it is not expected that possible contaminants would leach through the concrete.

Determination of whether soils have been impacted will be determined by comparing waste constituents analyzed for in the soil from each waste management unit to the Soil Background Concentration Report, May 1995. The table of "Summary Statistics for Surface Sample Population To Be Used For Risk Assessment Evaluations" from this report is included in Appendix 2. Waste constituents present in the soil sampled from waste management units, that are not naturally occurring in the soil background, will be considered contamination. Waste constituents found in soil sampled from waste management units, that are present in the soil background, will only be considered contamination if they are statistically over background levels.

If soil is impacted by waste constituents, additional samples will be taken for further delineation of the area of contamination. The exact quantity and location of the additional samples will be proposed to the TNRCC prior to collection.

Guidelines as to how the soil samples will be utilized are as following.
If total waste constituent levels exceed 100 times the Medium Specific Concentrations (MSC) for groundwater protection standards for residential exposure conditions, the samples will be subjected to Method 1312 of SW-846 (Synthetic Precipitation Leaching Procedure-SPLP) to determine if the concentration produces a leachate in excess of the MSC. Maximum Contaminant Levels (MCL) as identified in federal regulations or the Texas Administrative Code may not be available and will be obtained from another source such as EPA Risk Based Concentration Levels or the Health Effects Summary Table (HEAST) if necessary.

7.0 PHASE I SAMPLING ACTIVITIES

Phase I sampling activities consist of sampling waste management units and suspected contaminated areas to determine the nature of any wastes to be treated and removed during closure, as well as to determine whether a release of contaminants has occurred to the environment from the following units.

7.1 Stabilization Pond

Water contained with the stabilization pond will be sampled for pH, sodium, and chlorides. The pH level will be used to determine the need for treatment prior to discharging the water to the STP. Water discharged from the pond into the STP must meet the process controls of the STP in order to meet the requirements of the NPDES permit. The stabilization pond sludge will also be sampled in order to characterize the waste and to verify the thickness of the sludge on the bottom of the pond. Chloride levels in the sludge will determine whether the sludge may contribute to a CWA problem when the water is removed.

Four samples of water will be obtained from the stabilization pond. Sample depth and numbering requirements are located in Table T-4. They will be random samples drawn from different locations. Each sample will be a composite of the water drawn from the top of the sludge to the top of the water. A Coliwasa will be used to obtain the water samples.

Thirty-one samples of sludge will be obtained from the stabilization pond. Sample depth and numbering requirements are located in Table T-4. The samples will be drawn from different locations in the pond as indicated in Figure SB-1. Each sample will be a composite of a core of the sludge drawn from the top of the sludge to the clay liner. For every sampling location, a composite sample of sludge will be obtained. A type of core sampler will be used to sample the sediment from the bottom of the pond.

TABLE T-4
STABALIZATION POND SAMPLE ANALYSIS REQUIREMENTS

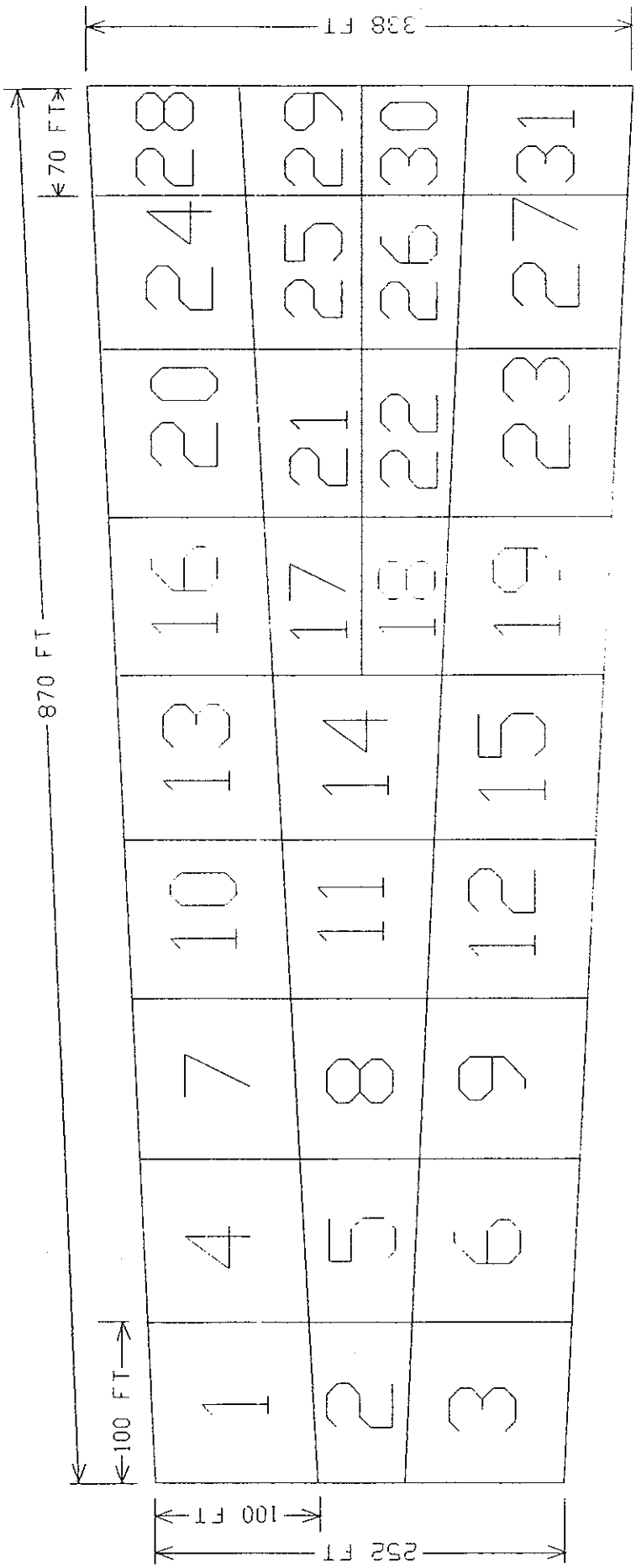
LOCATION	AREA	REQUIRED ANALYSIS
Stabilization Pond	401-B	Chlorides, pH, sodium

WATER SAMPLE LOCATION REQUIREMENTS

Sample Areas (Random)	Sample Depths	Sample Numbers
Stabilization Pond #1	Composite total water column depth for each sample	SPW#1
Stabilization Pond #2		SPW#2
Stabilization Pond #3		SPW#3
Stabilization Pond #4		SPW#4

SLUDGE SAMPLE LOCATION REQUIREMENTS

Sample Areas (See Grid)	Sample Depths	Sample Numbers
Stabilization Pond #1-#31	Composite sample of sludge	SPS#1 through SPS#31



LONGHORN AAP	
STABILIZATION POND	
SLUDGE SAMPLING GRID	
DATE: JULY 97	SCALE: 1" = 100'

FIGURE SB-1

7.2 Dunbar Filter Beds

As stated in section 3.4, the Dunbar Filter Beds were used at Longhorn AAP for the original treatment process for wastewater effluent. Effluent discharged to the Dunbar beds consisted of domestic sewage as well as some wastewater from the X-ray development laboratory. It is unknown whether any other wastewater was discharged through the Dunbar Filter system.

Because of a lack of detailed historical knowledge about what wastewater's were treated in the Dunbar beds, the beds will be characterized as follows. Samples of sand filter material from each filter bed will be analyzed for RCRA metals, copper and zinc, total and by Synthetic Precipitation Leaching Procedure(SPLP),and for total volatiles, and Total Petroleum Hydrocarbons. The SPLP results will be evaluated against the Longhorn AAP soil background summary to determine if background levels are exceeded. If levels exceed background levels, the results will be compared to 30 TAC 335, Subchapter S, Appendix II concentrations to determine whether Risk Reduction Standard 3 requirements can be met for closure. Soil samples of the clay floor under each sample site will be collected and analyzed for the same constituents as the sand media in the filter bed. These samples will be used to determine if a release has occurred from the unit and to what extent media has been impacted.

TABLE T-5
DUNBAR FILTER SAMPLE ANALYSIS REQUIREMENTS

Sample Areas	Sample Depths	Sample Numbers
Dunbar Filter #1	3-9"	DF1-1, DF1-2, DF1-3, & DF1-4
Dunbar Filter #2	3-9"	DF2-1, DF2-2, DF2-3, & DF2-4
Dunbar Filter #3	3-9"	DF3-1, DF3-2, DF3-3, & DF3-4
Dunbar Filter #4	3-9"	DF4-1, DF4-2, DF4-3, & DF4-4

Sample Location - Collect each sample as specified in figure DF-1.
Dunbar Filter Samples - Analyze for RCRA metals, copper, and zinc,(Totals and SPLP), volatiles, and TRPH.

CLAY ANALYSIS REQUIREMENTS

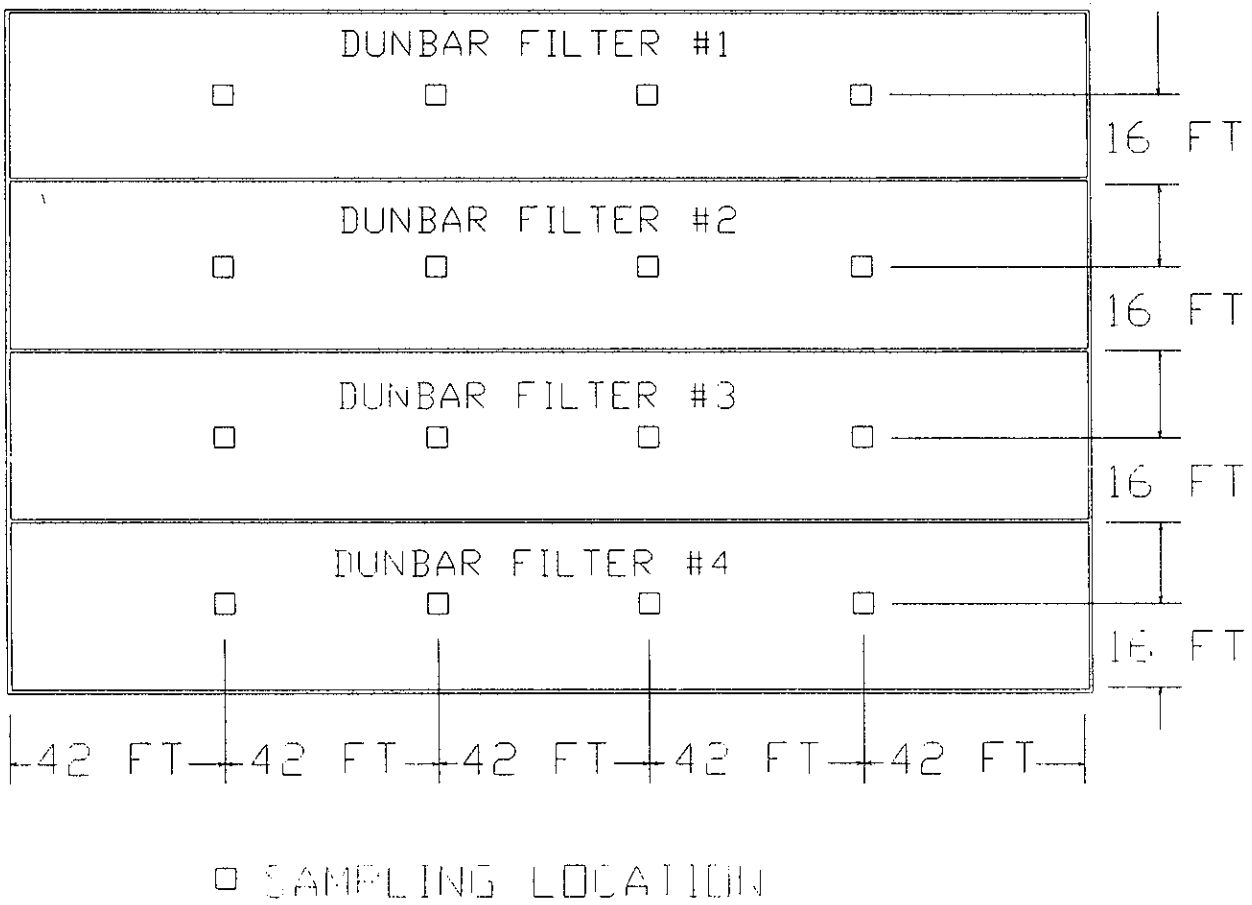
Sample Areas	Sample Depths	Sample Numbers
Dunbar Filters #1	0-6"	DF1-C1, DF1-C2, DF1-C3, DF1-C4
Dunbar Filters #2	0-6"	DF2-C1, DF2-C2, DF2-C3, DF2-C4
Dunbar Filters #3	0-6"	DF3-C1, DF3-C2, DF3-C3, DF3-C4
Dunbar Filters #4	0-6"	DF4-C1, DF4-C2, DF4-C3, DF4-C4

Sample Location - Sample directly below media samples as specified in figure DF-1.
Clay Floor Samples - Analyze for RCRA metals, copper, and zinc, (Totals and SPLP), volatiles, and TRPH.

7.3 Sewage Treatment Plant

Representative samples from the process units at the STP will be obtained and analyzed for total RCRA metals, and copper and zinc. The samples will also be analyzed for the same constituents utilizing the TCLP methodology. Specific analysis requirements are indicated in Table T-6. These metals are being analyzed not only for waste characterization, but to determine if sludges in the STP contain enough metals that could leach and exceed permitted discharge limitations. If the sludges do not leach metals above the maximum permitted discharge levels, it is reasonable to assume that decontamination water will not be a problem, as far as metals are concerned, to discharge through the STP outfall.

FIGURE DF-1



LONGHORN AAP
DUNBAR FILTER
SAMPLING LOCATIONS
DATE:AUG.97

00113674

Samples will be collected from the following STP process units as described below.

1. Imhoff Tank - Sludge in the Imhoff tank will be used to characterize sludge in the sewer treatment plant, except for the sludge drying beds which will be have their waste characterized separately. Each of the two chambers in the Imhoff tank will be sampled. A representative sample will be obtained for every two feet of sludge out of each chamber of the Imhoff tank. For example, a sample will be collected from 0-2 feet, from 2-4 feet, etc. The bottom sample from each chamber will be analyzed for volatiles.
2. Rotating Biological Contactors - A representative sample of bacterial growth will be obtained from the RBC's. This will determine whether the growth has bioaccumulated metals.
3. Sludge Drying Beds - One representative sample of solids will be obtained from the each of the three sludge drying beds. The composite sample will be obtained from four locations within the sludge drying bed.

TABLE T-6
SEWAGE TREATMENT PLANT SAMPLE ANALYSIS REQUIREMENTS
SLUDGE ANALYSIS REQUIREMENTS

Location	Sample Area	Sample Numbers
Imhoff Tank	Center of Chamber No. 1 One sample for every 2' of depth	IT1-0-2', IT1-2-4', etc.
Imhoff Tank	Center of Chamber No. 2 One sample for every 2' of depth	IT2-0-2', IT2-2-4', etc.
Three RBC's	One composite sample	RBC-1

Imhoff Tank - Analyze for 8- RCRA metals, copper, and zinc. Analyze for totals on all metals. Analyze for TCLP on lead, chrome, zinc, copper, and silver. Analyze for VOA's on the bottom sample from each chamber. Analyze for Total Recoverable Petroleum Hydrocarbons (TRPH).
RBC's - Analyze for 8- RCRA metals, copper, and zinc. Analyze for totals on all metals. Analyze using TCLP on all metals.

7.4 Sludge Drying Beds

The sludge drying beds have been in use since the STP was constructed in 1943. They were modernized in 1991 by adding a plastic media to the bottom of the beds to aid in draining the liquids off of the sludge. Due to the long history of the sludge beds being in use, they will be sampled for RCRA metals and volatiles. Table T-7 describes the samples to be obtained from the sludge drying beds.

TABLE T-7
SLUDGE DRYING BEDS SAMPLE ANALYSIS REQUIREMENTS

Location	Sample Area	Sample Numbers
Sludge Drying Beds	One composite sample from each bed	SDB-1, SDB-2, SDB-3

Sludge Drying Beds - Analyze for 8- RCRA metals, copper, and zinc and total volatiles. Analyze for totals on all metals. Analyze for TCLP on lead, chrome, zinc, copper, and silver.

8.0 PHASE II CLOSURE ACTIVITIES

Closure activities for the STP and associated waste management units will proceed in the following order using the assumptions described below. As necessary to ensure a timely and efficient closure of the STP and associated waste management units, the contractor may work within the guidelines for closure of each specific unit. The contractor will insure that waste materials are treated properly and that all possible precautions are taken to comply with the Longhorn NPDES permit.

8.1 Stabilization Pond

Closure of the stabilization pond must occur prior to closure of that section of the wastewater collection system and the STP in order to use the STP to treat the stabilization pond water. Water to be treated from this pond is non-hazardous and is assumed to contain elevated levels of chlorides.

The Stabilization Pond water will be treated to adjust the pH as necessary to meet Longhorn AAP's NPDES permit requirements. The water will be discharged to the Longhorn AAP Sewage Treatment Plant after pH adjustment.

Some closure options for the Stabilization Pond include the following:

Option 1 - Remove all water and waste residues from the unit. Sludge would be moved to an offsite landfill. Pond could remain intact or leveled to grade.

Option 2 - Remove all water from the unit. Sludge will remain in place. Sludge would be stabilized if necessary to leach below State of Texas secondary contaminant limits for chlorides. Pond could remain intact or leveled to grade.

Option 3 - Remove all water from the unit. Sludge will be left in place and the unit closed as a non-hazardous landfill. This closure option may require dewatering and/or stabilization of wastes, capping the closed unit, and deed recordation.

8.2 Dunbar Filter Beds

Closure of these four filters can occur prior to or simultaneously with the closure of any of the waste management units addressed in this closure plan.

It is assumed the sand in these filter beds will exceed TNRCC Risk Reduction standards due to metals and that the clay meets the standards and no release has occurred. Closure will be performed meeting TNRCC Risk Reduction Standard Number 2. If the clay exceeds SPLP levels for RR2, and Longhorn AAP soil background levels, a supplementary plan to remediate or close the unit under RR3 will be forwarded to the TNRCC.

If the unit is hazardous, further investigation will be required in accordance with 30 TAC 335.553 and 335.553(b). Revisions to the closure plan will completed and forwarded to the TNRCC for approval.

In the event the Dunbar Filters are closed under a Risk Reduction Standard Longhorn AAP will survey the Dunbar Filters and file a metes and bounds description of the plat of land where the Dunbar Filters are located. The description will include the waste classification of the materials left in place. Proof of recordation will be provided to the executive director.

8.3 Wastewater Treatment Collection Lines

Wastewater collection lines will be abandoned in place. Liftstations will be deactivated. Collection lines will be plugged at some locations in order to minimize the channeling of infiltration water from one area of the collection system to another at forming what could become an outfall. Locations where liftstations to be deactivated and manholes to be plugged are listed in Table T-8. Upon closure of the wastewater lines, the influent line at the headworks of STP will be permanently closed

One area determined to have contamination from silver is the old B-area/X-ray area. Distribution lines from the B-area/X-ray area will be disconnected and plugged near the buildings in order to limit any possibility of silver contamination from this area leaching into the collection from contaminated soil.

TABLE T-8
WASTEWATER COLLECTION LINES
PLUGGING LOCATIONS

48th St. @ Ave. P	Manholes
B-area @ 60th St.	
B-area @ 56-B-1	
Kelly Ave @ 719	
800 Area, Ave E @ 18th St.	
Acid Area near 405-L	
700 Area near 801-F	
62nd St. at Galveston Ave.	
Headworks at Sewage Treatment Plant	

8.4 Sewage Treatment Plant

Closure of the STP will occur after influent at the head works of the STP has been cut off. Closure of the STP will consist of processing any remaining wastes in the STP units, the decontaminating all process structures beginning at the start of the treatment process in order to use each subsequent process step. The exact sequence of closure events at the STP will be determined by the contractor. Discharge of wastewater will be monitored as required to verify that conditions of the NPDES permit are being met.

Sewage Treatment Plant process units and components in contact with wastewater will be emptied of sludge and surfaces will be washed with water or equivalent technology (40 CFR 268.45, Table 1) to remove sludge residue. Units emptied and cleaned will be considered "closed". Water utilized in the decontamination will be treated through the system. The chlorine contact chamber and dechlorinating system will be operated until the all wastewater and decontamination water has passed through the system. The water that has been flushed through the system will be discharged in accordance with the requirements of the wastewater discharge permits. All unused chemical stock will be removed from the STP when the system has been completely decontaminated. Equipment will be removed from the system for resale or scrap as the government requires. The Imhoff Tank will be filled with clean soil from a borrow area on the installation. Other process units at the STP may be filled with soil upon direction from the government. Sludge emptied from the system disposed of in accordance with Section 5.0.

8.5 Sludge Drying Beds

The sludge drying beds will be closed in conjunction with closure of the STP. The contractor may close the sludge drying beds last to allow for collection and drying of sludges removed from the STP unit. The drying beds are expected be closed as a non-hazardous unit as clean closure. All sludge will be removed, containerized, and disposed of off site.

Verification sampling will be completed when the contents have been removed from the sludge beds. Table T-9 lists the sample analysis requirements.

TABLE T-9
SLUDGE DRYING BEDS
SOIL ANALYSIS REQUIREMENTS

Sample Areas	Sample Depths	Sample Numbers
Sludge Drying Bed #1North	3-6"	SB1N
Sludge Drying Bed #2 East	3-6"	SB2E
Sludge Drying Bed #3 South	3-6"	SB3S
Sludge Drying Bed #4 West	3-6"	SB4W

Soil Samples - Analyze for total RCRA metals and total volatiles. and also use Method 1312 (Synthetic Precipitation Leachate Procedure, SPLP) of SW-846 on chemicals above background levels.

9.0 EQUIPMENT DECONTAMINATION

All equipment used in the closure of the STP and associated waste management units will be decontaminated using a high pressure wash, or by another appropriate method. All water used in the decontamination of the equipment will be discharged in accordance with the wastewater discharge permit.

10.0 SAFETY

The contractor responsible for closure of the STP and associated waste management units at the very least is to operate within Army, Corps of Engineers, and OSHA safety guidelines. Contractors are briefed on these regulations prior to any work being accomplished.

The contractor will have a Safety & Health Plan with emergency telephone numbers available, emergency routes, etc. Prior to any entry into confined areas contractor safety personnel will complete a confined space entry permit. Risk to entry personnel will be assessed. Level D protection will be worn by entry personnel at a minimum with additional protection added as required.

The following items should be recognized in the Safety & Health Plan as an inherent danger when working around sewer systems:

1. Toxic Gas (Example: Carbon Monoxide)
2. Flammable Gas (Example: Methane, Hydrogen Sulfide)
3. Oxygen Deficiency
4. Cave Ins
5. Electrical Hazards
6. Bacterial Infection
7. Chlorine Hazards

11.0 NOTIFICATION OF CLOSURE ACTIONS

Longhorn AAP considers final approval of this closure plan as notification to the TNRCC of closure activities to be performed for the Longhorn AAP Sewage Treatment Plant and associated waste management units contained in this plan. Longhorn AAP will notify the TNRCC Region V office in writing 14 days prior to the initiation of any sampling or closure activity described in this plan.

12.0 CLOSURE SCHEDULE

The closure plan for the Longhorn AAP STP and associated waste management units will be implemented upon receipt of approval form the TNRCC and when funding is received from the Army. If it becomes necessary to modify the closure plan during the implementation of the closure plan, the modification will be submitted to the TNRCC for review, comment, and approval. The time frame for completion of each activity is computed as number of calendar days from the start date.

CLOSURE SCHEDULE

Milestones/Activity	Projected Start Date	Time Required	Projected Finish Date
• Funding from Army to COE	Sept. 1997	3-months	
• COE Scope, Negotiate, & Award Phase 1		2-months	
• Implement Phase 1		2-months	
• Receive results from Phase 1 sampling and revise closure plan as necessary		2-months	
• COE Scope, Negotiate, & Award Phase 2		4-months	
• Implement Phase 2		4-months	
• Final Report		2-months	April 1999

This schedule does not account for delays which may be caused by force majeure, including without limitations, fires, floods, riots, strikes, or lack of funding. If any of the aforementioned circumstances occur, LHAAP will submit a written request to the TNRCC to extend the time allowed for closure, with the rationale substantiating that request.

13.0 CERTIFICATION OF CLOSURE ACTIONS

Closure for the STP and associated waste management unit as described in this plan will be certified for compliance with this closure plan and all applicable state and federal regulations by an independent Professional Engineer registered in the State of Texas. The certification will be in the form of a Closure Completion Report. This certification will be submitted to the TNRCC by registered mail. Included with this certification will be all analytical reports, chain-of-custody reports, work done, and the final configuration of the subject units.

14.0 POST CLOSURE REQUIREMENTS

Post closure requirements will be determined once assumptions are clarified for each of the closure activities.

APPENDIX 1

SAMPLE CONTAINER, PRESERVATION & ANALYSIS REQUIREMENTS

PARAMETER	COLLECTION VOLUME	PRESERVATIVE	MAXIMUM HOLDING TIME	EXTRACT
pH	1/2 pint glass	None	Immediate	
Metals				
(water)	Plastic 1 liter	Filter in field HNO_3 to pH<2	6 months (mercury = 28 days)	
(soil)	Plastic 200 grams	None	6 months	
Volatiles				
(soil)	Glass 500 ml	Cool 4^0 C	14 days	
COD				
(water)	Plastic 500 ml	Cool 4^0 C	24 hours	
CBOD				
(water)	Plastic 1 liter	Cool 4^0 C	24 hours	
Ammonia				
(water)	Plastic 500 ml	Cool 4^0 C H_2SO_4 to pH<2	28 days	
Nitrate				
(water)	Plastic 500 ml	Cool 4^0 C H_2SO_4 to pH<2	28 days	
Chlorides				
(water)	Plastic 1 liter	None	6 months	
(soil)	Plastic 200 grams	None	6 months	
Sodium				
(water)	Plastic 1 liter	Filter in field HNO_3 to pH<2	6 months	
(soil)	Plastic 200 grams	None	6 months	
Total Recoverable Petroleum Hydrocarbons				
(Soil)	Plastic 250 ml	Cool 4^0 C	28 days	

NOTE: Sample containers for Volatiles have Fluorocarbon resin-lined caps.

Table 4-1 - Summary Statistics Of Surface Sample Population To Be Used For Risk Assessment Evaluations.

Metal	Sample Population/ Number of Detections/ Number of Detections Above SQL	SQL (mg/kg)	Range of Detections (mg/kg) Minimum	Maximum	Mean (mg/kg)	Standard Deviation	Distribution Type N=Normal L=Lognormal	UCL (mg/kg)
Aluminum	15/ 15 /15	100	1270	20700	6218	5375	L	9881
Antimony	15/ 0 / 0	15	----	----	----	----	♦	7.5
Arsenic	15/ 3 / 3	1	2.3	29.7	15.2	13.8	♦	0.5
Barium	15/ 15 / 15	1	35.1	287	107.3	80	L	161.8
Cadmium	15/ 0 / 0	2.5	----	----	----	----	♦	1.25
Calcium	15/ 15 / 15	50	124	1090	459	283.6	L	675
Chromium	15/ 15 / 15	2.5	3.2	22.8	11.7	6.1	L	16.7
Cobalt	15/ 15 / 13	2.5	1.5	19.1	6.8	5.1	L	10.8
Copper	15/ 15 / 11	2.5	0.88	6.7	2.4	1.7	L	3.5
Iron	15/ 15 / 15	5	2450	31000	10515	8311	L	17300
Lead	15/ 14 / 14	1	2.6	17.4	6.8	4.5	L	14.6
Magnesium	15/ 15 / 15	50	68.4	1190	316.5	288.6	L	494
Manganese	15/ 15 / 15	2.5	10.9	2330	818.1	770.6	L	4646
Mercury	15/ 0 /0	0.5	----	----	----	----	♦	0.25
Nickel	15/ 15 / 15	4.0	1.5	6.3	3.9	1.3	L	4.8
Potassium	15/ 15 / 15	50.0	133	481	247.9	113.8	L	313
Selenium	15/ 0 / 0	1	----	----	----	----	♦	0.5
Silver	15/ 1 / 0	2.5	2.3	2.3	2.3	----	♦	1.3
Strontium	15/ 15 / 14	2.5	2.3	20.6	6.8	4.9	L	9.8
Thallium	15/ 1 / 0	15	14.1	14.1	14.1	---	♦	7.5
Zinc	15/ 15 / 15	2.5	3.4	16.2	8.4	3.9	L	10.7

♦ Indicates metals with insufficient quantified values to calculate distribution probability values.

APPENDIX B

Corps of Engineers Report of Phase I Sampling Activities

APPENDIX B

Corps of Engineers Report of Phase I Sampling Activities

PHASE I SAMPLING ACTIVITIES
for
SEWAGE TREATMENT PLANT
and
ASSOCIATED NON-HAZARDOUS WASTE MANAGEMENT UNITS
at
LONGHORN ARMY AMMUNITION PLANT

1.0 Introduction. The Fort Worth District Corps of Engineers (COE) received a request from the Longhorn Army Ammunition Plant (LHAAP) Chief, Operations Review, in August 1997 to conduct Phase 1 Soil Sampling Activities at the LHAAP Sewage Treatment Plant (STP) and associated non-hazardous waste management units. LHAAP has been excessed by the United States Army and there is no further use of the STP. To satisfy the requirements of their wastewater treatment plant permit, LHAAP prepared a Closure Plan which was approved by the Wastewater Permits Section, Water Quality Division of the Texas Natural Resource Conservation Commission (TNRCC). Phase I of the Closure Plan consists of sampling the waste management units and suspected contaminated areas; Phase II is the actual closure of the STP. This report documents the Phase I sampling activities conducted by personnel from the Environmental Design Branch of the Fort Worth District COE (CESWF-EV-DI).

2.0 Objective. The objective of the Phase I sampling activities was to determine the nature of any wastes to be treated and removed during closure of the STP and to determine if there had been a release of contaminants to the environment.

3.0 Sampling and Analysis Plan (SAP). Field activities were conducted in accordance with a Sampling and Analysis Plan (SAP) prepared by CESWF-EV-DI. The SAP was written to supplement the Closure Plan to provide field personnel with specific sampling procedures, decontamination procedures, sample handling and shipping procedures, analytical requirements and Health and Safety requirements. Procedures and requirements described in the SAP were in accordance with EPA SW-846 *Test Methods for Evaluating Solid Waste Physical/Chemical Methods*. Copies of the SAP and Closure Plan are provided in Appendices A and B, respectively.

4.0 Data Quality. The following procedures were followed to ensure that all data is of acceptable quality and decisions based on data are technically sound.

4.1 Quality Assurance/Quality Control (QA/QC) Samples. Approximately 10% of field samples were split for QA and QC samples. The field sample was homogenized and split into three parts. Samples collected for VOCs were not homogenized but were obtained by alternately filling the VOC sample containers until all containers required for the field, QC and QA analyses were full. The field sample and its duplicate, designated the QC sample, were submitted to Environmental Testing

and Consulting, Inc. The third part of the split, designated the QA sample, was submitted to Environmental Chemical Corporation. Analysis of a QC duplicate sample provides a measure of sample homogeneity and intra-laboratory variations. Analysis of a QA sample provides a further test of sample homogeneity and a test of inter-laboratory accuracy. QA and QC samples effectively provide triplicate analysis of a subset of the total project samples. Comparisons of field data to the corresponding QC and QA data are tabulated in the Chemical Quality Assurance Reports provided in Appendix C. Although data for all three samples are presented on the tables, comparisons are used to evaluate the usability of field sample results only; field sample results are the results of record.

4.2 Matrix Spike/Matrix Spike Duplicate Samples. The Closure Plan specified that one matrix spike and matrix spike duplicate (MS/MSD) be collected for approximately 5% of samples taken. MS/MSDs are samples of the environmental media that are spiked in the laboratory with a known concentration of a target analyte(s) to verify percent recoveries. They are primarily used to check sample matrix interferences and the precision of a given sample matrix. A MS/MSD is analyzed with every batch of samples; however, it is selected randomly by the laboratory and may not be from the same group of samples as those submitted for a particular project. As specified in the Closure Plan, MS/MSDs were collected from the STP units and include the following: 1) sand sample from a Dunbar Filter, DF1-2; 2) clay sample from a Dunbar Filter, DF1-C2; and 3) sample from a Sludge Drying Bed, SDB-2. Because of the difficulty in obtaining adequate sample volume for analyses, MS/MSDs were not obtained from the Imhoff Tank or the Rotating Biological Contactors. Also, a MS/MSD was not obtained from the Stabilization Pond because matrix interferences were not anticipated to be a problem in the analysis of sodium and chloride. The results for MS/MSDs are included in the lab report provided in Appendix D. Evaluations of MS/MSD results are provided in the Chemical Quality Assurance Reports.

4.3 Analytical Testing Laboratories. The two analytical testing laboratories used for this project are Environmental Chemical Corporation, Cincinnati, Ohio and Environmental Testing and Consulting, Inc., Memphis, Tennessee. Both are currently validated by the U.S. Army Corps of Engineers (USACE). The purpose of laboratory validation is to ensure that analytical chemistry laboratories meet the minimum requirements of the USACE quality assurance/quality control program that facilitates the generation of chemical data of known and acceptable quality.

5.0 Data Evaluation. The following reports provide a discussion on the quality of analytical data. A summary and discussion on data quality and usability is provided for each STP unit in Section 6.0

5.1 Chemical Quality Assurance Report (CQAR). A Chemical Quality Assurance Report (CQAR) is a stand-alone document that evaluates: 1) field sampling activities and sample representativeness based upon inspections of sample shipments; 2) data precision and accuracy based upon the comparison of field, QC

sample data and QA sample data; and 3) assessment of primary and QA laboratory performance based upon review of deliverables. The CQAR is a detailed evaluation of all quality control procedures and results. Data which are outside control limits are qualified as to the source and potential affect on the data and are tabulated in the CQAR. In some cases, the source of problems in data quality can be defined but cannot be attributed to a specific cause. In this situation, problems are minor and have little potential impact on data quality. A CQAR report was prepared for each of the following sites: 1) Dunbar Filters, Sludge Drying Beds and Rotating Biological Contactors; 2) Imhoff Tanks; and 3) Stabilization Pond which includes an evaluation of test results for one sample from the Imhoff Tank and seven samples from the Sludge Drying Beds. Copies of the CQARs are provided in Appendix C.

5.2 Case Narrative Report. A Case Narrative has been prepared for each batch of analytical data and summarizes quality control performance for sample handling and analyses. Four Case Narratives were prepared for the following sites: 1. Dunbar Filter sand samples, 2. Dunbar Filter clay samples, Sludge Drying Beds and RBC, 3. Imhoff Tanks, and 4. Stabilization Pond. The Case Narratives are located at the front of the lab reports provided in Appendix D.

6.0 Summary of Field Activities and Results. Five waste management units of the Sewage Treatment Plant were sampled to meet the requirements of the Closure Plan. Units sampled were the Dunbar Filters, Sludge Drying Beds, Rotating Biological Contactors, Imhoff Tank, and Stabilization Pond. Information for each unit is provided as its own section and includes a description of the facility, sample locations and sampling procedures, sample identification, analytical parameters and results and data usability. At the end of each section are tabulated analytical data, field data forms, site diagrams and photos. Supporting information and data are provided in Appendices A - D. Figure 1 is a site map of the Longhorn Sewage Treatment Plant.

6.5 Stabilization Pond.

6.5.1 Description. The Stabilization Pond is a 5.7-acre surface impoundment that is trapezoid shaped, 870 feet long, 338 feet wide at one end and 252 feet wide at the opposite end. A black plastic liner could be seen in a few areas along the bank. The pond was in the process of being pumped to the STP for treatment and at the time of sampling, the deepest point was approximately 4 feet. There was very little sludge or sediment in the pond and the bottom was composed of a tan or gray colored clay greater than 6 inches in depth.

6.5.2 Sample Locations and Sampling Procedures. On December 11, 1997, one water sample and one sediment sample were collected from each of the four sides of the pond for analysis of sodium and chloride. On March 17, 1998, a sampling grid was set up so that 31 sample locations could be determined. Figure 3 is a diagram of the sampling grid. The first row of samples were at locations approximately 50 feet from the bank on the long side of the pond. The remaining rows of samples were approximately 100 feet apart. A rope marked at 10 foot intervals was stretched across the narrow parts of the pond. The sample collectors were in a small boat and pulled themselves along the rope until they reached the approximate center of the sample area. A posthole digger was used to obtain samples approximately 4 to 6 inches deep. There was very little sediment with most of the sample being composed of clay. The samples were taken from within the center of the sample which had not made contact with the posthole digger. In addition, surface soil samples were taken from the approximate center of each side of the pond at the berm approximately 8 feet from the edge of the pond. All samples were placed in pre-labeled sample containers which was factory cleaned specifically for environmental samples. Sediment samples were analyzed for sodium, chloride, and pH; water samples were not collected.

6.5.3 Sample Identification. Sediment and water samples collected in December 1997 were identified as SPW and SPS for water and sediment, respectively, followed by the numeric extension 1 - 4. The first sample was collected on the long side of the pond closest to the fire station. Samples were numbered counterclockwise with the fourth sample being closest to the road.

The samples collected during the March 1998 sampling event were numbered as shown on Figure 3. Sample results are also shown on this figure.

6.5.4 Analytical Parameters and Results. The samples collected in December 1997 were of water and sediment and were collected approximately 3 feet from the edge of the pond. They were analyzed for sodium and chlorides. The sediment samples collected in March 1998 were collected at depths of 4" to 6" and were analyzed for sodium, chlorides, and pH. A summary of the comparison of test results to action levels is as follows and is provided in the tables at the end of this section.

6.5.4.1 Sodium. The action level for sodium was not defined in the Closure Plan. The December 1997 sample results for the four water samples ranged from 154 mg/L to 157 mg/L and 189 mg/Kg to 286 mg/Kg for the sediment samples. Results for sediment samples collected from the interior of the pond in March 1998 ranged from 225 mg/Kg to 2640 mg/Kg with the average result being 504 mg/Kg.

6.5.4.2 Chlorides. The action level for chlorides is 300 mg/Kg. The December 1997 sample results ranged from 334 mg/L to 348 mg/L for the water and 110 mg/Kg to 209 mg/Kg for the sediment. Results for sediment samples collected from the interior of the pond in March 1998 ranged from 87 mg/Kg to 441 mg/Kg with the average result being 107 mg/Kg.

6.5.5 Data Evaluation. All of the analyses were performed using specified methods and were within the proper holding times for each method. The CQAR was evaluated and compared to the data quality objectives. Conclusions are as follows.

6.5.5.1 Sodium. The CQAR documents the data were analyzed without any potential weakness. Thus, the data are considered usable for the purpose of this investigation.

6.5.5.2 Chlorides. The CQAR documents the data were analyzed without any potential weakness. Thus, the data are considered usable for the purpose of this investigation.

LONGHORN ARMY AMMUNITION PLANT SEWAGE TREATMENT PLANT
STABILIZATION POND
SEDIMENT & WATER SAMPLE RESULTS
DATE SAMPLED: 11 DEC 1997

SAMPLE ID #	CHLORIDES EPA Method 9252A	SODIUM EPA Method 6010B
SPS-1	130 mg/Kg	286 mg/Kg
SPS-2	110 mg/Kg	218 mg/Kg
SPS-3	209 mg/Kg	189 mg/Kg
SPS-4	135 mg/Kg	275 mg/Kg
SPW-1	339 mg/L	157 mg/L
SPW-2	334 mg/L	157 mg/L
SPW-3	344 mg/L	157 mg/L
SPW-4	348 mg/L	154 mg/L

LONGHORN ARMY AMMUNITION PLANT SEWAGE TREATMENT PLANT
STABILIZATION POND
SEDIMENT SAMPLE RESULTS
DATE SAMPLED: 17 MAR 1998

SAMPLE ID #	CHLORIDES EPA Method 9252A (mg/Kg)	SODIUM EPA Method 6010B (mg/Kg)	pH EPA Method 9045A Units
SPS #1	190	429	4.8
SPS #2	204	496	5.4
SPS #3	287	2640	8.3
SPS #4	273	553	6.2
SPS #5	227	684	6.4
SPS #6	200	508	4.7
SPS #7	144	280	4.8
SPS #8	149	477	5.4
SPS #9	137	793	5.2
SPS #10	147	295	4.6
SPS #11	145	242	4.9
SPS #12	156	842	4.8
SPS #13	124	320	4.9
SPS #14	149	391	6.1
SPS #15	122	305	5.0
SPS #16	441	409	4.8
SPS #17	109	247	4.8
SPS #18	87	255	5.0
SPS #19	171	312	4.9
SPS #20	127	225	4.7
SPS #21	92	291	4.8
SPS #22	139	329	4.9
SPS #23	108	474	5.1
SPS #24	189	484	5.4
SPS #25	171	615	5.5
SPS #26	107	496	5.9
SPS #27	134	368	5.3
SPS #28	251	458	4.6
SPS #29	132	413	5.7
SPS #30	172	411	4.8
SPS #31	194	571	4.7
AVERAGE	170	504	5.2

Note: Action Level for Chlorides is 300 mg/Kg, detection limit is 10 mg/Kg
Action Level for Sodium To Be Determined, detection limit is 20 mg/Kg
Average value for Sodium, excluding high value of 2,640 for SPS #3, is 432 mg/Kg

LONGHORN ARMY AMMUNITION PLANT SEWAGE TREATMENT PLANT
STABILIZATION POND
SEDIMENT SAMPLE RESULTS
QA/QC RESULTS
DATE SAMPLED: 17 MAR 1998

SAMPLE ID #	CHLORIDES EPA Method 9252A (mg/Kg)	SODIUM EPA Method 6010B (mg/Kg)
SPS #10	147	295
SPS #10QC	140	295
SPS #10QA	96.2	296
SPS #13	124	320
SPS #13QC	122	270
SPS #13QA	79.7	239
SPS #29	132	413
SPS #29QC	162	434
SPS#29QA	106	476

LONGHORN ARMY AMMUNITION PLANT SEWAGE TREATMENT PLANT
STABILIZATION POND PERIMETER
SEDIMENT SAMPLE RESULTS
DATE SAMPLED: 17 MAR 1998

SAMPLE ID #	CHLORIDES EPA Method 9252A (mg/Kg)	SODIUM EPA Method 6010B (mg/Kg)	pH EPA Method 9045A Units
SPS #32	62	31.2	5.2
SPS #33	94	123	4.8
SPS #34	45	43.3	5.3
SPS #35	93	64.1	5.2
AVERAGE	74	65.4	5.1

Note: Samples were collected approximately 8 feet from edge of pond, one on each side.
Action Level for Chlorides is 300 mg/Kg, detection limit is 10 mg/Kg
Action Level for Sodium To Be Determined, detection limit is 20 mg/Kg

SOIL SAMPLING

FIELD DATA SHEET

Location LHAAP Date 11 Dec 97

Site Stabilization Pond Sample No. SPW-1 0800

Weather Conditions cold + cloudy ~ 35 SPW-2 0830

water in pond high SPW-3 0840

Excavation Conditions 6-8" at edge of pond SPW-4 0850

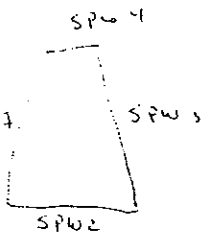
~ 2' in pond - post hole digger used Same for: SPS-1, 2, 3, 4

Sampling Depth _____ Start/End Times 0800 - 0900

Sample Containers Collected: pH temp QA/QC Samples Collected: no

SPW-1 5.0 @ 3'

VOC's		VOC's	
Total metals		Total metals	
TCLP metals		TCLP metals	
Total & TCLP metals		Total & TCLP metals	
Pesticides		Pesticides	
SVOC's		SVOC's	
Cl	✓		
Na	✓		



Cooler No. _____

Remarks/Comments water + soil

SPW-1 nearest fire station - SW side of pond - long sick tan + gray clay - sample taken at 6-8" at edge of pond

SPW-2 dk brown + gray clay - all samples taken at edge of pond

SPW 3 - tan + red clay

SPW-4 - Steep end of pond - clay tanish & orange slight amt of gray mixed in

Note - pH meter malfunctioned

Sampler's Signature Beverly Post / Donnie Garrett

00113695

SOIL SAMPLING

FIELD DATA SHEET

Location Longhorn A.A.P. S.T.P Date 17 Mar 98

Site Stabilization Pond Sample No. SPS # 1-31
32-35

Weather Conditions cool ~ 65°, sunny

Excavation Conditions

Sampling Depth 0 - 4" Start/End Times

Sample Containers Collected:

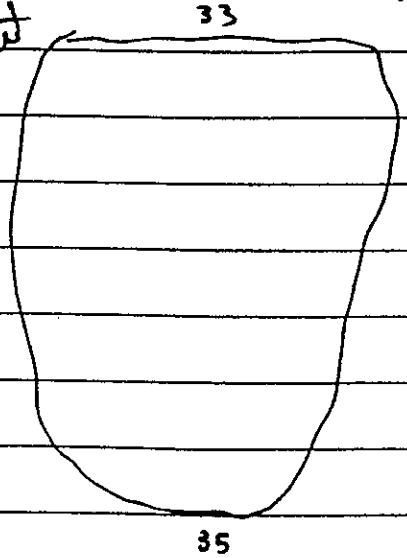
VOC's	
Total metals	
TCLP metals	
Total & TCLP metals	
Pesticides	
SVOC's	
Cl	✓
Na	✓
pH	✓

QA/QC Samples Collected:

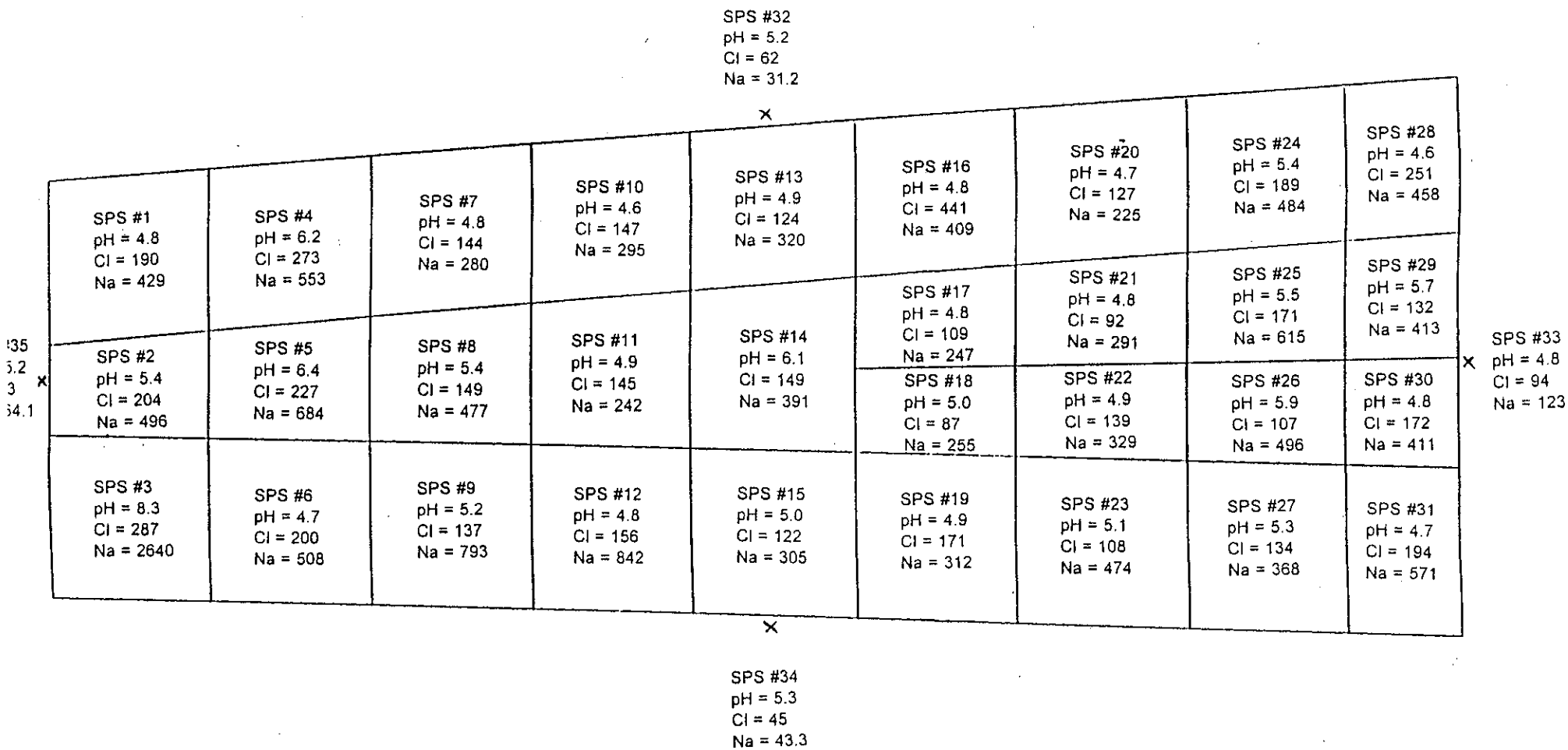
VOC's	
Total metals	
TCLP metals	
Total & TCLP metals	
Pesticides	
SVOC's	

Cooler No.

Remarks/Comments samples taken of pond sediment / clay very little sediment clay gray or tan in color Samples 32-35 taken of surface soil samples at top of berm ~ 8' from edge of pond per B. Corrigan



Sampler's Signature



LONGHORN AAP		
STABILIZATION POND		
SEDIMENT SAMPLING GRID		
FIGURE 3	DATE: MAR 98	Scale: 1" = 100'

00113696

Longhorn AAP 6 Oct. 1997

Brine Pond / Stabilization Pond

Stabilization Pond. Photo taken in October 1997 when pond was full.

LONGHORN ARMY AMMUNITION PLANT
SEWAGE TREATMENT PLANT

APPENDIX C

Industrial Solid Waste Certification of Industrial Remediation

APPENDIX C

Industrial Solid Waste Certification of Industrial Remediation

30990 Longhorn Army Ammunition Plant ATTN: SIOLH-OR

**** UNITS AT THIS SITE MANAGING WASTE ****

Unit Number	Unit Type	Unit Status	Date of Status	Classes of Waste Managed in Unit Onsite / Offsite	Unit Permit Number	Unit # on Permit	Regulatory Status	Deed Recording Needed/Date
** 'Active' & 'Closure Pending' Units **								
001	Landfill	Closure Pending	06/13/94	/ NA	NA	NA		Yes/
System Types:								
Wastes Currently Managed in Unit:								
Wastes Previously Managed in Unit:	152430 170260 171580 173240 179390 180370 180400 180610 212610 270050 275240 279760 280240 280590 340150 371290 380200							
002	Surface Impoundment	Closure Pending		/ NA	NA	NA		Yes/
Description from Company: Partial closure completed; letter sent 6/13/86								
System Types:								
Wastes Currently Managed in Unit:								
Wastes Previously Managed in Unit:	909800							
003	Open Control Incin	Active		1 2 H/ NA	NA	004	RCRA Interim Status Unit	NA /
Description from Company: East Burning Cage								
Capacity:	1.0000 Capacity Unit of Measure: U							
System Types:								
Wastes Currently Managed in Unit:	0023315H Pentolite 0024315H Detonating 0029509H Sludge, KO 0030303H Barium con 0075405H Reactive a 00769011 Explosive 00964032 Cellulose 0097219H Diethylene 0098219H Triethylen 0104315H Ammonium P 0105210H Cellulose 0117609H Sludge fro							
Wastes Previously Managed in Unit:	181450 951270 981450							
004	Surface Impoundment	Active	08/01/79	1/ NA	NA	NA		NA /
System Types: 141 Storage								
Wastes Currently Managed in Unit:	00321991 Brine Solu							
Wastes Previously Managed in Unit:	201560							
005	Incinerator	Active		1 2/ NA	NA	NA	Non-Hazardous Regulated	Yes/
Capacity:	1.0000 Capacity Unit of Measure: U							
System Types:								
Wastes Currently Managed in Unit:	00383082 Drums that 00563032 Ash residu 00659012 Plant prod 00669032 Plant offi 00689012 Cardboard/ 00744882 Wood debri 00769011 Explosive 00854882 Wood debri 01024891 Oil soaked							
Wastes Previously Managed in Unit:	181450 182660 279760 280240 280590 380200							
006	Landfill	Active		2/ NA	NA	NA	Non-Hazardous Regulated	Yes/
System Types:								
Wastes Currently Managed in Unit:	00669032 Plant offi 00689012 Cardboard/ 00744882 Wood debri							
Wastes Previously Managed in Unit:	00659012 01063042 173240 180370 180400 180610 212610 270050 275240 279760 280240 340150 370510 371290 380200							
007	Contain Store Area	Closure Pending	01/09/97	/ NA	NA	002	RCRA Permitted	NA /

Rdal No 38445 Vol 1888 Pg 001 13701

LONGHORN ARMY AMMUNITION PLANT SEWAGE TREATMENT PLANT
STABILIZATION POND
SEDIMENT SAMPLE RESULTS
DATE SAMPLED: 17 MAR 1998

SAMPLE ID #	CHLORIDES EPA Method 9252A (mg/Kg)	SODIUM EPA Method 6010B (mg/Kg)	pH EPA Method 9045A Units
SPS #1	190	429	4.8
SPS #2	204	496	5.4
SPS #3	287	2640	8.3
SPS #4	273	553	6.2
SPS #5	227	684	6.4
SPS #6	200	508	4.7
SPS #7	144	280	4.8
SPS #8	149	477	5.4
SPS #9	137	793	5.2
SPS #10	147	295	4.6
SPS #11	145	242	4.9
SPS #12	156	842	4.8
SPS #13	124	320	4.9
SPS #14	149	391	6.1
SPS #15	122	305	5.0
SPS #16	441	409	4.8
SPS #17	109	247	4.8
SPS #18	87	255	5.0
SPS #19	171	312	4.9
SPS #20	127	225	4.7
SPS #21	92	291	4.8
SPS #22	139	329	4.9
SPS #23	108	474	5.1
SPS #24	189	484	5.4
SPS #25	171	615	5.5
SPS #26	107	496	5.9
SPS #27	134	368	5.3
SPS #28	251	458	4.6
SPS #29	132	413	5.7
SPS #30	172	411	4.8
SPS #31	194	571	4.7
AVERAGE	170	504	5.2

Note: Action Level for Chlorides is 300 mg/Kg, detection limit is 10 mg/Kg
Action Level for Sodium To Be Determined, detection limit is 20 mg/Kg
Average value for Sodium, excluding high value of 2,640 for SPS #3, is 432 mg/Kg

00113703

Real No 38445 Vol 1888 Pg 87

LONGHORN ARMY AMMUNITION PLANT SEWAGE TREATMENT PLANT
STABILIZATION POND PERIMETER
SEDIMENT SAMPLE RESULTS
DATE SAMPLED: 17 MAR 1998

SAMPLE ID #	CHLORIDES EPA Method 9252A (mg/Kg)	SODIUM EPA Method 6010B (mg/Kg)	pH EPA Method 9045A Units
SPS #32	62	31.2	5.2
SPS #33	94	123	4.8
SPS #34	45	43.3	5.3
SPS #35	93	64.1	5.2
AVERAGE	74	65.4	5.1

Note: Samples were collected approximately 8 feet from edge of pond, one on each side.
Action Level for Chlorides is 300 mg/Kg, detection limit is 10 mg/Kg
Action Level for Sodium To Be Determined, detection limit is 20 mg/Kg

ARK-LA-TEX SURVEYING CO., INC.
P.O. Box 910 • 315 N. Alamo Blvd. • Marshall, Texas 75671 • 903/938-9939 • FAX 903/938-0601

FIELD NOTES

All that certain lot, tract, or parcel of land situated in Harrison County, Texas, about 16 miles Northeast of the Courthouse in the City of Marshall, being 6.717 acres of land, a part of the JAMES C. HAWLEY SURVEY, A-324, and a part of the GEORGE W. LEWIS SURVEY, A-426, and being a part of that certain called 2887.6 acre tract described in deed from T.J. Taylor to the United States of America, dated August 5, 1942, and recorded in Volume 249, Page 415 of the Harrison County Deed Records, said 6.717 acres being more particularly described as follows:

Beginning at a ½" iron rod set for corner having State Plane Coordinates of North = 6959059.064 and East = 3306534.734, said rod bears South 46 deg 49'01" East – 2447.11 feet from Corps of Engineers Monument "X-11", and also bears North 57 deg 23'21" East – 1582.49 feet from Corps of Engineers Monument "HMX-5";

Thence North 43 deg 25'39" East – 290.53 feet to a ½" iron rod set for corner;

Thence South 48 deg 57'55" East – 898.92 feet to a ½" iron rod set for corner;

Thence South 43 deg 01'36" West – 360.13 feet to a ½" iron rod set for corner;

Thence North 44 deg 32'02" West – 901.23 feet to the place of beginning and containing 6.717 acres of land.

Bearing Basis: Bearings and coordinates are based upon NAD 83, Texas North Central Zone.

Surveyed: November 1998

Mark H. Patheal, R.P.L.S. #4528

STATE OF TEXAS
REGISTERED
MARK H. PATHEAL
4528
PROFESSIONAL LAND SURVEYOR

Job # 15905

00113705

STATE OF TEXAS

HARRISON COUNTY

FILED FOR RECORD

97 JUN -7 PM 1:

COUNTY

BY DEPUTY

INDUSTRIAL SOLID WASTE
CERTIFICATION OF REMEDIATION

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Water Commission pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

United States Army, United States Department of Defense, has performed a remediation of the land described herein. A copy of the Notice of Registration No. 30990 description of the facility, NOR Unit 004, is attached hereto and is made part of this filing. A list of the known waste constituents (brine solution), including known concentrations, which have been left in place is attached hereto and is made part of this filing. Further information concerning this matter may be found by an examination of Installation records or in the Notice of Registration No. 30990 files, which are available for inspection upon request at the central office of the Texas Natural Resource Conservation Commission in Austin, Texas.

The Texas Natural Resource Conservation Commission derives its authority to review the remediation of this tract of land from the Texas Solid Waste Disposal Act, § 361.002, Texas Health and Safety Code, Chapter 361, which enables the Texas Natural Resource Conservation Commission to promulgate closure and remediation standards to safeguard the health, welfare and physical property of the people of the State and to protect the environment by controlling the management of solid waste. In addition, pursuant to the Texas Water Code, § 5.012 and § 5.013, Texas Water Code, Annotated, Chapter 5, the Texas Natural Resource Conservation Commission is given primary responsibility for implementing the laws of the State of Texas relating to water and shall adopt any rules necessary to carry out its powers and duties under the Texas Water Code. In accordance with this authority, the Texas Natural Resource Conservation Commission requires certain persons to provide certification and/or recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This deed certification is not a representation or warranty by the Texas Natural Resource Conservation Commission of the suitability of this land for any purpose, nor does it constitute any guarantee by the Texas Natural Resource Conservation Commission that the remediation standards specified in this certification have been met by the United States Army.

II

Being a 6.717-acre tract, more or less, out of the United State Army, Longhorn Army Ammunition Plant's 8,823.96-acre tract lying in Harrison County, State of Texas, said 6.717-acre tract being more particularly described as Attachment One.

Contaminants deposited hereon have been remediated to meet residential soil criteria, in accordance with a plan designed to meet the Texas Natural Resource Conservation Commission's requirements in 31 Texas Administrative Code, Chapter 335.555, which mandates that the remedy be designed to eliminate substantial present and future risk such that no post-closure care or engineering or institutional control measures are required to protect human health and the environment. Future land use is considered suitable for residential purposes in accordance with risk reduction standards applicable at the time of this filing. Future land use is intended to be non-residential.

III

The owner of the site is United States Army, Department of Defense, and its address is Attn: SMCLO-CO, P.O. Box 658, Doyline, LA 71023, where more specific information may be obtained from the owner.

EXECUTED this the 7th day of January, 1999.

United States Army
United States Department of
Defense

Ira Nathan
Chief of Operations Review

BEFORE ME, on this the 7th day of January, personally appeared Ira Nathan, Chief of Operations Review of United States Army, United States Department of Defense, known to me to be the person and agent of said corporation whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 7th day of January, 1999.

LAWRENCE LEE
NOTARY PUBLIC
STATE OF TEXAS
EXPIRES
10-4-2002

Notary Public in and
for the State of Texas,
County of

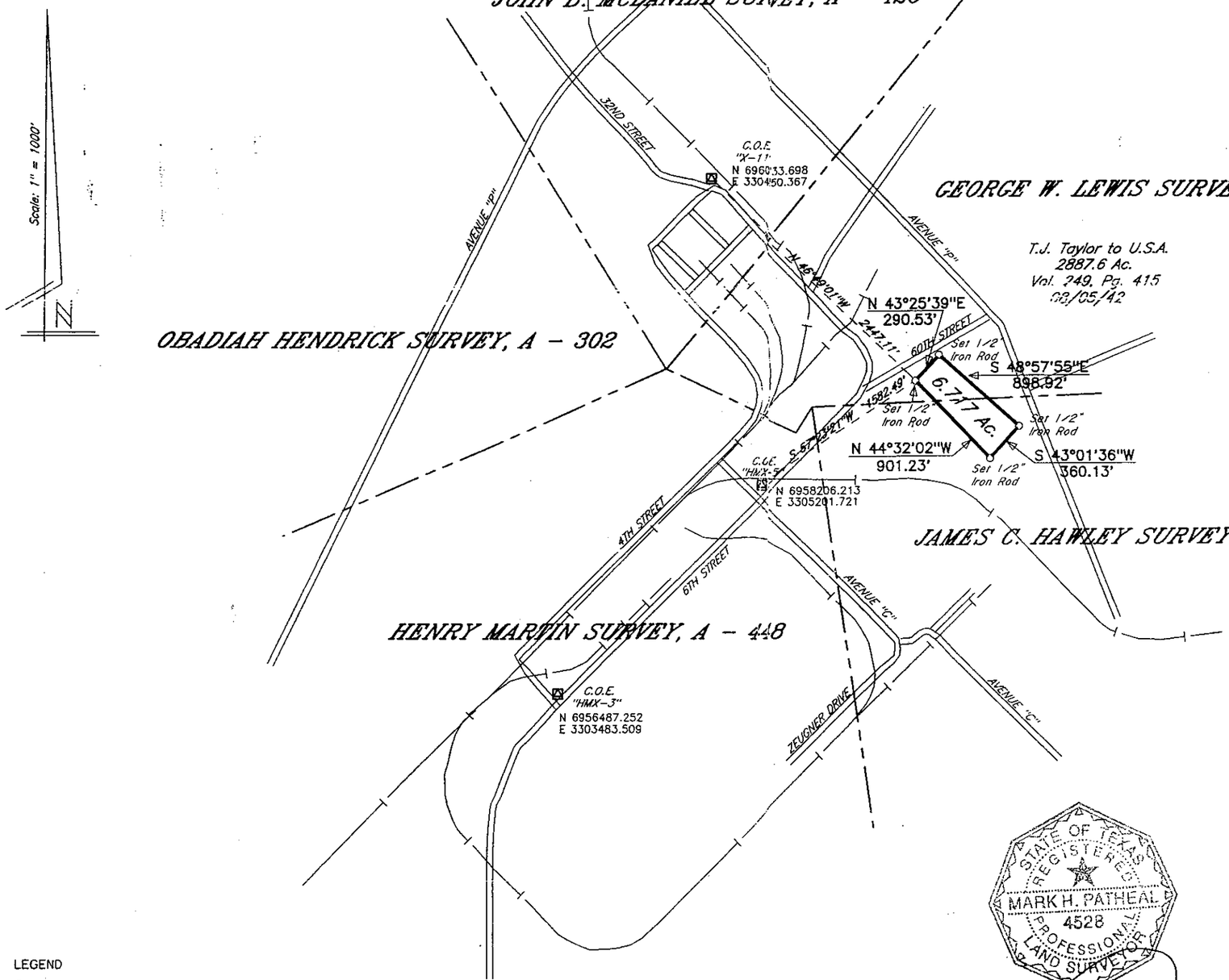
Harrison

My Commission Expires

10-4-02

Real No 38445 Vol 1888 Pg 89

HARRISON COUNTY, TEXAS



Plat Showing

6.717 ACRES OF LAND LOCATED IN THE JAMES C. HAWLEY SURVEY, A – 324, AND THE GEORGE M. LEWIS SURVEY, A – 426, LONGHORN ARMY AMMUNITION PLANT, HARRISON COUNTY, TEXAS.

Being a part of that Certain 2887.2 Acre tract of land described in deed to the U.S.A., recorded in Volume 249, Page 415, H.C.D.R.

LEGEND

Barbed Wire Fence	—X—
Chain Link Fence	—O—
Wood Fence	—□—
Tele. Cable	—T—
Powerline	—E—
Centerline	— - —
Pipeline	—\—

Field Notes To Accompany Plat

To COMPLETE ENVIRONMENTAL SERVICE, exclusively

I, Mark H. Patheal, hereby certify that this survey was made on the ground, under my supervision, and that this plat correctly represents the facts found at the time of survey.

BEARING BASIS: Bearings are oriented to STATE PLANE COORDINATES, N.A.D. 83. TEXAS NORTH CENTRAL ZONE

STATE OF TEXAS REGISTERED MARK H. PATHEAL 4528 PROFESSIONAL LAND SURVEYOR

Mark H. Patheal, R.P.L.S. # 4528

SURVEYED FOR

COMPLETE ENVIRONMENTAL SERVICE

SURVEYING & MAPPING BY

ARK-LA-TEX SURVEYING CO., INC.

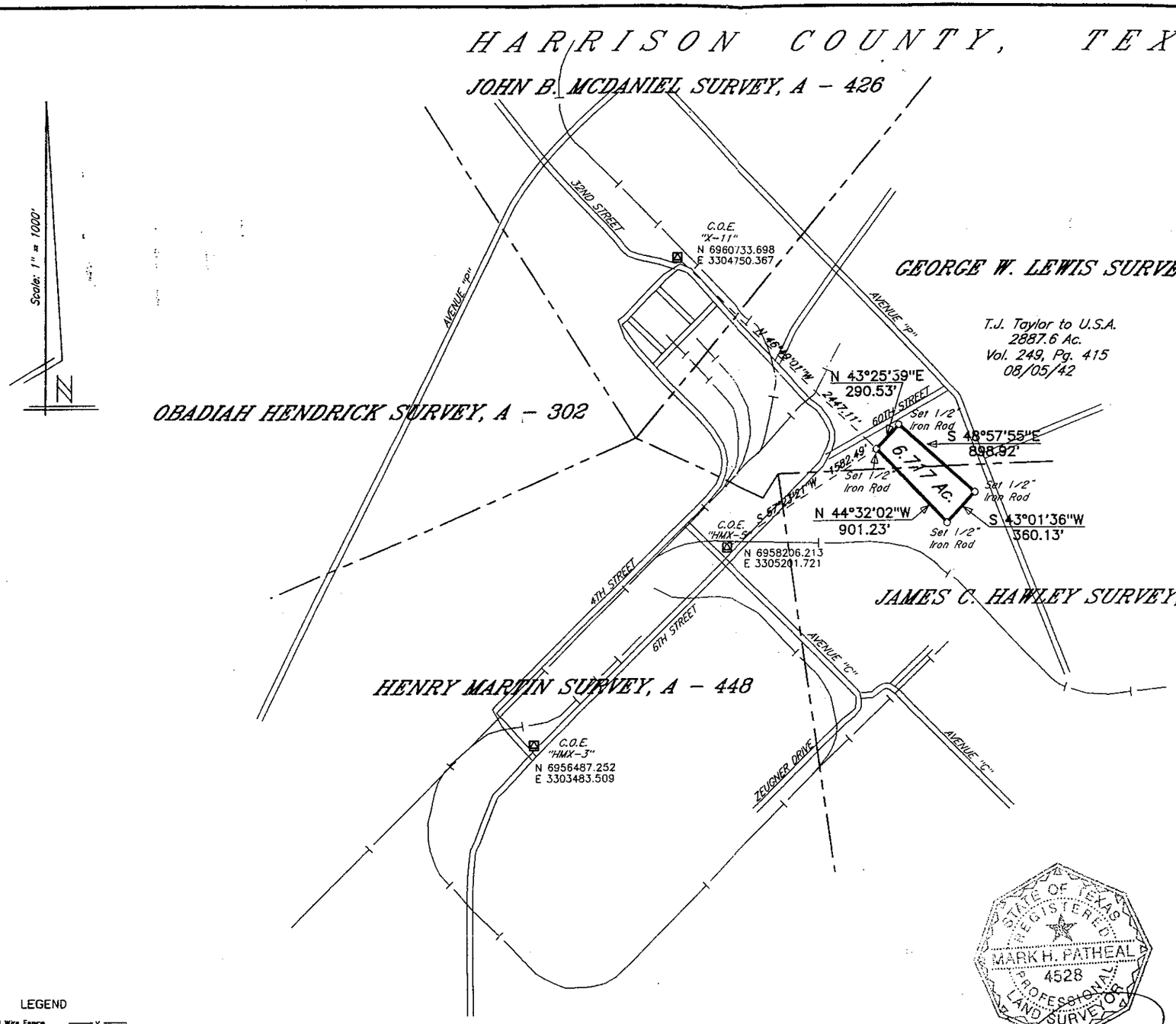
315 N. Alamo Marshall, Tx. (903) 938-9939

Scale: 1" = 1000'	Drawn By: BCC	Job No.: 15905
Date: 11/19/98	Surveyed By: DWS	File No.: 324-02

APPENDIX D

Survey and Field Notes of Stabilization Pond Tract of Land

HARRISON COUNTY, TEXAS



Plat Showing

6.717 ACRES OF LAND LOCATED IN THE JAMES C. HAWLEY SURVEY, A - 324, AND THE GEORGE M. LEWIS SURVEY, A - 426, LONGHORN ARMY AMMUNITION PLANT, HARRISON COUNTY, TEXAS.

Being a part of that Certain 2887.2 Acre tract of land described in deed to the U.S.A., recorded in Volume 249, Page 415, H.C.D.R.

LEGEND

Barbed Wire Fence	—X—
Chain Link Fence	—O—
Wood Fence	—□—
Tele. Cable	—T—
Powerline	—E—
Centerline	— - —
Pipeline	—\—

Field Notes To Accompany Plat

To COMPLETE ENVIRONMENTAL SERVICE, exclusively

I, Mark H. Patheal, hereby certify that this survey was made on the ground, under my supervision, and that this plat correctly represents the facts found at the time of survey.

BEARING BASIS: Bearings are oriented to STATE PLANE COORDINATES, N.A.D. 83. TEXAS NORTH CENTRAL ZONE

STATE OF TEXAS REGISTERED MARK H. PATHEAL 4528 PROFESSIONAL LAND SURVEYOR

Mark H. Patheal, R.P.L.S. # 4528

SURVEYED FOR

COMPLETE ENVIRONMENTAL SERVICE

SURVEYING & MAPPING BY

ARK-LA-TEX SURVEYING CO., INC.

315 N. Alamo Marshall, Tx. (903) 938-9939

Scale: 1" = 1000'	Drawn By: BCC	Job No.: 15905
Date: 11/19/98	Surveyed By: DWS	File No.: 324-02

00113710

ARK-LA-TEX SURVEYING CO., INC.

P.O. Box 910 • 315 N. Alamo Blvd. • Marshall, Texas 75671 • 903/938-9939 • FAX 903/938-0601

FIELD NOTES

All that certain lot, tract, or parcel of land situated in Harrison County, Texas, about 16 miles Northeast of the Courthouse in the City of Marshall, being 6.717 acres of land, a part of the JAMES C. HAWLEY SURVEY, A-324, and a part of the GEORGE W. LEWIS SURVEY, A-426, and being a part of that certain called 2887.6 acre tract described in deed from T.J. Taylor to the United States of America, dated August 5, 1942, and recorded in Volume 249, Page 415 of the Harrison County Deed Records, said 6.717 acres being more particularly described as follows:

Beginning at a ½" iron rod set for corner having State Plane Coordinates of North = 6959059.064 and East = 3306534.734, said rod bears South 46 deg 49'01" East – 2447.11 feet from Corps of Engineers Monument "X-11", and also bears North 57 deg 23'21" East – 1582.49 feet from Corps of Engineers Monument "HMX-5";

Thence North 43 deg 25'39" East – 290.53 feet to a ½" iron rod set for corner;

Thence South 48 deg 57'55" East – 898.92 feet to a ½" iron rod set for corner;

Thence South 43 deg 01'36" West – 360.13 feet to a ½" iron rod set for corner;

Thence North 44 deg 32'02" West – 901.23 feet to the place of beginning and containing 6.717 acres of land.

Bearing Basis: Bearings and coordinates are based upon NAD 83, Texas North Central Zone.

Surveyed: November 1998

Mark H. Patheal, R.P.L.S. #4528

STATE OF TEXAS REGISTERED MARK H. PA... 4528 PROFESSIONAL LAND SURV...

Job # 15905

APPENDIX E

Letters and Correspondence

APPENDIX E

Letters and Correspondence

Barry R. McBee, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Dan Pearson, *Executive Director*

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

August 25, 1997

Certified Mail

Mr. Ira Nathan
Chief, Operations Review
Department of the Army
Longhorn/Louisiana Army Ammunition Plants
P.O. Box 658
Doyline, Louisiana 71023-0658

Re : Longhorn Army Ammunition Plant - Closure Plan

Dear Mr. Nathan:

We have completed our review of the closure plan for the sewage treatment plant (STP) and associated non-hazardous waste management units located at the above referenced wastewater treatment facility received August 8, 1997. The plan consists partly of the following:

1. Phase 1: Sampling waste management units and suspected contaminant areas

   a) to determine the nature of any wastes to be treated and removed during closure.

   b) to determine whether a release of contaminants has occured to the environment from these units.

   c) All samples will be collected, handled and analyzed in accordance with EPA SW-846 *Test Methods for Evaluating Solid Waste Physical/Chemical Methods*.

2. Phase 2: Actual closure of sewage treatment plant and associated waste management units:

   a) Removal of all wastes during the first phase activities. All hazardous waaste or class 1 nonhazardous waste shipments to offsite facilities shall be accompanied by a manifest. Wastes shipped offsite shall be to permitted Treatment, Storage, and/or Disposal facilities. Wastes such as sand, gravel, and other materials with a high specific gravity and materials such as rags generated during preliminary treatment of domestic sewage, generated from the grit chamber, Imhoff tank, RBC's, sludge drying beds, or other areas of the STP, to be decontaminated and closed, must be disposed of in accordance

with 40 CFR 258, relating to Municipal Solid Waste Landfills.

b) Plugging of sewage lines in strategic locations, abandoning sewage lines in place and deactivating lift stations.

c) Decontamination of all structures.

3. Modify the Phase 2 closure plan activities for TNRCC approval should results obtained from the Phase 1 sampling activities indicate conditions significantly different from those assumed in this document.

4. All water used in the decontamination of STP process units or associated waste management units shall be disposed of in the Longhorn AAP Sewage Treatment Plant and discharged in accordance with the wastewater discharge permit.

5. Notification to the TNRCC Region V office in writing 14 days prior to the initiation of any sampling or closure activity described in the closure plan.

6. Submission of a final closure report to the TNRCC.

Our review otherwise indicated that the documents provided for review are generally in compliance with the applicable minimum standards as set forth in the Closure Guidance Documents. On that basis, the project is approved. Please note, within 90 days of completion of the closure project, an appointed engineer must notify the Commission (Sludge and Transporter Review Team, Water Quality Division (MC 148)) of the date of completion and attest, by written certification, that the project, materials, and any installed equipment are in accordance with the approved closure plan and the requirements of 30 TAC Chapter 312.

Should you have further questions, please do not hesitate to call Sreenivasula R. Magunta at (512) 239-4560.

Sincerely,

Thomas W. Weber

Thomas W. Weber, Manager
Wastewater Permits Section
Water Quality Division

TW/sm

cc: TNRCC Region 5 - Tyler

00113715

RADIAN INTERNATIONAL LLC

Longhorn Army Ammunition Plant
P.O. Box 107
Karnack, TX 75661
(903) 679-3448
FAX (903) 679-3357

December 3, 1997

Wastewater Program Manager
Texas Natural Resource Conservation Commission
Region V Office
2916 Teague Drive
Tyler, TX 75701

Re: NOTIFICATION OF SAMPLING ACTIVITY

Dear Mr Luper:

In accordance with the Sewage Treatment Plant Closure Plan, the Corps of Engineers intends to begin sampling the Dunbar Filter Beds, Sludge Drying Beds, Rotating Biological Contactors, and Stabalization Pond beginning 9 December 1997. This sampling activity is contingent upon the weather permitting outside activities.

I will contact you on 8 December concerning the schedule of sampling.

If you , have any question concerning this matter contact Bill Corrigan at 903/679-2062.

Sincerely,

Bill Corrigan
Project Manager

DEPARTMENT OF THE ARMY
LONGHORN/LOUISIANA ARMY AMMUNITION PLANTS
P.O. BOX 658
DOYLINE, LOUISIANA 71023-0658

REPLY TO
ATTENTION OF

SIOLH-OR

7 April 1998

SUBJECT: Closure of Longhorn Army Ammunition Plant (LHAAP) Surface Impoundment

Texas Natural Resource Conservation Commission
Mr. Richard Clarke - MC-127
Industrial & Hazardous Waste Division
Closure Team Program Manager
P. O. Box 13087
Austin, TX 78711-3087

Dear Mr. Clarke:

Reference meeting at TNRCC on March 16, 1998, LHAAP Texas Waste Registration No. 30990 NOR Unit No. 004 "Surface Impoundment".

As we discussed during our meeting on March 16, we are pursuing closure of a surface impoundment, which we refer to as a stabilization pond. We left the meeting with the understanding that the stabilization pond could be closed in place if chloride levels meet an appropriate Risk Reduction Standard in accordance with 30 TAC 335.555.

Criteria for risk based closure and numeric levels for chlorides are not set and must be calculated. Most maximum contaminant levels (MCL's) are set directly from the National Primary Drinking Water Regulations. There are no MCL's for chlorides in primary regulations. However, there are secondary maximum contaminant levels for chlorides for public water systems which set reasonable goals for drinking water quality. This level is 250 mg/l.

Appropriate correspondence describing the stabalization pond and chloride levels in the stabilization pond sediment, and water, were provided to Murali Padaki, with the Pollution Cleanup Division of the TNRCC.

It is the opinion of Mr. Padaki, and the consensus of LHAAP, that the stabilization pond be closed to meet cleanup levels for chloride levels of 125 mg/l. This is a conservative number when compared to the secondary drinking water standards and will provide adequate protection for public health and the environment.

In summary, the following actions will take place to close the stabilization pond:

1. Process water from stabilization pond into sewage treatment plant.

2. Breach stabilization pond dam to cease any collection of storm water.

3. Push in, slope, and grade berms of pond to prevent collection of water.

4. Fertilize and seed area with native grass to establish turf and prevent erosion.

5. Survey area to obtain metes and bounds description.

6. Deed record area at county courthouse in accordance with 30 TAC 335.560.

6. Provide final report to TNRCC that documents attainment of the risk reduction standard in accordance with 30 TAC 335.555.

In order to meet the schedules for completion of the STP closure, we are proceeding with the closure of the pond as outlined by you at our meeting: Unless we otherwise hear from you.

If you have questions or comments please advise the undersigned at (318) 459-5103.

Ira Nathan
Chief, Operations Review Division

Copy furnished:
Ft Worth COE Eastern Office, Mr. Oscar Linebaugh
Ft Worth COE, Ms Beverly Post
Longhorn AAP EQ File 2.20B

Complete Environmental Service
P.O. Box 170, Karnack, TX 75661 phone:903/679-2062 fax:903/679-2056

Fax Cover Sheet

DATE:	March 17, 1998	TIME:	1:34 PM
TO:	Murali Padaki TNRCC	PHONE: FAX:	(512) 239-2356 (512) 239-2346
FROM:	Bill Corrigan Longhorn AAP	PHONE: FAX:	(903) 679-2062 (903) 679-2056
RE:	Stabilization Pond Information		
CC:			

Number of pages including cover sheet: 4

Message

Mr. Padaki:

Encl A/S

Call me if you have any questions.

Thanks,

William R. Corrigan

William R. Corrigan
Environmental Manager

P.S. Since this fact sheet was written, the pond was checked for sediment and there is none.

LONGHORN AAP SEWAGE TREATMENT PLANT CLOSURE

STABILIZATION (BRINE) POND

FACT SHEET

- The stabilization pond is a non-hazardous waste management unit permitted to discharge through the Longhorn AAP sewage treatment plant.
- Water and Sludge contained in the brine pond are contaminated with low levels of sodium chloride from water softener recharge backwash at the boiler house. The boiler house has been inoperative since 1994.
- Water within the brine pond has been treated to a pH of between 6.5 and 7 for discharge to the sewage treatment plant. The sewage treatment plant discharges in to Goose Prairie Creek.
- The water in the brine pond is currently being discharged through the sewage treatment plant. The water level in the pond has currently been reduced to 50% of the pond capacity.
- Water within the brine pond is an average of 341 mg/l chlorides, down from approximately 1500 mg/l in recent years. Water discharged from the sewage treatment plant is currently near 97 mg/l of chlorides, down from over 300 mg/l in previous years.
- Water from the pond was used to conduct a 24-hour minnow (Pimephales promelas) toxicity screen test using method EPA/600/4-90/27F. There was no toxicity in 100% effluent. Chlorides were 277 mg/l.
- Samples of sludge were collected from the perimeter of the brine pond. The sample locations have always been under water prior to lowering the water level in recent weeks. Leachate of chlorides from these sludge samples, when subjected to the TCLP, leached an average of 13.87 mg/l chlorides. These samples were analyzed using the Method of Standard Additions.
- Total water soluble chloride in the sludge is an average of 151.7 ug/g. When the sludge samples were subjected to a hot water ultrasonic extraction (4X dilution, no buffer), average chlorides in solution were 38.2 mg/l.
- Based on sample analysis results from the pond, once it has been emptied, chloride levels will be below the LC50 for Ceriodaphnia dubia and Mysidopsis bahia[1]. Chlorides at this concentration do not degrade water quality to more than a de minimis extent.
- After the pond is pumped dry, it is the Army's recommendation that the pond should remain intact.
- As an alternate, if the pond cannot be pumped dry (El Nino), then it is the Army's recommendation that the dam be breached. Discharge will be directly from the pond and into Goose Prairie Creek approximately 3/4 mile upstream from the sewage treatment plant.

[1] Inter-Laboratory Study of Acute Toxicity Test Precision, 1990: Summary of Responses Using KCL as the Reference Toxicant, U.S. Environmental Protection Agency

2 March, 1998

Longhorn Army Ammunition Plant
Stabilization Pond Closure
Summary of Sample Analysis Results

Water Samples from Stabilization Pond				
Sample No.	Sample Date	Constituent	Concentration Level	Unit
SPW-1	12/11/97	Sodium	157.0	mg/L
SPW-2	12/11/97	Sodium	157.0	mg/L
SPW-3	12/11/97	Sodium	157.0	mg/L
SPW-4	12/11/97	Sodium	154.0	mg/L
SPW-1	12/11/97	Chloride	339.0	mg/L
SPW-2	12/11/97	Chloride	334.0	mg/L
SPW-3	12/11/97	Chloride	344.0	mg/L
SPW-4	12/11/97	Chloride	348.0	mg/L

Soil Samples from Stabilization Pond				
Sample No.	Sample Date	Constituent	Concentration Level	Unit
SPS-1	12/11/97	Sodium	286	mg/Kg
SPS-2	12/11/97	Sodium	218	mg/Kg
SPS-3	12/11/97	Sodium	189	mg/Kg
SPS-4	12/11/97	Sodium	275	mg/Kg
SPS-1	12/11/97	Chloride	130	mg/Kg
SPS-2	12/11/97	Chloride	110	mg/Kg
SPS-3	12/11/97	Chloride	209	mg/Kg
SPS-4	12/11/97	Chloride	135	mg/Kg
BP-1	2/25/98	Chloride (Total)	112.9	ug/g
BP-2	2/25/98	Chloride (Total)	222.4	ug/g
BP-3	2/25/98	Chloride (Total)	149.3	ug/g
BP-4	2/25/98	Chloride (Total)	122.1	ug/g
BP-1	2/25/98	Chloride (TCLP)	8.8	mg/L
BP-2	2/25/98	Chloride (TCLP)	7.5	mg/L
BP-3	2/25/98	Chloride (TCLP)	18.9	mg/L
BP-4	2/25/98	Chloride (TCLP)	20.3	mg/L
BP-1	2/25/98	Chloride (Hot Water Extraction	29.3	mg/L
BP-2	2/25/98	Chloride (Hot Water Extraction	55.7	mg/L
BP-3	2/25/98	Chloride (Hot Water Extraction	37.3	mg/L
BP-4	2/25/98	Chloride (Hot Water Extraction	30.6	mg/L

Longhorn Army Ammunition Plant
Stabilization Pond Closure
Summary of Sample Analysis Results

Water Sample from Sewage Effluent				
Sample No.	Sample Date	Constituent	Concentration Level	Unit
SE1	2/12/98	Chloride	97.6	mg/L
SE1	2/12/98	Sulfate	17.2	mg/L
Outfall 001	12/29/89	Chloride	308.7	mg/L

Water Sample from Cental Creek at Stabilization Pond				
Sample No.	Sample Date	Constituent	Concentration Level	Unit
CC1	2/12/98	Chloride	12.6	mg/L
CC1	2/12/98	Sulfate	16.2	mg/L

APPENDIX F

Surface Impoundment Fact Sheet and Supporting Documentation

APPENDIX F

Surface Impoundment Fact Sheet and Supporting Documentation

LONGHORN AAP SEWAGE TREATMENT PLANT CLOSURE

STABILIZATION (BRINE) POND

FACT SHEET

- The stabilization pond is a non-hazardous waste management unit permitted to discharge through the Longhorn AAP sewage treatment plant.
- Water and Sludge contained in the brine pond are contaminated with low levels of sodium chloride from water softener recharge backwash at the boiler house. The boiler house has been inoperative since 1994.
- Water within the brine pond has been treated to a pH of between 6.5 and 7 for discharge to the sewage treatment plant. The sewage treatment plant discharges in to Goose Prairie Creek.
- The water in the brine pond is currently being discharged through the sewage treatment plant. The water level in the pond has currently been reduced to 50% of the pond capacity.
- Water within the brine pond is an average of 341 mg/l chlorides, down from approximately 1500 mg/l in recent years. Water discharged from the sewage treatment plant is currently near 97 mg/l of chlorides, down from over 300 mg/l in previous years.
- Water from the pond was used to conduct a 24-hour minnow (Pimephales promelas) toxicity screen test using method EPA/600/4-90/27F. There was no toxicity in 100% effluent. Chlorides were 277 mg/l.
- Samples of sludge were collected from the perimeter of the brine pond. The sample locations have always been under water prior to lowering the water level in recent weeks. Leachate of chlorides from these sludge samples, when subjected to the TCLP, leached an average of 13.87 mg/l chlorides. These samples were analyzed using the Method of Standard Additions.
- Total water soluble chloride in the sludge is an average of 151.7 ug/g. When the sludge samples were subjected to a hot water ultrasonic extraction (4X dilution, no buffer), average chlorides in solution were 38.2 mg/l.
- Based on sample analysis results from the pond, once it has been emptied, chloride levels will be below the LC50 for Ceriodaphnia dubia and Mysidopsis bahia[1]. Chlorides at this concentration do not degrade water quality to more than a de minimis extent.
- After the pond is pumped dry, it is the Army's recommendation that the pond should remain intact or leveled.
- As an alternate, if the pond cannot be pumped dry (El Nino), then it is the Army's recommendation that the dam be breached. Discharge will be directly from the pond and into Goose Prairie Creek approximately 3/4 mile upstream from the sewage treatment plant.

[1] Inter-Laboratory Study of Acute Toxicity Test Precision, 1990: Summary of Responses Using KCL as the Reference Toxicant, U.S. Environmental Protection Agency

00113726

PB94-114733
EPA/600/4-90/027F
August 1993

METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS

(Fourth Edition)

Edited by

Cornelius I. Weber

ENVIRONMENTAL MONITORING SYSTEMS LABORATORY - CINCINNATI
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
CINCINNATI, OHIO 45268

Printed on Recycled Paper

TABLE 4. INTER-LABORATORY STUDY OF ACUTE TOXICITY TEST PRECISION, 1990: SUMMARY OF RESPONSES USING KCL AS THE REFERENCE TOXICANT[1]

TEST TYPE	NO. LABS SUBMITTING VALID DATA	TEST PRECISION (CV%)[2] GRAPH[3] METHOD N	LC50	CV%	STAT[4] METHOD N	LC50	CV%	TOTAL[5] N	LC50	CV%
Pimephales promelas (96 h, 22°C)[6]	17	6	944	28.8	13	832	27.8	17	864	29.6
Pimephales promelas (24 h, 25°C)[7]	6	6	832	11.5	6	832	11.5	-	-	-
Ceriodaphnia dubia (48 h, 25°C)[7]	11	11	256	53.1	11	264	48.5	-	-	-
Mysidopsis bahia (96 h, 22°C)[8]	14	7	292	32.9	11	250	36.0	14	268	37.3

[1] Interlaboratory study of toxicity test precision conducted in 1990 by the Environmental Monitoring Systems Laboratory-Cincinnati, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268, in cooperation with the states of New Jersey and North Carolina, and the Office of Water Enforcement and Permits, U.S. Environmental Protection Agency, Washington, DC.

[2] CV% Percent coefficient of variation = (standard deviation X 100)/mean. Calculated for LC50 from acute tests. LC50s expressed as mg/L KCl added to the dilution water.

[3] LC50 estimated by the Graphical Method.

[4] LC50 estimated by Probit, Litchfield-Wilcoxon, or Trimmed Spearman-Karber method.

[5] LC50 usually reported for only one method of analysis for each test. Where more than one LC50 was reported for a test, the lowest value was used to calculate the statistics for "Total."

[6] Data from the New Jersey Department of Environmental Protection: static daily-renewal tests, using moderately-hard synthetic freshwater.

[7] Data from North Carolina certified laboratories: static non-renewal tests, using moderately-hard reconstituted freshwater.

[8] Data from the New Jersey Department of Environmental Protection: static daily-renewal tests, using 25 ppt salinity, FORTY FATHOMS® synthetic seawater.

Valentec Systems, Inc.
LOUISIANA ARMY AMMUNITION PLANT
Chemical Laboratory

FAX COVER SHEET

DATE: 2-9-98

TO: B. Corrigan, Complete Env. — **PHONE:** (903) 679-2022 — **FAX:** (903) 679-2056

FROM: Chemical Laboratory, Elizabeth West — **PHONE:** 318-459-5095 — **FAX:** 318-459-5084

RE: Results of Toxicity test.

Number of pages including cover sheet: 16

Message

Bill,

Transmitted here with are your Results of 24-hour toxicity test on the Brine Pond sample ~~sent~~ received in the lab Wednesday, 2-4-98.

There was no toxicity observed. The chlorides were 277 mg/l. (Translates to: 457 mg NaCl/l)

Kathy will be sending your invoice soon.

Elizabeth West

Valentec Systems, Inc.
LOUISIANA ARMY AMMUNITION PLANT
Chemical Laboratory

P.O. Box 687
Doyline LA 71023
Ph. 318-459-5087
Fax 318-459-5084

Analysis Request Form

Requested By: W. R. Corrigan Date Requested: 1-21-98
Sample Description: Brine Pond, East Side
Source: Longhorn AAP Sample Date: 2/4/98 Time: 1155
Chain of Custody Attached? (Yes) No Sample Integrity: (Accept) Resample
Send Report to: Complete Environmental / Bill to: Complete Environmental Service
Hiwy 134 @ Spur 449 PO Box 170
Longhorn AAP, Karnack Karnack, TX 75661

Lab use only

Analysis Requested:	Results	Units	Analyst	date/time	Method	MDL
24-hour Minnow Toxicity Screen Test	No Tox	%Eff	EW	2/6/98 1100AM	*	N/A
	* p 61 of EPA/600/4-90/027F					
	24 hour exposure @ 25°C					

I Certify that the results shown above were obtained using the Methods indicated:

Elizabeth Allest
Analyst

Laboratory Manager

Acute Toxicity Data Sheet

Industry/Toxicant: Brine Pond at Longhorn AAP
Address: Karnack, Texas
Contact:
Effluent Serial No: N/A
NPDES Permit No: N/A
Sample Collector: Bill Corrigan

Composite/Grab Sample Collected:
FROM: 1155A (time); 2/4/97 (date) To: ____ (time); ____ (date)

Person Conducting Test: E West
Test Period:
Beginning Date: 2-5-98; Time: 1100
Ending Date: 2-6-98; Time: 1100
Test Organism:
Species: Pimephales promelas
Age: 3 days
Source: Aquatic Bio Systems
Dilution Water Used: MHSF
Incubator Temp: 25.2°C
Photoperiod: 8hr dark; 16 hrs Light

Conc %	rep	# of live organisms 0 hr	# of live organisms 24 hr	Dissolved Oxygen 0 hr	Dissolved Oxygen 24 hr	pH (S.U.) 0 hr	pH (S.U.) 24 hr	Temperature (°C) 0 hr	Temperature (°C) 24 hr	Hardness (mg/L as $CaCO_3$) 0 hr	Alkalinity (mg/L as $CaCO_3$) 0 hr	Conductivity (µmhos/cm) 0 hr	Chlorides (Cl^-)
Control 0%	A	10	10	8.3	7.9	8.2	8.1	23.8	25.2°C	97.9	65.5	323/326	
	B	10	10										
1 6%	A	10	10	7.9	7.9	8.2	8.1	—	25.2°C	—	—	—	
	B	10	9										
2 12.5%	A	10	10	—	—	—	—	—	25.2°C	—	—	—	
	B	10	10										
3 25%	A	10	10	7.9	8.0	8.1	8.0	—	25.2°C	—	—	—	
	B	10	10										
4 50%	A	10	10	—	—	—	—	—	25.2°C	—	—	—	
	B	10	10										
5 100%	A	10	10	8.4	7.9	7.4	7.3	23.5	25.2°C	100.0	14.6	945/942	277 mg/L
	B	10	10										

00113730

U.S. Department of the Army

Permit No. 02713

TABLE 2 (SHEET 2 OF 2)

FATHEAD MINNOW SURVIVAL
(Pimephales promelas)

Brine Pond Sample

GENERAL INFORMATION

GRAB	Time (am/pm)	Date
~~Composite~~ Sample Collected	11:55 AM	2-4-98
Test Initiated	11AM	2-5-98

PERCENT SURVIVAL

Time	Rep	Percent effluent (%)					
		0%	6%	13%	25%	50%	100%
24h	A	100	100	100	100	100	100
	B	100	90	100	100	100	100
	C	—	—	—	—	—	—
	D	—	—	—	—	—	—
	E	—	—	—	—	—	—
	MEAN	100	95	100	100	100	100

1. Enter percent effluent corresponding to the LC50 below:

24 hour LC50 (Pimephales) = N/A % effluent

95% confidence limits: _____

Method of LC50 calculation: _____

No lethality observed at 24 hours in the 100% Effluent concentration.

Elizabeth A West
2-6-98 1100AM

00113732

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax: 970/484-2514

ORGANISM HISTORY

DATE: 2/2/98

SPECIES: Pimephales promelas

AGE: N/A

LIFE STAGE: Embryo

HATCH DATE: 2/2/98

BEGAN FEEDING: N/A

FOOD: N/A

Water Chemistry Record:	Mean	Range
TEMPERATURE:	24°C	--
SALINITY / CONDUCTIVITY:	--	--
TOTAL HARDNESS (as $CaCO_3$):	116 mg/l	--
TOTAL ALKALINITY (as $CaCO_3$):	85 mg/l	--
pH:	7.96	--

Comments:

Facility Supervisor

[redacted]

Lab No 98W0015

CONTRACTOR P.O. NO. 98W0015

CHAIN-OF-CUSTODY RECORD

LONGHORN ARMY AMMUNITION PLANT

[redacted]

PROJECT NAME/NUMBER _____

REPORT RESULTS TO: Bill Corrigan

LAB DESTINATION LAAP Chemical Lab

PHONE NO _____ FAX (903) 679-2910

OFFICE (903) 679-2219

SAMPLE NUMBER	SAMPLE LOCATION & DESCRIPTION	DATE & TIME COLLECTED	ANALYSIS TYPE	CONTAINER PRESERVATIVE	INITIALS	CONDITION ON RECEIPT (NAME & DATE)
BP1	E. side of brine pond	2-4-98 11:55	24-hr screen test	1 gal/k, plastic	WRC	

SPECIAL INSTRUCTIONS call Bill C. with results.

SIGNATURES: (NAME, COMPANY, DATE AND TIME)

RELINQUISHED BY Victor R. Corry 12:00 pm/2-4-98 3. RELINQUISHED BY _____

RECEIVED BY Elizabeth West RECEIVED BY _____

RELINQUISHED BY _____ 4. RELINQUISHED BY _____

00113733

2/12/08

	Cl⁻ ppm	$SO_4^=$ ppm
CC1	12.6	16.1
ADUP	12.6 > 12.6	16.4 > 16.2
SE1	97.5	17.1
ADUP	97.7 > 97.6	17.2 > 17.2

QC Start −370
End +370

R. A. Pensch
Chemist

LONGHORN ARMY AMMUNITION PLANT
P. O. BOX 1149
MARSHALL, TEXAS 75671

CHAIN-OF-CUSTODY RECORD

Contractor P.O.No. N/A

PROJECT NAME/NUMBER Chloride Analysis
REPORT RESULTS TO: Bill Corriga

LAB DESTINATION Chaco Lab
Phone No _____ FAX (903) 679-~~2910~~ 2056
OFFICE (903) 679-~~2219~~ 2056

Sample Number	Sample Location & Description	Date & Time Collected	Analysis Type	Container/ Preservative	Initials	Condition on Receipt (Name & Date)
SE 1	Effluent at Sewage Treatment Plant	2/12/98 1215	Chloride	40 ml glass no pres.	WRC	
CC 1	~~Effluent~~ North Creek below S. end of Brine Pond	2/12/98 1330	Chloride	40 ml glass No pres.	WRC	

Special Instructions _____

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By William R Corriga, 2/12/98, 1358
Received By CHBourk 2/12/98 1400

2. Relinquished By _____
Received By _____

3. Relinquished By _____
Received By _____

4. Relinquished By _____

00113735

Valentec Systems, Inc.
LOUISIANA ARMY AMMUNITION PLANT
Chemical Laboratory

P.O. Box 687
Doyline LA 71023
Ph. 318-459-5087
Fax 318-459-5084

Chloride Analysis Summary

Sample	TCLP Chlorides	Total Water-Soluble Chlorides
	Analyzed using Method of Standard Additions	Ultrasonic extraction in hot water
Soil Sample 1	8.8 mg/L	112.9 µg/g
Soil Sample 2	7.5 mg/L	222.4 µg/g
Soil Sample 3	18.9 mg/L	149.3 µg/g
Soil Sample 4	20.3 mg/L	122.1 µg/g
Spike Recovery	Interference found (All samples spiked to determine true concentrations)	86.8%
QA Sample Results	100 / 97.1 (103% recovery)	

Chlorides were determined by Mercuric Nitrate Titration.

Valentec Systems, Inc.
LOUISIANA ARMY AMMUNITION PLANT
Chemical Laboratory

P.O. Box 687
Doyline LA 71023
Ph. 318-459-5087
Fax 318-459-5084

Report of Chemical Analysis

Requested By: W. Corrigan/ Ira Nathan Date Requested: 2/26/98

Sample Description: Soil Samples collected 0-6"depth East Side Water's Edge
Source: LHAAP, Brine Pond Sample 1 Sample Date: 2-25-98 Time: 1305
Preservative: none required Sample Temp on Receipt: N/A °C
Chain of Custody Attached? Yes No Sample Integrity: Accept Resample

Lab use only

Purchase Order or Subcontract Number: Verbal

Report to: W. Corrigan
LHAAP
Complete Environmental Ser.
Phone (903) 679-2062
FAX (903) 679-2056

Bill to: William Corrigan
Complete Environmental Ser.
P.O. Box 170
Karnack, TX 75661

Analysis Requested:	Results	Units	Analyst	date/time	Method	MDL
TCLP Extraction	extracted	N/A	EW	3-3-98/1845	1331	---
Chlorides By MSA	8.8	mg/L	EW	3-5-98/1130	325.3	
Ultrasonic extraction in hot water	extracted	N/A	EW	3-5-98/0945	---	---
Total Water-Soluble Chlorides	112.9	µg/g	EW	3-5-98/1200	325.3	

Requested By: W. Corrigan/ Ira Nathan Date Requested: 2/26/98

Sample Description: Soil Samples south (creek) side, water's edge midpoint
Source: LHAAP, Brine Pond Sample 2 Sample Date: 2-25-98 Time: 1318
Preservative: none required Sample Temp on Receipt: N/A °C
Chain of Custody Attached? Yes No Sample Integrity: Accept Resample

Lab use only

Analysis Requested:	Results	Units	Analyst	date/time	Method	MDL
TCLP Extraction	extracted	N/A	EW	3-3-98/1845	1331	---
Chlorides By MSA	7.5	mg/L	EW	3-5-98/1130	325.3	
Ultrasonic extraction in hot water	extracted	N/A	EW	3-5-98/0945	---	---
Total Water-Soluble Chlorides	222.4	µg/g	EW	3-5-98/1200	325.3	

Valentec Systems, Inc.
LOUISIANA ARMY AMMUNITION PLANT
Chemical Laboratory

P.O. Box 687
Doyline LA 71023
Ph. 318-459-5087
Fax 318-459-5084

Requested By: W. Corrigan/ Ira Nathan Date Requested: 2/26/98

Sample Description: Soil Samples north side water's edge midpoint
Source: LHAAP, Brine Pond Sample 3 Sample Date: 2-25-98 Time: 1323
Preservative: none required Sample Temp on Receipt: N/A °C
Chain of Custody Attached? Yes No Sample Integrity: Accept Resample

Lab use only

Analysis Requested:	Results	Units	Analyst	date/time	Method	MDL
TCLP Extraction	extracted	N/A	EW	3-3-98/1845	1331	---
Chlorides By MSA	18.9	mg/L	EW	3-5-98/1130	325.3	
Ultrasonic extraction in hot water	extracted	N/A	EW	3-5-98/0945	---	---
Total Water-Soluble Chlorides	149.3	µg/g	EW	3-5-98/1200	325.3	

Requested By: W. Corrigan/ Ira Nathan Date Requested: 2/26/98

Sample Description: Soil Samples west side, water's edge midpoint
Source: LHAAP, Brine Pond Sample 4 Sample Date: 2-25-98 Time: 1330
Preservative: none required Sample Temp on Receipt: N/A °C
Chain of Custody Attached? Yes No Sample Integrity: Accept Resample

Lab use only

Analysis Requested:	Results	Units	Analyst	date/time	Method	MDL
TCLP Extraction	extracted	N/A	EW	3-3-98/1845	1331	---
Chlorides By MSA	20.3	mg/L	EW	3-5-98/1130	325.3	
Ultrasonic extraction in hot water	extracted	N/A	EW	3-5-98/0945	---	---
Total Water-Soluble Chlorides	122.1	µg/g	EW	3-5-98/1200	325.3	

I Certify that the results shown above were obtained using the Methods indicated:

Elizabeth West
Analyst

Laboratory Manager

Valentec Systems, Inc.
LOUISIANA ARMY AMMUNITION PLANT
Chemical Laboratory

P.O. Box 687
Doyline LA 71023
Ph. 318-459-5087
Fax 318-459-5084

Chloride Analytical Data

TCLP extractions:
45 grams of sample extracted for 18 hours in 900 mls of Extraction Fluid No. 2. EF #2 consists of Acetic acid and sodium hydroxide in purified water buffered to a pH of 4.93±0.05.

The result of the spike QA sample showed the titrations had an interference. Therefore, the Method of Standard Additions was used to determine the actual concentrations in the extracts.

Sample	Titration results in mg/L +0	+10	+20	Calculated Actual Value (mg/L)	Linear Regression Correlation (should be ≈ 1)
Soil #1	4	7	12	8.8	0.990
Soil #2	3	7	11	7.5	1.000
Soil #3	5	7	10	18.9	0.993
Soil #4	5	8	10	20.3	0.993

Total Water-Soluble Chlorides:
25.0 grams (measured to the milligram) of each sample was heated in 100 mls of water to almost boiling, then placed in an ultrasonic bath for 15 minutes.
The extract was filtered using vacuum filtration and analyzed for chlorides.

Sample	Chlorides found in 100ml extract (mg/L)	Sample mass (g)	Total Water-Soluble Chlorides (micrograms/gram)
Soil #1	29.3	24.987	112.9
Soil #1 Spike	46.2	24.997	recovered: 16.9mg/L added: 19.6mg/L
Soil #2	55.7	25.041	222.4
Soil #3	37.3	25.009	149.3
Soil #4	30.6	25.019	122.1

Sample calculation:

$$\frac{(30.6\ \text{mg/L})(1000\ \mu\text{g/mg})(0.100\text{L})}{25.019\text{g}} = 122.1\ \mu\text{g/g}$$

Complete Environmental Service

P.O Box 170, Karnack, TX 75661 phone:903/679-2062 fax:903/679-2056

CONTRACTOR P.O. NO. Verbal

CHAIN-OF-CUSTODY RECORD

LONGHORN ARMY AMMUNITION PLANT
P.O. BOX 658
DOYLINE, LA 71023

PROJECT NAME/NUMBER Brine Pond Soil Samples
REPORT RESULTS TO: Bill Corrigan

LAB DESTINATION Laqp Chemical Laboratory
PHONE NO OFFICE (903) 679-2062
FAX (903) 679-2056

SAMPLE #NUMBER	SAMPLE LOCATION & DESCRIPTION	DATE & TIME COLLECTED	ANALYSIS TYPE	CONTAINER PRESERVATIVE	INITIALS	CONDITION ON RECEIPT (NAME & DATE)
BP-1	East side water edge, midpoint	2/25/98 1305	Total Chlorides, TCLP Chlorides	250 ml plastic no pres.	WRC	
BP-2	South (creek) side water edge, midpoint	2/25/98 1318	Total Chlorides, TCLP Chlorides	250 ml plastic no pres.	WRC	
BP-3	North side waters edge, midpoint	2/25/98 1323	Total Chlorides, TCLP Chlorides	250 ml plastic no pres.	WRC	
BP-4	West side waters edge, midpoint	2/25/98 1330	Total Chlorides, TCLP Chlorides	250 ml plastic no pres.	WRC	
Samples collected	0"-6" depth.	Samples	2+3 sampled	1/2 to plastic liner		
at approximately	6" depth.					

SPECIAL INSTRUCTIONS
SIGNATURES: (NAME, COMPANY, DATE AND TIME)

RELINQUISHED BY William R. Corrigan, CES, 2/25/98, 1345 3. RELINQUISHED BY

RECEIVED BY Elizabeth West Valentec 2/26/98/0730 RECEIVED BY

RELINQUISHED BY 4. RELINQUISHED BY

00113740

FINAL
ENVIRONMENTAL CONDITION OF PROPERTY III
(ECOP III)

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

August 2005

Table of Contents

1.0 Purpose 1
2.0 Property Description 1
2.1 Northwest Block / West Further Investigation Area 1
2.2 Northwest Block / Production Area 2
2.3 Excluded Area Parcel 4
3.0 Environmental Condition of the Property 4
3.1 Environmental Condition of Property Categories 4
3.2 Storage, Release, or Disposal of Hazardous Substances 4
3.3 Storage, Release, or Disposal of Petroleum and Petroleum Products 4
3.3.1 Underground and Aboveground Storage Tanks (UST/AST) 4
3.3.2 Non-UST / AST 5
3.4 Polychlorinated Biphenyls 5
3.5 Asbestos 5
3.6 Lead-Based Paint 5
3.7 Radiological Materials 5
3.8 Radon 5
3.9 Munitions and Explosives of Concern (MEC) 6
3.10 Other Considerations 6
3.10.1 Hope Cemetery No. 2 6
3.10.2 Former Railroad Classification Yard 6
3.11 Adjacent Hazardous Conditions 6
4.0 Remediation 7
5.0 Groundwater Monitoring Wells 7
6.0 Potential Wetlands 7
7.0 Endangered or Threatened Species 7
8.0 Archaeological Properties 7
9.0 Regulatory/Public Coordination 8
10.0 National Environmental Policy Act 8
11.0 Environmental Protection Provisions 8
12.0 Conclusion 9

List of Tables

Table 1	Community Environmental Response Facilitation Act Categories and Codes
Table 2	Adjacent Properties
Table 3	Notification of Petroleum Product Storage, Release, or Disposal
Table 4	Groundwater Monitoring Well Locations
Table 5	Federal and State Listing of Threatened Species and States Species of Concern

List of Figures

Figure 1	Location of the Longhorn Army Ammunition Plant, Harrison County, Texas
Figure 2	Location of Proposed Transfer Parcels
Figure 3	Proposed Transfer Parcel - Northwest Block of the Goose Prairie Creek Parcel
Figure 4	Adjacent Environmental Sites
Figure 5	Proposed Transfer Parcel - Excluded Area Parcel
Figure 6	Locations of Former Aboveground Storage Tanks

List of Attachments

Attachment 1	Environmental Protection Provisions
Attachment 2	Industrial Solid Waste Certification of Remediation
Attachment 3	References

Acronyms and Abbreviations

ACM	asbestos-containing material
AST	aboveground storage tank
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CLNWR	Caddo Lake National Wildlife Refuge
CFR	Code of Federal Regulations
DOD	Department of Defense
DOI	Department of the Interior
EA	Environmental Assessment
EBS	Environmental Baseline Survey
ESA	Environmental Site Assessment
ECOP	Environmental Condition of Property
FFA	Federal Facility Agreement
LHAAP	Longhorn Army Ammunition Plant
LBP	lead-based paint
MEC	munitions and explosives of concern
MOA	Memorandum of Agreement
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
OE	ordnance and explosives
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
TCEQ	Texas Commission on Environmental Quality
TNRCC	Texas Natural Resources Conservation Commission
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank

DRAFT
ENVIRONMENTAL CONDITION OF PROPERTY III (ECOP III)

Longhorn Army Ammunition Plant, Karnack, Texas
August 2005

1.0 Purpose

The purpose of this Environmental Condition of Property (ECOP) is to document the environmental conditions of approximately 398.5 acres of land and one (1) building within the Longhorn Army Ammunition Plant (herein after referred to as the Property). The Property will be transferred from Department of the Army control to another federal agency, the Department of the Interior (DOI), U.S. Fish and Wildlife Service (USFWS), consistent with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §120(h), Army, and USFWS policy. In addition, the ECOP identifies provisions necessary to protect human health or the environment as specified in the attached Environmental Protection Provisions **(Attachment 1)**.

2.0 Property Description

Longhorn Army Ammunition Plant (LHAAP) is located in central-east Texas in the northeastern corner of Harrison County, between State Highway 43 at Karnack, Texas and the western shore of Caddo Lake **(Figure 1)**. The Property proposed for transfer consists of two parcels and is approximately 398.5 acres of land. The parcels are referred to as the Northwest Block of the Goose Prairie Creek Parcel and the Excluded Area Parcel with locations shown on **Figure 2.** The Northwest Block of Goose Prairie Creek parcel is approximately 394 acres. As depicted on **Figure 3**, it consists of two areas identified as (1) the Northwest Block / West Further Investigation Area (WFIA) and (2) Northwest Block / Production Area. The Excluded Area parcel is approximately 4.5 acres. There is only one environmental site within the Property and it comprises approximately 6.7 acres located within the Northwest Block / Production Area. This site was identified in the RCRA Facility Assessment as LHAAP-5, Power House Boiler Ion-Exchange Salt Evaporation Pond.

2.1 Northwest Block / West Further Investigation Area

The U.S. Fish and Wildlife Service collected surface soil samples at LHAAP as part of a site-wide evaluation of the Caddo Lake National Wildlife Refuge Overlay Area. Sampling was conducted during March to April 2002 and April to May 2003. The surface soils were analyzed for metals, semivolatile organic compounds, organochlorine pesticides, polychlorinated

biphenyls, dioxins/furans, and perchlorate. Based on the USFWS evaluation of analytical results, the USFWS requested that the Army perform further investigation of several areas; one of these areas was referred to as the West Further Investigation Area (WFIA).

The West Further Investigation Area was designated for further investigations based on detections of lead and mercury in soil sampling performed by USFWS. The acreage is not an environmental site but is adjacent to environmental sites LHAAP-49 and LHAAP-29 where production of TNT took place during the World War II era. Locations of environmental sites adjacent to the transfer Property is shown in **Figure 4**. In order to assess the potential for the metals detections to be related to the adjacent sites, existing data and limited additional soil data were evaluated. Additional sampling was performed by USACE during June 2004 and December 2004. The results are documented in a Memorandum entitled "Evaluation of Select Metals Detections in West Further Investigation Area, Longhorn Army Ammunition Plant, Revision 1, February 2005." Based on mercury and lead concentrations in the soil sampled from WFIA and adjacent site LHAAP-49, the WFIA and LHAAP-49 boundaries were redrawn. Approximately 6 acres were removed from transfer consideration and will be included as part of LHAAP-49. The WFIA boundary designated for transfer is approximately 284 acres. No evidence of CERCLA-related releases have been identified in the WFIA and adjacent environmental sites have no adverse impact on this area.

2.2 Northwest Block / Production Area

The Northwest Block / Production Area includes a portion of the former Shops Area and a portion of the TNT Waste Disposal Plant Buffer area. Building 710, also referred to as the Former Firehouse, is used for administrative offices and support equipment storage. It is located within this area as shown on **Figure 3** and is the only existing building within the transfer Property. A well-house is located on the southwest corner of Building 710 and is currently used to supply potable water to several buildings throughout LHAAP.

Southeast of Building 710 is the location of a former Power House Boiler Ion-Exchange Salt Evaporation Pond, LHAAP structure 401-B. This site was identified as a solid waste management unit in the RCRA Facility Assessment and designated as LHAAP-5. It has also been referred to as the Powerhouse Boiler Pond, Brine Pond, Surface Impoundment, or Stabilization Pond. It was an approximate 6.7-acre lined surface impoundment that received approximately 3,000 gallons/day of backwash water from zeolite treatment units at the Powerhouse (i.e. Building 401) and was designated as waste management unit 004 in the LHAAP Solid Waste Notice of Registration Number 30990. This unit operated from 1978 to 1994 and was permitted to discharge water into the LHAAP sewage treatment plant under Texas Wastewater Discharge Permit 02713. A Closure Plan for the Sewage Treatment Plant and Associated Non-Hazardous Waste Management Units was prepared in 1997 to meet the requirements of Texas Wastewater Discharge Permit 02713. The stabilization pond was one of

the non-hazardous waste management units addressed in the closure plan; sodium and chloride were identified in the plan as contaminants of concern for this unit.

Closure activities were performed at LHAAP-5 between January and August 1998. Closure proceeded in accordance with the Closure Plan with an agreement reached during a March 16, 1998 meeting between LHAAP and the Texas Natural Resource Conservation Commission (TNRCC) representatives. The Closure Plan required sampling and analysis of the waste management unit for a release determination. Based on a confirmed release, delineation of contamination extent was required to determine if the results met the Risk Reduction Standard 2 groundwater protection standard for residential use. Provided that the site met the criteria of Risk Reduction Standard 2, the site would be surveyed and closed in accordance with 30 TAC §335.560 which required deed certification. The Risk Reduction standard for groundwater protection did not have a medium specific concentration established for either chloride or sodium since there is no promulgated primary drinking water standard maximum contamination levels (MCL) for these constituents. Although there is not a primary MCL, there is a secondary maximum contaminant level (SMCL) established for chloride based on asethics which is non-enforceable. During the March 16, 1998 meeting, TNRCC requested to use 125 mg/l (this is one-half of chloride SMCL of 250 mg/l) as the chloride criterion to ensure groundwater protection for residential use and close the unit in-place. Samples obtained from the stabilization pond were analyzed for chloride using the toxic characteristic leaching procedure (TCLP). Chloride concentrations of leachate ranged from 7.9 to 20.3 mg/l, significantly less than the 125 mg/l agreed- to criterion.

During closure, all water in the surface impoundment was pH adjusted from approximately 5.5 to 6.9. Once the pH was stabilized, the water was discharged to the sewage treatment plant. Earthen berms around the pond perimeter were pushed into the pond, leaving sludge in-place, and leveled to grade. The site was sloped to drain and prevent collection of water. The site was also fertilized and seeded with native grass to establish turf and prevent erosion.

The site was closed to attainment of Risk Reduction Standard Number 2 – closure to Groundwater Protection Standard for Residential Use. The closed site was surveyed with metes and bounds description prepared with plat of the area. The Army filed an Industrial Solid Waste Certification of Remediation for public record. This was filed on January 7, 1999 in Harrison County Courthouse to comply with the deed certification requirements of 30 TAC §335.560. A copy of the notification is included in **Attachment 2**.

All requirements of the LHAAP NDPES Permit 02713 and 30 Texas Administrative Code Chapter 335, Subchapter S (Risk Reduction Standards) have been met for LHAAP-5.

2.3 Excluded Area Parcel

The Excluded Area is located directly north and beyond the LHAAP perimeter fence as shown in **Figure 5**. A recent land survey revealed that the LHAAP boundary extends beyond the fence and encompasses a residence. LHAAP activities were not performed within this area and there are no adjacent environmental sites. The adjacent encroachment will be addressed in a separate transfer document (i.e. Finding of Suitability to Transfer I (FOST I)).

3.0 Environmental Condition of the Property

A determination of the environmental condition of the property was made based on the review of existing environmental documents, aerial photographs, evaluation of analytical data from sampling performed in 2004, completion of the associated physical and visual inspection of the area and the properties immediately adjacent to the Property. Documents reviewed are listed in **Attachment 3**.

3.1 Environmental Condition of Property Categories

A summary of the Department of Defense (DOD) Environmental Condition of Property (ECP) Categories is presented in Table l. The Property proposed for transfer is assigned as Category 1. This Community Environmental Response Facilitation Act (CERFA) category includes areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas). Environmental sites adjacent to the Property are summarized in **Table 2** and shown on **Figure 4.**

3.2 Storage, Release, or Disposal of Hazardous Substances

There is no evidence that any hazardous substances were stored, released, or disposed on the Property.

3.3 Storage, Release, or Disposal of Petroleum and Petroleum Products

3.3.1 Underground and Aboveground Storage Tanks (UST/AST)

- **Current UST/AST Sites**: There are no underground or aboveground petroleum storage tanks (UST/AST) on the Property.

- **Former UST/AST Sites**: There were two ASTs on the Property that have been removed. Locations of the former ASTs are shown on **Figure 6**. There is no evidence of petroleum releases at these sites. A summary of the AST petroleum product activities is provided in Table 3 - Notification of Petroleum Products Storage, Release, or Disposal. USTs have never been present on the Property.

3.3.2 Non-UST / AST

There is no evidence that non-UST/AST petroleum products in excess of 55 gallons were stored for one year or more on the Property.

3.4 Polychlorinated Biphenyls

Between May 1995 and March 1996 transformers within the LHAAP were tested for polychlorinated biphenyl (PCB) contents. All transformers containing PCBs above the action level of 50 ppm were removed from LHAAP. There are no transformers containing PCBs below 50 ppm located on the Property. Based on a review of existing records and available information, there are currently no PCB-contaminated transformers of any type located on the Property and no evidence of releases from PCB equipment.

3.5 Asbestos

Building 710 is the only existing building on the Property. There is no evidence that the building contains non-friable or friable asbestos-containing material.

3.6 Lead-Based Paint

Building 710 is the only existing building on the Property. Since it was constructed after 1978, it is presumed that it does not contain lead-based paint.

3.7 Radiological Materials

Radiological materials were used at LHAAP. Known locations of radiological use are not within the Property addressed in this ECOP. However, radiological sources and quantities identified in the ESA were also associated with unknown locations. These were primarily sealed sources containing Cobalt-60, Cesium 137, Strontium-90, or Tritiuim. Although all radiological source locations are not documented, there is no evidence that radioactive material or sources were stored or used on the property addressed in this ECOP, based on knowledge of the property use (i.e. shops area). Additionally, there is no evidence of a radiological release within the LHAAP installation.

3.8 Radon

The U.S. Environmental Protection Agency (USEPA) assigned Harrison County as a Radon Zone 3 county as it is within an area identified as a low potential for radon. Zone 3 indicates the average short-term radon measurement is expected to be less than 2 pCi/L in a building without the implementation of radon control methods. Although LHAAP is within a county with a predicted low radon potential, radon surveys were conducted at LHAAP for verification. Approximately 50 representative buildings located installation-wide were surveyed between

1991 and 1992. Radon was not detected at or above the EPA residential action level of 4 picocuries per liter (pCi/L) in these buildings.

3.9 Munitions and Explosives of Concern (MEC)

Munitions and Explosives of Concern (MEC), which distinguishes specific categories of military munitions that may pose unique explosives safety risks, means: (A) unexploded ordnance as defined in 10 U.S. Code 2710(e)(9); (B) discarded military munitions as defined in 10 U.S.C. 2710(e)(2); or (C) explosive munitions constituents (e.g., trinitrotoluene, cyclotrimethylene-trinitramine) present in high enough concentrations to pose an explosive hazard. Based on a review of existing records and available information, the Property is not known or suspected to contain MEC (Engineering Environmental Management, 2002). However, MEC may potentially be present on nearby property, LHAAP-47, where hand signal assemblies took place **(Figure 3).** The Letter of Transfer will contain the notice for the potential presence of MEC provided in the Environmental Protection Provisions **(Attachment 1)**.

3.10 Other Considerations

3.10.1 Hope Cemetery No. 2

The West Further Investigation Area, as shown in **Figure 3**, surrounds a small cemetery that is referred to as Hope Cemetery No. 2. This early 20th century cemetery, consisting of approximately 600 square feet, contains four graves and is fenced. The Oscar Hope Cemetery Association maintains the cemetery. The Point of Contact for the Oscar Hope Cemetery Association is Mr. Robert Cargill, P.O. Box 992, Longview, Texas 75606 (phone number: 903-757-3322).

3.10.2 Former Railroad Classification Yard

A railroad classification yard was formerly located within the West Further Investigation Area. All the railroad tracks, ties, and ballasts were removed except at locations where it intersected a road. Removal was performed during the 1999-2000 timeframe.

3.11 Adjacent Hazardous Conditions

Sites adjacent to the Property include Category 1, 3, 5, and 6 sites. Remedial investigations/ feasibility studies are currently ongoing for the Category 6 sites adjacent to the Property. There is no indication that potential contamination has migrated from the adjacent sites to the Property.

4.0 Remediation

The Longhorn Army Ammunition Plant Federal Facilities Agreement (FFA), effective as of December 30, 1991, by and between the Longhorn Army Ammunition Plant, the Texas Water Commission (currently known as the Texas Commission on Environmental Quality), and the United States Environmental Protection Agency applies to the Property. Currently, there are no environmental remediation orders applicable to the Property. The Army reserves the right to conduct remediation activities.

5.0 Groundwater Monitoring Wells

The Property proposed for transfer contains five monitoring wells as shown on **Figure 3**. Survey information is provided in **Table 4.** The Letter of Transfer will include the groundwater monitoring well notice and covenant provided in the Environmental Protection Provisions **(Attachment 1)**.

6.0 Potential Wetlands

Although an official wetland survey has not been conducted, the potential for wetlands on the Property is negligible.

7.0 Endangered or Threatened Species

No federal endangered or threatened species have been confirmed on the Property proposed for transfer. However, LHAAP contains habitat identified as suitable for five (5) federal and/or state threatened species (CLI, 1995). Of the five (5) animal species that could potentially be present, information received from USFWS (January 2003) and Texas Department of Parks and Wildlife (February 2003) identified the species known or suspected to occur in the vicinity of LHAAP as summarized in **Table 5.**

8.0 Archaeological Properties

The Property proposed for transfer contains one known archaeological site 41HS406 that is potentially eligible for inclusion in the National Register of Historic Places (NRHP). With the exception of a small tract of land, the transfer parcel has been surveyed for archeological sites. This information was obtained from the review of the Longhorn Army Ammunition Plant Cultural Resources Management Plan (Geo-Marine, Inc., 1996) and the Archeological Survey 319 Hectares at the Longhorn Army Ammunition Plant (Gadus et. al, 1998). The USFWS will honor its responsibilities under the National Historic Preservation Act and will coordinate all

activities in furtherance of its responsibilities with the Texas State Historic Preservation Office; appropriate federally recognized tribes, and other interested parties. The Letter of Transfer will include the archaeological properties covenant and notice provided in the Environmental Protection Provisions **(Attachment 1)**.

9.0 Regulatory/Public Coordination

The USEPA Region 6, Texas Commission on Environmental Quality (TCEQ), U.S. Fish and Wildlife Service, and the public were provided copies of this ECOP. Additionally, Caddo Lake Institute was provided a courtesy copy. Public notice of the public comment period and the availability of the ECOP was made in the Shreveport Times newspaper on May 29, 2005 and June 5, 2005. Notice was also provided in the Marshall News Messenger newspaper on June 13, 2005. The 30-day public comment period was between June 7 and July 7, 2005 and a public information forum was held on June 14, 2005. No comments were received.

10.0 National Environmental Policy Act

The environmental impacts associated with the proposed transfer of the Property have been analyzed in accordance with the National Environmental Policy Act (NEPA). The results of this analysis have been documented in the Record of Environmental Consideration (U.S. Army, 2005) which is in part supported by a Final Environmental Assessment (EA) for establishment of the Caddo Lake National Wildlife Refuge, prepared by the U.S. Fish and Wildlife Service on September 22, 2000 and the Final Environmental Site Assessment Phase I and II Report for the Production Areas, prepared by Plexus Scientific Corporation, February 2005. Any encumbrances or conditions identified in such analysis as necessary to protect human health or the environmental will be incorporated into the Letter of Transfer.

11.0 Environmental Protection Provisions

On the basis of the above results from the EBS and other environmental studies and in consideration of the intended use of the Property, certain terms and conditions are required for the proposed transfer. These terms and conditions will be set forth in the Environmental Protection Provisions **(Attachment 1)** and will be included in the Letter of Transfer.

12.0 Conclusion

Based on the above, the Property is determined to be suitable for transfer to the USFWS. The U.S. Army remains responsible for the completion of the environmental program at LHAAP as provided in the Federal Facility Agreement.

AUG 16 2005

Thomas E. Lederle
Director, Hampton Field Office
Army Base Realignment and Closure

AUG 16 2005

Attachment 1
Environmental Protection Provisions

ATTACHMENT 1

Environmental Protection Provisions

The following conditions, restrictions, and notifications will be incorporated by reference into the Letter of Transfer from the Department of the Army to the Department of Interior (DOI) to ensure the protection of human health and the environment and in furtherance of ongoing and completed remediation activities at Caddo Lake National Wildlife Refuge.

Inclusion of Provisions:

The federal agency to whom the property is transferred shall neither transfer the property, lease the property, nor grant any interest, privilege, or license whatsoever in connection with the property without the inclusion of the environmental protection provisions contained herein, and shall require the inclusion of such environmental protection provisions in all further deeds, transfers, leases, or grant of any interest, privilege, or license, unless there is a specific legal finding authorizing a change and specifically addressing any liabilities that will result from the change.

Federal Facilities Agreement:

The U.S. Army acknowledges that portions of Longhorn Army Ammunition Plant have been identified as National Priorities List (NPL) sites under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended. The USFWS acknowledges that the U.S. Army has provided it with a copy of the LHAAP Federal Facility Agreement (FFA) dated December 30, 1991 and will provide the USFWS with a copy of any amendments thereto. The USFWS, its successors and assigns, agrees that should any conflict arise between the terms of the FFA as they presently exist or may be amended, and the provisions of this property transfer, the terms of the FFA will take precedence. The USFWS, its successors and assigns, further agree that notwithstanding any other provisions of the transfer, the U.S. Army assumes no liability to the USFWS, its successors and assigns, should implementation of the FFA interfere with the use of the Property. The USFWS, its successors and assigns, shall have no claim on account of any such interference against the U.S. Army or any officer, agent, employee or contractor thereof.

No Liability for Non-Army Contamination:

The U.S. Army shall not incur liability for response action or corrective action found to be necessary after the date of transfer, in any case in which the federal agency to whom the property is transferred, or other non-Army person or entity is identified as the party responsible for contamination of the property.

CERCLA Access Notice:

The U.S. Army, U.S. Environmental Protection Agency (USEPA) and Texas Commission on Environmental Quality (TCEQ) and their officers, agents, employees, contractors, and subcontractors have the right, upon reasonable notice to the USFWS, to enter upon the Property in any case in which a response action or corrective action is found to be necessary after the date of transfer of the property or such access is necessary to carry out a response action or corrective action on adjoining property, including, without limitation, the following purposes.

To conduct investigations and surveys, including, where necessary, drilling, soil and water sampling, testing-pitting, test soil borings and other activities;

To inspect field activities of the U.S. Army and its contractors and subcontractors;

To conduct any test or survey related to the environmental conditions at the transferred Property or to verify any data submitted to the USEPA or TCEQ by the U.S. Army relating to such conditions;

To construct, operate, maintain or undertake any other response or remedial actions as required or necessary including, but not limited to monitoring wells, pumping wells and treatment facilities.

Notice of the Potential for the Presence of Munitions and Explosives Concern, and Covenant:

Based upon a review of existing records and available information, none of the land proposed for transfer is known or suspected to contain munitions and explosives of concern (MEC). The term MEC means specific categories of military munitions that may pose unique explosives safety risks and includes: (1) Unexploded Ordnance (UXO), as defined in 10 U.S.C. §101(e)(5); (2) Discarded military munitions (DMM), as defined in 10 U.S.C. §2710(e)(2); or (3) Munitions constituents (e.g., TNT, RDX), as defined in 10 U.S.C. §2710(e)(3), present in high enough concentrations to pose an explosive hazard.) In the event that USFWS, its successors, or assign should discover any MEC on the property,, they shall immediately stop any intrusive or ground-disturbing work in the area or in any adjacent areas and shall not attempt to remove or destroy it, but shall immediately notify the Harrison County Sheriff's Department (phone number: 903-923-4000), so that appropriate explosive ordnance disposal personnel can be dispatched to address such MEC as required under applicable law and regulations. An alternate contact is the City of Marshall Fire Department (phone number: 903-938-6711). Local authorities must contact the U.S. Army's 705th Explosives Ordnance Detachment (EOD) at Fort Polk, LA (phone number: 337-531-5502; the 24-hour emergency phone number is 337-531-5505).

Notice of Groundwater Monitoring Wells Covenant:

a. The USFWS is hereby informed and does acknowledge the presence on the Property of five groundwater monitoring wells that may be necessary for the U.S. Army to complete monitoring after the date of transfer of title to the Property, or portions thereof.

b. Promptly upon the determination by the U.S. Army that a well is no longer necessary for monitoring, the Army will close such well at the Army's sole cost and expense in accordance with applicable laws, regulations, and ordinances.

Notice of Archaeological Property and Preservation Covenant:

One archaeological property 41HS406 is located in the County of Harrison, Texas, the USFWS hereby covenants on behalf of itself, its heirs, successors, and assigns at all times to the Texas State Historic Preservation Officer, to maintain and preserve the archaeological properties. The USFWS will honor its responsibilities under the National Historic Preservation Act and will coordinate all activities in furtherance of its responsibilities with the Texas State Historic Preservation Office, appropriate federally recognized tribes and other interested parties.

Conditions, Restrictions, and Covenants Binding and Enforceable:

These restrictions and covenants are binding on the USFWS, its successors and assigns and shall be included in subsequent deeds; and shall run with the land; are forever enforceable; shall benefit the public in general and the territory surrounding the Property, including lands retained by the U.S. Army; and shall further the common environmental objectives of the U.S. Army and the State of Texas; and are therefore enforceable by the U.S. Army and the State of Texas.

Attachment 2
Industrial Solid Waste Certification of Remediation

Real No 30443 Vol 1000 Pg 63

...ED FOR RECORD
...-7 PM 1:...
...
BY ... DEPUTY

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
CERTIFICATION OF REMEDIATION

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Water Commission pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

United States Army, United States Department of Defense, has performed a remediation of the land described herein. A copy of the Notice of Registration No. 30990 description of the facility, NOR Unit 004, is attached hereto and is made part of this filing. A list of the known waste constituents (brine solution), including known concentrations, which have been left in place is attached hereto and is made part of this filing. Further information concerning this matter may be found by an examination of Installation records or in the Notice of Registration No. 30990 files, which are available for inspection upon request at the central office of the Texas Natural Resource Conservation Commission in Austin, Texas.

The Texas Natural Resource Conservation Commission derives its authority to review the remediation of this tract of land from the Texas Solid Waste Disposal Act, § 361.002, Texas Health and Safety Code, Chapter 361, which enables the Texas Natural Resource Conservation Commission to promulgate closure and remediation standards to safeguard the health, welfare and physical property of the people of the State and to protect the environment by controlling the management of solid waste. In addition, pursuant to the Texas Water Code, § 5.012 and § 5.013, Texas Water Code, Annotated, Chapter 5, the Texas Natural Resource Conservation Commission is given primary responsibility for implementing the laws of the State of Texas relating to water and shall adopt any rules necessary to carry out its powers and duties under the Texas Water Code. In accordance with this authority, the Texas Natural Resource Conservation Commission requires certain persons to prqvide certification and/or recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This deed certification is not a representation or warranty by the Texas Natural Resource Conservation Commission of the suitability of this land for any purpose, nor does it constitute any guarantee by the Texas Natural Resource Conservation Commission that the remediation standards specified in this certification have been met by the United States Army.

II

Being a 6.717-acre tract, more or less, out of the United State Army, Longhorn Army Ammunition Plant's 8,823.96-acre tract lying in Harrison County, State of Texas, said 6.717-acre tract being more particularly described as Attachment One.

Contaminants deposited hereon have been remediated to meet residential soil criteria, in accordance with a plan designed to meet the Texas Natural Resource Conservation Commission's requirements in 31 Texas Administrative Code, Chapter 335.555, which mandates that the remedy be designed to eliminate substantial present and future risk such that no post-closure care or engineering or institutional control measures are required to protect human health and the environment. Future land use is considered suitable for residential purposes in accordance with risk reduction standards applicable at the time of this filing. Future land use is intended to be non-residential.

III

The owner of the site is United States Army, Department of Defense, and its address is Attn: SMCLO-CO, P.O. Box 658, Doyline, LA 71023, where more specific information may be obtained from the owner.

EXECUTED this the 7th day of January, 1999.

United States Army
United States Department of
Defense

Ira Nathan
Chief of Operations Review

BEFORE ME, on this the 7th day of January, personally appeared Ira Nathan, Chief of Operations Review of United States Army, United States Department of Defense, known to me to be the person and agent of said corporation whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 7th day of January, 1999.

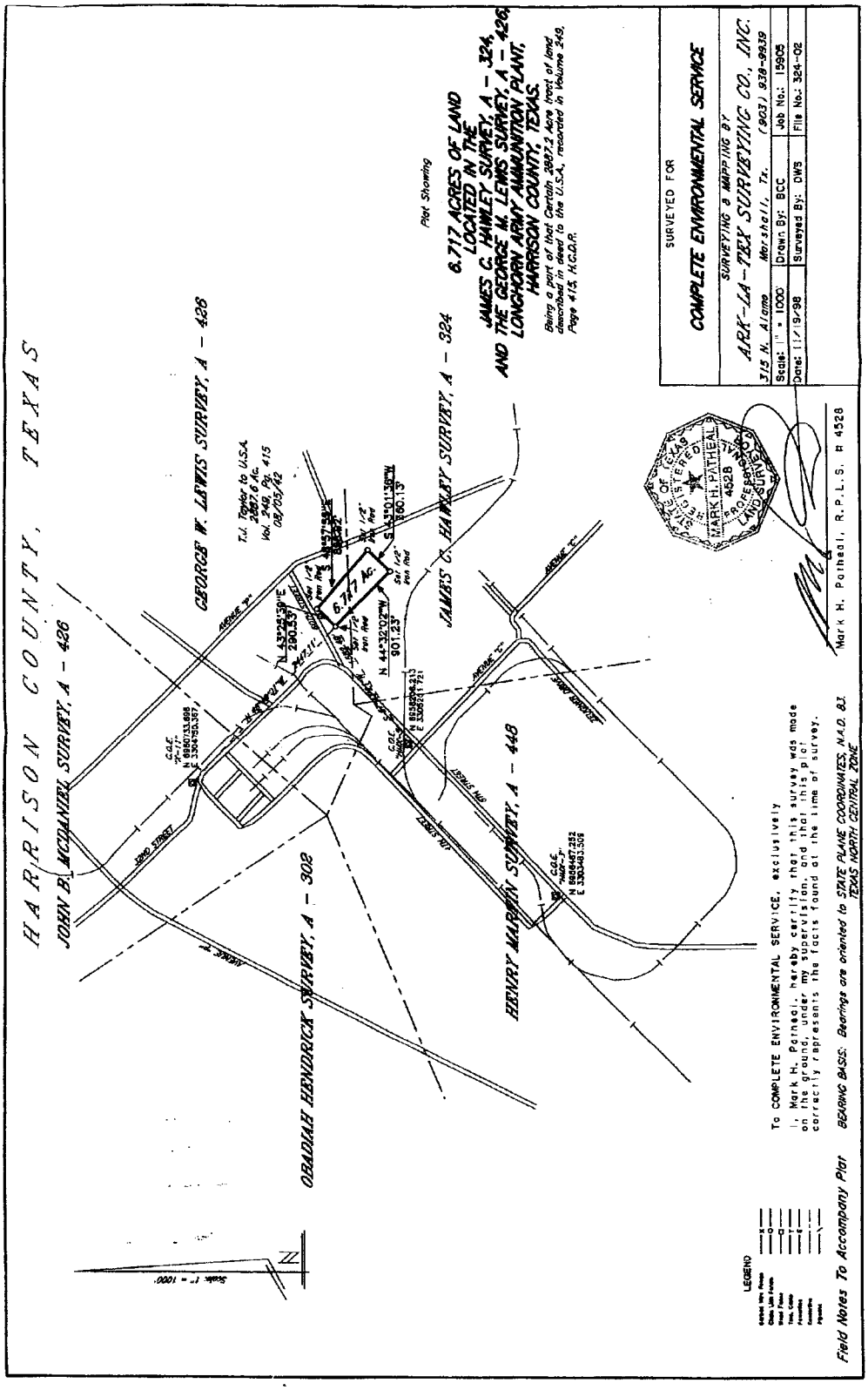
LAWRENCE LEE NOTARY PUBLIC STATE OF TEXAS EXPIRES 10-4-2002

Notary Public in and
for the State of Texas,
County of

Harrison

My Commission Expires

10-4-02


HARRISON COUNTY, TEXAS
JOHN B. McDANIEL SURVEY, A - 426
GEORGE W. LEWIS SURVEY, A - 426
OBADIAH HENDRICK SURVEY, A - 302
HENRY MARTIN SURVEY, A - 448
JAMES C. HAWLEY SURVEY, A - 324
6.717 ACRES OF LAND
LOCATED IN THE
JAMES C. HAWLEY SURVEY, A - 324,
AND THE GEORGE W. LEWIS SURVEY, A - 426
LONGHORN ARMY AMMUNITION PLANT,
HARRISON COUNTY, TEXAS
Being a part of that Certain 2887.2 Acre tract of land described in deed to the U.S.A., recorded in Volume 249, Page 415, H.C.D.R.
Plat Showing
6.717 Ac.
SURVEYED FOR
COMPLETE ENVIRONMENTAL SERVICE
SURVEYING & MAPPING BY
ARK-LA-TEX SURVEYING CO., INC.
315 N. Alamo Marshall, Tx. (903) 938-9939
Scale: 1" = 1000' Drawn By: BCC Job No.: 15905
Date: 11/19/98 Surveyed By: DWS File No.: 324-02
LEGEND
To COMPLETE ENVIRONMENTAL SERVICE, exclusively
I, Mark H. Pothedl, hereby certify that this survey was made on the ground under my supervision and this plat correctly represents the facts found at the time of survey.
Mark H. Pothedl, R.P.L.S. # 4528
Field Notes To Accompany Plat
BEARING BASIS: Bearings are oriented to STATE PLANE COORDINATES, N.A.D. 83, TEXAS NORTH CENTRAL ZONE
Scale: 1" = 1000'

ARK-LA-TEX SURVEYING CO., INC.
P.O. Box 910 • 315 N. Alamo Blvd. • Marshall, Texas 75671 • 903/938-9939 • FAX 903/938-0601

FIELD NOTES

All that certain lot, tract, or parcel of land situated in Harrison County, Texas, about 16 miles Northeast of the Courthouse in the City of Marshall, being 6.717 acres of land, a part of the JAMES C. HAWLEY SURVEY, A-324, and a part of the GEORGE W. LEWIS SURVEY, A-426, and being a part of that certain called 2887.6 acre tract described in deed from T.J. Taylor to the United States of America, dated August 5, 1942, and recorded in Volume 249, Page 415 of the Harrison County Deed Records, said 6.717 acres being more particularly described as follows:

Beginning at a ½" iron rod set for corner having State Plane Coordinates of North = 6959059.064 and East = 3306534.734, said rod bears South 46 deg 49'01" East – 2447.11 feet from Corps of Engineers Monument "X-11", and also bears North 57 deg 23'21" East – 1582.49 feet from Corps of Engineers Monument "HMX-5";

Thence North 43 deg 25'39" East – 290.53 feet to a ½" iron rod set for corner;

Thence South 48 deg 57'55" East – 898.92 feet to a ½" iron rod set for corner;

Thence South 43 deg 01'36" West – 360.13 feet to a ½" iron rod set for corner;

Thence North 44 deg 32'02" West – 901.23 feet to the place of beginning and containing 6.717 acres of land.

Bearing Basis: Bearings and coordinates are based upon NAD 83, Texas North Central Zone.

Surveyed: November 1998

Mark H. Patheal, R.P.L.S. #4528

Job # 15905

Attachment 3
References

References

Caddo Lake Institute (CLI), 1995, ***Initial Species Inventory for Longhorn Army Ammunition Plant, Karnack, Texas***, June.

Complete Environmental Service, 1999, ***Closure Report for Brine Pond (Surface Impoundment) at Longhorn Army Ammunition Plant, Karnack, Texas, EPA ID No. TX6213820529, Solid Waste Registration No. 30990, NOR Unit Number 004***, April.

Gadus, E.F., Freeman, M.D., and Fields, R.C., 1998, ***Archaeological Survey of 319 Hectares at the Longhorn Army Ammunition Plant, Harrison County, Texas***, June.

Geo-Marine Inc., 1996, ***Draft Longhorn Army Ammunition Plant Cultural Resources Management Plan***, December.

Pertulla, Timothy K. and Bo Nelson, 1999, ***An Archaeological Survey of Harrison Bayou Lease Lands at the Longhorn Army Ammunition Plant, Harrison County, Texas***. Archaeological and Environmental Consultants, Report of Investigation No. 12, Caddo Lake Institute, Aspen Colorado, December.

Plexus Scientific Corporation, ***Environmental Site Assessment Phase I and II Report, Final, Production Areas***, February 2005. *(Note: This document meets the requirements of an Environmental Baseline Survey)*

Sverdrup Environmental, Inc., 1998, ***Environmental Baseline Survey, Longhorn Army Ammunition Plant***, Karnack, Texas, October.

U.S. Army, 2005, ***Record of Environmental Consideration for Proposed Property Transfer Addressed in ECOP III,*** May.

U.S. Army Corps of Engineers, 2005, ***Evaluation of Select Metals Detections in the West Further Investigation Area, Longhorn Army Ammunition Plant, Revision 1***, February.

U.S. Fish and Wildlife Services, 2000, ***Final Environmental Assessment for the Proposed Establishment of the Caddo Lake National Wildlife Refuge through Management Agreement of Transfer of Longhorn Army Ammunition Plant from the Department of the Army to the Department of Interior, USFWS, Harrison County, Texas***, September.

U.S. Fish and Wildlife Service, 2003, ***Contaminants Investigation of Northern Central and Eastern Portions of Caddo Lake National Wildlife Refuge***, Texas, November.

U.S. Fish and Wildlife Service, 2002, ***Contaminants Investigation of Western Portions of Caddo Lake National Wildlife Refuge, Texas***, December.

Tables

Table 1
Community Environmental Response Facilitation Act Categories and Codes
Longhorn Army Ammunition Plant, Karnack, Texas

Category	Description
Category 1	Areas where no release or disposal of hazardous substance or petroleum products has occurred (including no migration of these substances from adjacent areas)
Category 2	Areas where only release or disposal of petroleum products has occurred
Category 3	Areas where release, disposal, and or migration of hazardous substance has occurred, but at concentrations that do not require a removal or remedial response
Category 4	Areas where release, disposal, and or migration of hazardous substance has occurred, and all removal or remedial actions to protect human health and the environment have been taken
Category 5	Areas where release, disposal, and or migration of hazardous substance has occurred, and removal or remedial actions are underway, but all required remedial actions have not yet been taken
Category 6	Areas where release, disposal, and or migration of hazardous substance has occurred, but required actions have not yet been implemented
Category 7	Areas that are not evaluated or require additional evaluation

Table 2
Adjacent Properties
Longhorn Army Ammunition Plant, Karnack, Texas

Site No.	Site Name	CERFA Category
LHAAP- 04	Pilot Wastewater Treatment Plant	5[a]
LHAAP- 23	Building 707 Storage Area of PCBs	1
LHAAP- 29	Former TNT Production Area	6
LHAAP- 32	Former TNT Waste Disposal	6
LHAAP- 35	Wastewater Sumps	5
LHAAP- 37	Chemical Laboratory Waste Pad (Quality Assurance Laboratory Bldg 29-A)	5[a]
LHAAP- 47	Plant 3 / Produces Hand Signal Assemblies (also known as Solid Rocket Fuel Motor Production)	5[a]
LHAAP- 49	Acid Storage Area	6
LHAAP- 58	Maintenance Complex	6[b]
LHAAP- 60	Pesticide Storage Area – Buildings 411 and 411A	3
LHAAP- 64	Transformer Storage	1[c]

Notes

a.. LHAAP-04, LHAAP-37 and LHAAP-47 are addressed under LHAAP-35

b: LHAAP 58 encompasses sites 2, 3, 59, 60 (Building 714) , 61, and 69

c: Site was previously classified as Category 2

Table 3
Notification of Petroleum Products Storage, Release or Disposal

Building Number or Location / Tank ID	Name of Petroleum Product(s)	Date of Storage, Release or Disposal	Quantity	Description	Remedial Action
450-B / 2-450B	Diesel	Storage: 1987- 1999	10,000 gallon capacity	Aboveground storage tank used to store diesel fuel. Secondary containment provided by earthen dike as of 1981. Dike dimensions enclosed full capacity of tank plus one-foot of free-board.	Phase II ESA included one surface soil, subsurface soil and groundwater sample (temporary monitoring well) for analysis to determine presence or absence of contamination. No evidence of a release based on analytical results. No remedial action required.
510B-1/ 1-510B1	Diesel	Storage: 1974 – 1990	560,000 gallon capacity	Aboveground storage tank used to store fuel oil. Originally constructed in 1942 to store fire protection water and in 1974 was converted from water to oil storage. Secondary containment provided by earthen dike as of 1981. Dike dimensions enclosed full capacity of tank plus one-foot of free board. Reported in ESA that tank was emptied during 1992 "due to leakage." Not included in TCEQ Leaking Petroleum Storage Tank database; therefore presumed that if there was "leakage", it was contained by the secondary containment.	Phase II ESA included one surface soil, subsurface soil and groundwater sample (temporary monitoring well) for analysis to determine presence or absence of contamination. No evidence of a release based on analytical results. No remedial action is required.

00113768

Table 4
Groundwater Monitoring Well Locations
Longhorn Army Ammunition Plant, Karnack, Texas

Monitoring Well ID	Depth	Installation Date	State Plane, Texas North Central, NAD 83, feet	
	Depth (feet)	Installation Date	Easting X_Coordinate	Northing Y_Coordinate
114	36	7/15/1982	3304340	6954928
04WW01	23	11/29/2000	3305912	6958971
04WW03	25	11/29/2000	3306190	6959562
LHSMW02	16	8/20/1994	3305705	6959134
LHSMW03	32	8/20/1994	3305514	6959938

00113769

Table 5
Federal and State Listing of Threatened Species and State Species of Concern In the Vicinity of Longhorn Army Ammunition Plant, Karnack, Texas

FEDERAL LISTED THREATENED SPECIES
Bald Eagle
Louisiana Black Bear
STATE LISTED THREATENED SPECIES
Louisiana Black Bear
Alligator Snapping Turtle
Bluehead Shiner
STATE SPECIES OF CONCERN
Southern Lady's Slipper
STATE SPECIAL FEATURE/NATURAL COMMUNITIES/MANAGED AREAS
Colonial Waterbird Rookeries
Bald Cypress-Water Tupelo Series
Shortleaf Pine-Oak Series
Water Oak-Willow Oak Series
Caddo Lake State Park

Notes:

Source: Caddo Lake Institute, 1995, Initial Species Inventory for Longhorn Army Ammunition Plant, Karnack, Texas, June

Figures

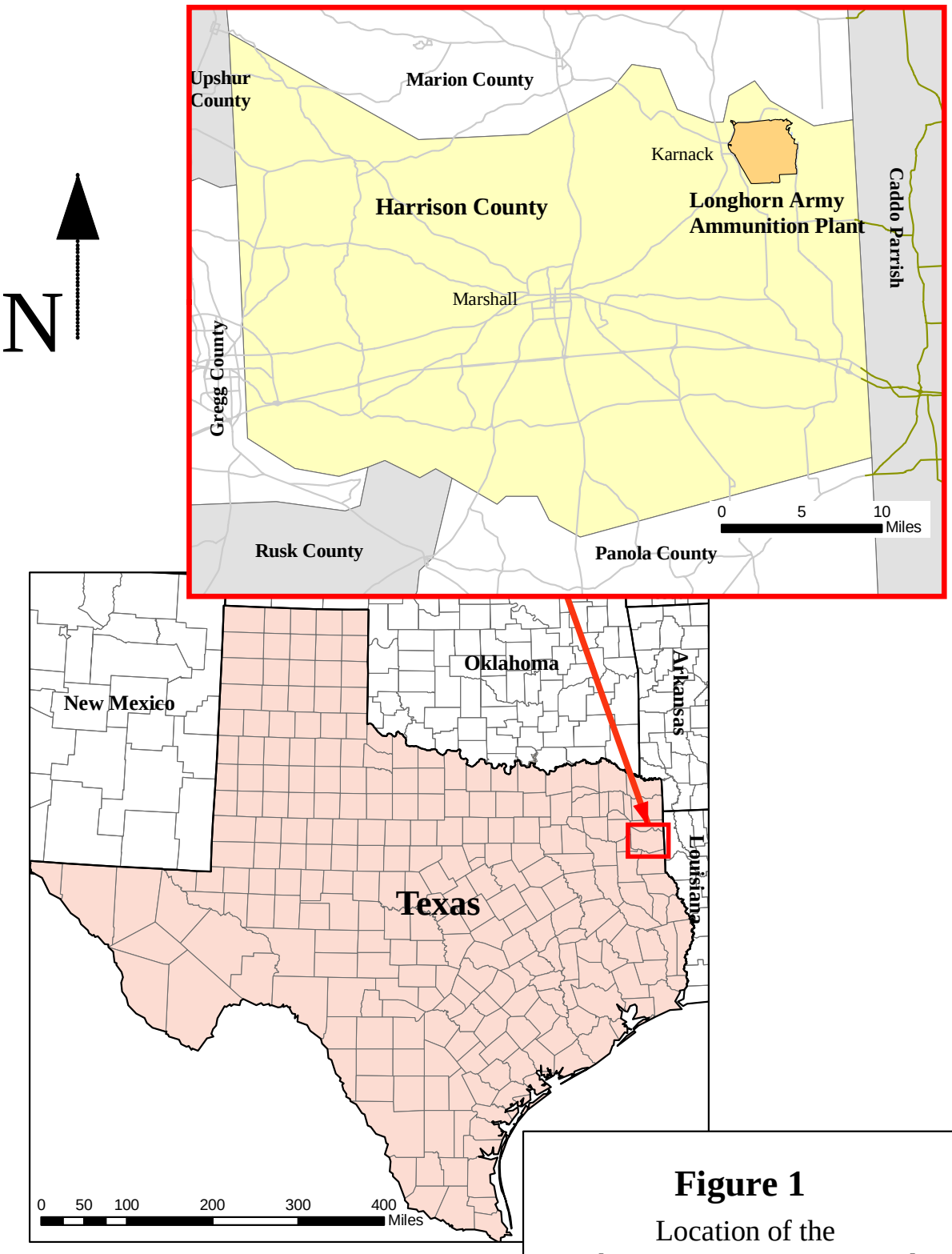
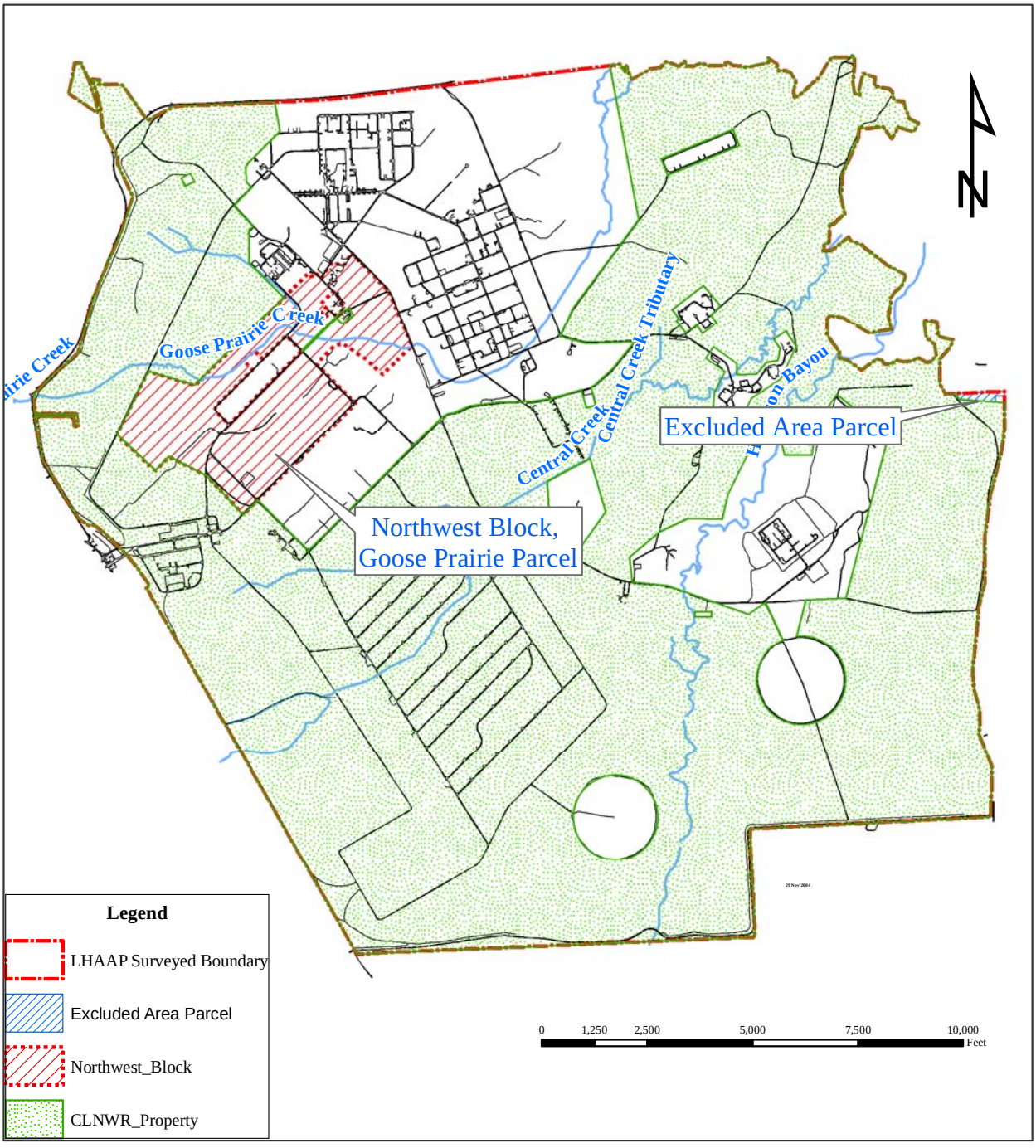


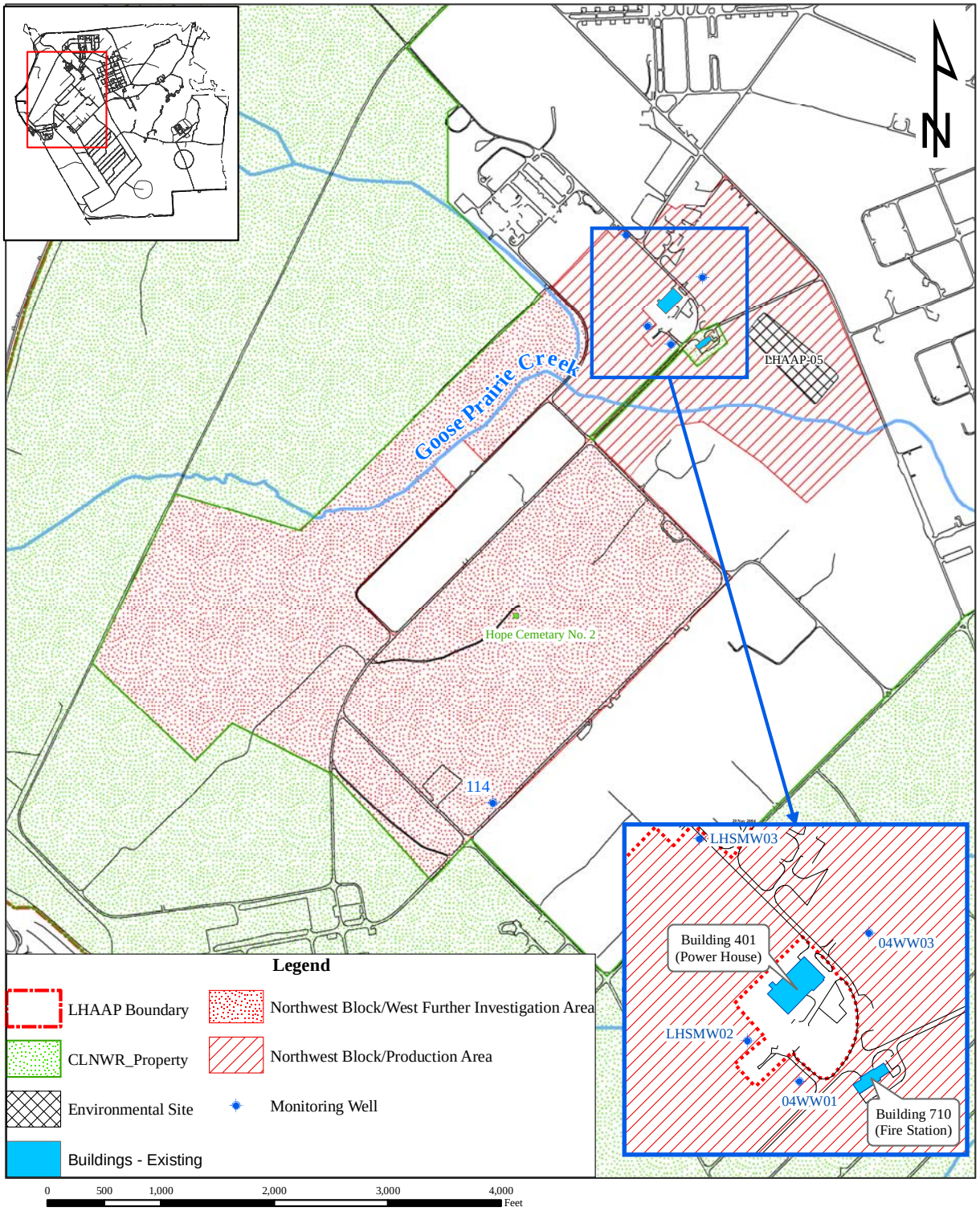
Figure 1

Location of the
Longhorn Army Ammunition Plant
Harrison County, Texas



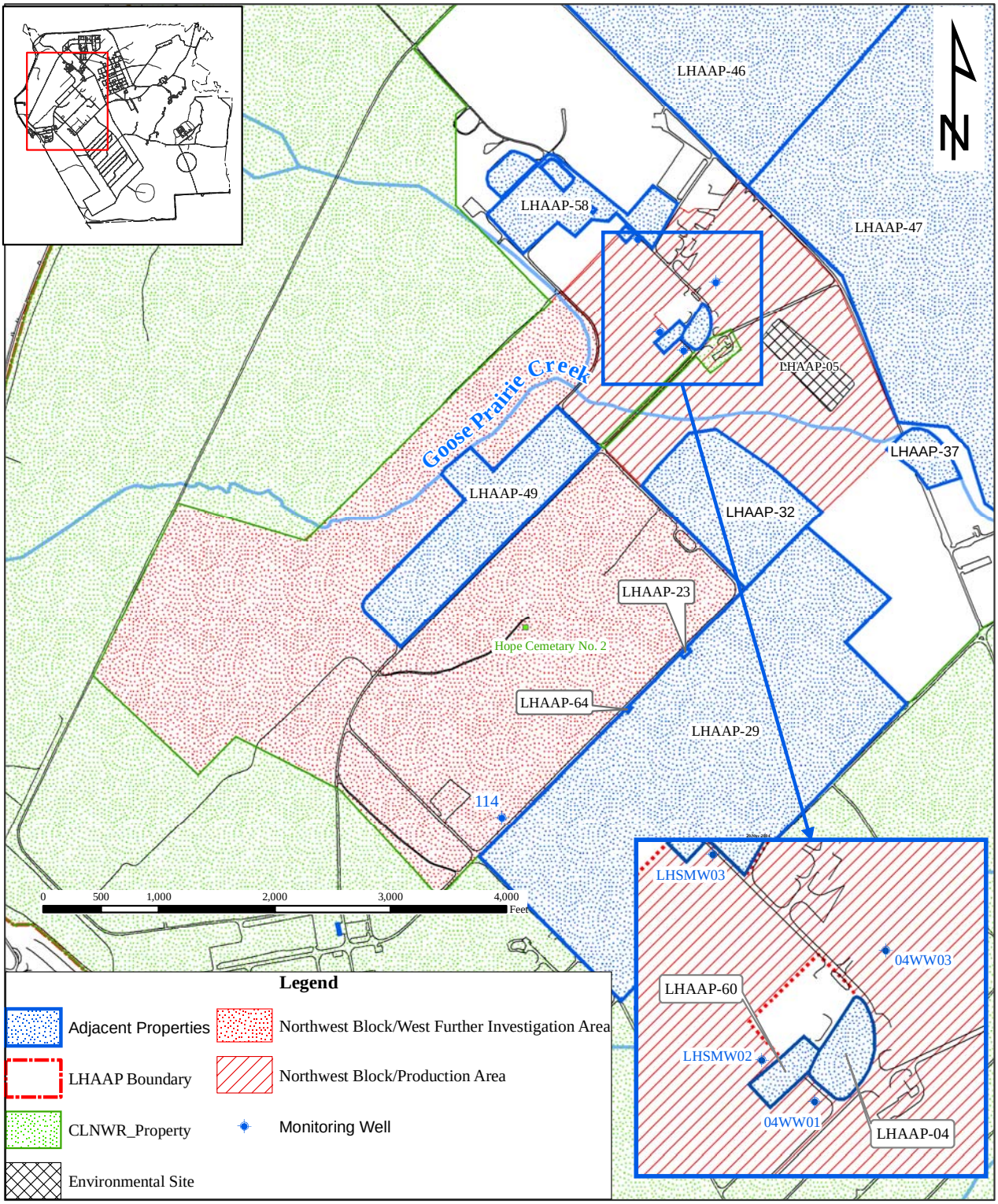
LONGHORN ARMY AMMUNITION PLANT

Figure 2. Location of Proposed Transfer Parcels



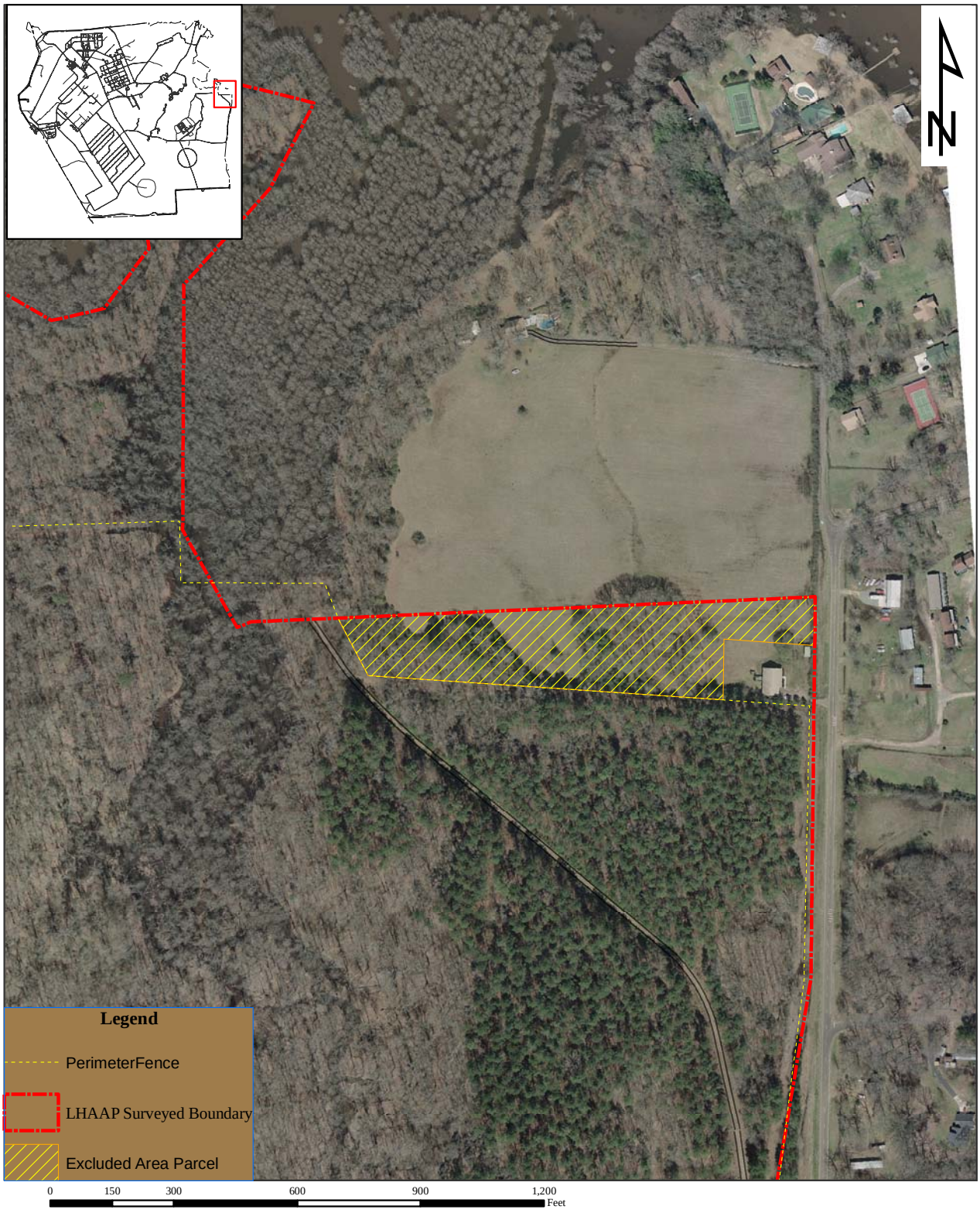
LONGHORN ARMY AMMUNITION PLANT

Figure 3. Proposed Transfer Parcel - Northwest Block of the Goose Prairie Creek Parcel



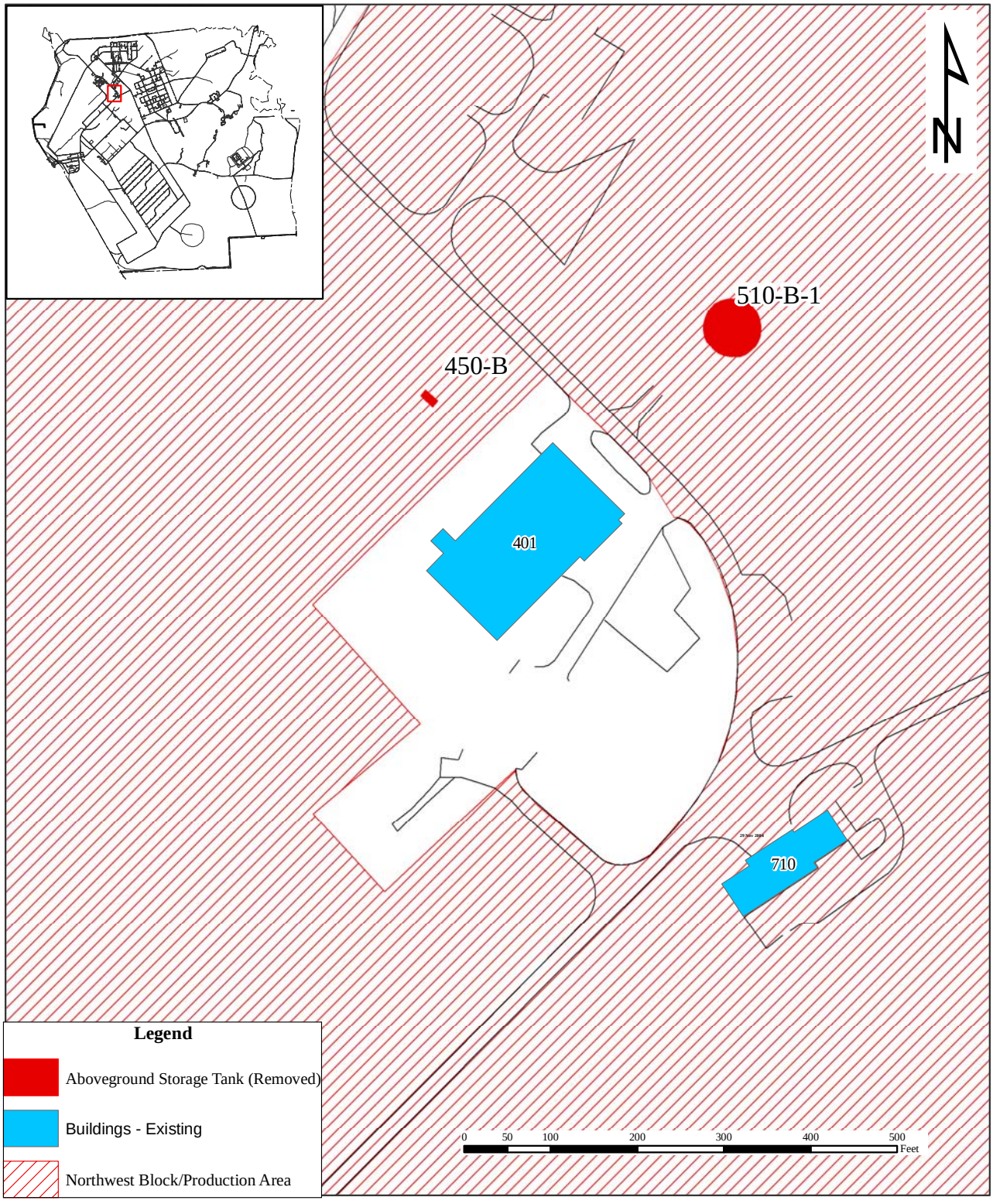
LONGHORN ARMY AMMUNITION PLANT

Figure 4. Adjacent Environmental Sites



LONGHORN ARMY AMMUNITION PLANT

Figure 5. Proposed Transfer Parcel - Excluded Area Parcel



LONGHORN ARMY AMMUNITION PLANT

Figure 6. Locations of Former Aboveground Storage Tanks

FINAL

ENVIRONMENTAL CONDITION OF PROPERTY IV (ECOP IV)

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

March 2007

Table of Contents

1.0 PURPOSE 1
2.0 PROPERTY DESCRIPTION 1
2.1 Former Production Areas (1, 2, 3 and 4) 1
2.2 Revised East Further Investigation Area Parcel 2
2.3 Cemetery Parcels - Hope No. 2 and Hayner 3
2.3.1 Hope No. 2 Cemetery 3
2.3.2 Hayner Cemetery 4
3.0 ENVIRONMENTAL CONDITION OF PROPERTY 4
3.1 Environmental Condition of Property Categories 4
4.0 ENVIRONMENTAL REMEDIATION SITES AND INFORMATION 5
4.1 Storage, Release, or Disposal of Hazardous Substances 6
4.2 Petroleum and Petroleum Products 6
4.2.1 Underground and Above-Ground Storage Tanks (UST/AST) 6
4.2.2 Non-UST / AST 6
4.3 Polychlorinated Biphenyls 6
4.4 Asbestos 6
4.5 Lead-Based Paint (LBP) 6
4.6 Radiological Materials 7
4.7 Radon 7
4.8 Munitions and Explosives of Concern (MEC) 7
4.9 Other Property Conditions 7
5.0 ADJACENT PROPERTY CONDITIONS 8
6.0 ENVIRONMENTAL REMEDIATION AGREEMENTS 9
7.0 GROUNDWATER MONITORING WELLS 9
8.0 POTENTIAL WETLANDS 9
9.0 ENDANGERED OR THREATENED SPECIES 9
10.0 ARCHEOLOGICAL PROPERTIES 10
11.0 REGULATORY/PUBLIC COORDINATION 10
12.0 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) COMPLIANCE 11
13.0 ENVIRONMENTAL PROTECTION PROVISIONS 11
14.0 CONCLUSION 11

List of Tables

Table 1 Description of Property (ECP Categories included)
Table 2 Adjacent Properties
Table 3 Groundwater Monitoring Well Locations

List of Figures

Figure 1 Location of the Longhorn Army Ammunition Plant, Harrison County, Texas
Figure 2 Locations of Proposed Transfer Property
Figure 3 ECP Categories of ECOP IV Property
Figure 4 Transferring Environmental Sites
Figure 5 Adjacent Environmental Sites
Figure 6 Location of Existing Monitoring Wells on Proposed Transfer Property, Trichloroethene (TCE) and Perchlorate Groundwater Plumes Indicated

List of Attachments

Attachment 1 References
Attachment 2 Environmental Protection Provisions

Acronyms and Abbreviations

ACM	asbestos-containing material
AST	aboveground storage tank
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLNWR	Caddo Lake National Wildlife Refuge
CFR	Code of Federal Regulations
DOD	Department of Defense
DOI	Department of the Interior
ECOP	Environmental Condition of Property
ECP	DoD Environmental Condition of Property (classification of an area)
EFIA	East Further Investigation Area
FFA	Federal Facility Agreement
LAP	Load-Assemble-Package
LHAAP	Longhorn Army Ammunition Plant
LBP	lead-based paint
MEC	munitions and explosives of concern
PCB	polychlorinated biphenyl
TCEQ	Texas Commission on Environmental Quality
TNT	trinitrotoluene
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank

FINAL
ENVIRONMENTAL CONDITION OF PROPERTY IV (ECOP IV)

Longhorn Army Ammunition Plant, Karnack, Texas
March 2007

1.0 PURPOSE

The purpose of this Environmental Condition of Property (ECOP) is to document the environmental condition of the described parcels of land which comprise part of Longhorn Army Ammunition Plant for transfer to the Department of the Interior (DOI) - U.S. Fish and Wildlife Service (USFWS) for the purpose of a national wildlife refuge. The transfer is consistent with DoD and Army Policy. The determination of the suitability for this transfer from the Army to another Federal Agency (the United States Fish and Wildlife Service, hereafter USFWS) is based upon the results of the Environmental Baseline Survey (EBS), dated February 2005.

2.0 PROPERTY DESCRIPTION

Longhorn Army Ammunition Plant (LHAAP) is located in central-east Texas in the northeastern corner of Harrison County, between State Highway 43 at Karnack, Texas and the western shore of Caddo Lake **(Figure 1)**.

As shown on **Figure 2**, the property for transfer (herein after referred to as the Property) consists of approximately 640 acres distributed among seven separate tracts of land. Four of the seven tracts of land consist of approximately 456.72 of the 1,189 acres of the Production Area parcel (see definition below), and for the purpose of discussion in this text, are referred to as Production Areas 1, 2, 3, and 4. The remaining three tracts of land are referred to as the Revised East Further Investigation Area (EFIA) consisting of approximately 182 acres, and two cemeteries: Hayner Cemetery (approximately 1.24 acres) and Hope No. 2 Cemetery (0.04 acres). The Property is a Federal enclave that was used mainly for industrial purposes since 1941 and includes approximately 485 acres of undeveloped land. The proposed reuse for the Property is industrial or recreational, consistent with the intended use as a national wildlife refuge.

2.1 Former Production Areas (1, 2, 3 and 4)

The Production Area was a complex of industrial buildings and structures surrounded by open land commonly identified as Buffer Zones that separated the production plants and other support facilities. Historically, the major production areas included Plant 1 which operated only during World War II for the production of trinitrotoluene (TNT); Plant 2 which operated from the 1950's through the 1990's for the production of pyrotechnic items; and Plant 3, which also

operated from the 1950's to 1990's for the production of rocket motors and pyrotechnic items. The Production Area also included support facilities. This ECOP focuses on the portions of Plants 2 and 3 and production area buffer zones which only comprise a part of the overall Production Area that are being transferred to USFWS and are indicated in Figure 2.

The former production areas addressed under this ECOP include: (1) Production Area 1 comprised of selected portions of Plants 2 and 3, a selected portion of the shops area, and associated buffer zones; (2) Production Area 2 consisting of the Waste Disposal Buffer Zone that lies between LHAAP-29 (Former TNT Production Area) and LHAAP-32 (Former TNT Wastewater Treatment Plant); (3) Production Area 3 consisting of the southeastern portion of the Waste Disposal Plant Buffer Zone located immediately south of Plant 3; and (4) Production Area 4 comprised of the Battery Shop and Buffer Zone located south of Plant 3. All buildings have been demolished either to the slab or with concrete walls remaining intact.

Funded by the Army, the USFWS conducted a contaminants investigation of surface soils within the former production area during June 2005. The investigation was conducted within this portion of the Production Area parcel to further evaluate suitability to transfer administrative control from the U.S. Army to USFWS. Surface soil samples collected from 32 locations were analyzed for metals, organochlorine pesticides, polychlorinated biphenyls (PCBs), and perchlorate. The investigative results are documented in a USFWS-prepared report, dated September 2005, and entitled Contaminants Evaluation of Former Production Area Within Caddo Lake Wildlife Refuge, Texas, 2005, Project ID No.1902-2007-2142. Based on the analysis, there were no detectable concentrations of perchlorate in surface soils. Furthermore, USFWS concluded that concentrations of metals, organochlorine pesticides, and PCBs detected in surface soil during this investigation were not at levels likely to adversely affect ecological resources within or adjacent to the Caddo Lake National Wildlife Refuge (CLNWR). USFWS recommended that no further surficial investigation was necessary prior to USFWS assuming administrative control over the acreage sampled within the former production area. The U.S. Environmental Protection Agency (USEPA) Region 6 concurred with this finding in a Memorandum for Site File dated 6 October 2005.

2.2 Revised East Further Investigation Area Parcel

The EFIA property included in this transfer represents a portion of the original 357-acre parcel designated for transfer. It is located east of Plants 2 and 3 as shown on **Figure 2.** The USFWS, funded by the U.S. Army, conducted a contaminants investigation of surface soils during 2002 and 2003 as part of a site-wide evaluation of the CLNWR Overlay Area. USFWS conducted the investigation within portions of LHAAP that were not previously subjected to systematic investigations. Surface soil samples were collected and analyzed for metals, semivolatile organic

compounds, organochlorine pesticides, polychlorinated biphenyls, dioxins/furans, and perchlorate. The results and conclusions from the USFWS site-wide sampling are documented in the two reports: Contaminants Investigation of Western Portions of Caddo Lake National Wildlife Refuge, Texas 2002, Project ID No. 94420-02-Y037 and Contaminants Investigation of Northern, Central, and Eastern Portions of Caddo Lake National Wildlife Refuge, Texas 2003, Project ID No. 1902-2007-21420. Based on these results, USFWS identified three parcels to be excluded from the initial transfer of property that occurred on May 5, 2004 pending additional evaluation. One of these three parcels was identified as the EFIA and is located east of Plants 2 and 3. The initial designation of EFIA consisted of approximately 357 acres.

Investigative evaluations conducted as part of the environmental restoration program at LHAAP indicated the presence of groundwater contamination from an upgradient source (i.e. Plant 3) underlying the western portion of EFIA. The affected area was conservatively estimated at 175 acres. Therefore, the 175-acre western portion of the EFIA is currently considered an exclusion area, will be separately addressed in the future, and is not considered in this ECOP. Analytical data, obtained only from the remaining EFIA acreage, was then statistically evaluated and used for USFWS' determination of the suitability for transferring administrative control of this property.

A review of soil sampling results obtained from the remaining EFIA acreage is documented in a March 2006 Department of the Army memorandum prepared by the Tulsa District U.S. Army Corps of Engineers entitled "Evaluation of 182 acres of the 357-acre East Further Investigation Area, Longhorn Army Ammunition Plant". This study concluded that contaminant concentrations in surface soil within the remaining portion of the EFIA do not present an unacceptable risk to human health and that the revised EFIA is suitable for unrestricted use. With the exception of potential avian risk, the area presents no unacceptable ecological risk. Based on the conservative nature of the ecological screening values used, the impact to potential avian receptors is expected to be negligible. USEPA Region 6 concurred with this conclusion as documented in a letter from Mr. Chris Villarreal dated October 25, 2006. Therefore, the EFIA parcel proposed for transfer consists of a revised delineation representing approximately 182 acres.

2.3 Cemetery Parcels - Hope No. 2 and Hayner

2.3.1 Hope No. 2 Cemetery

A small private cemetery of approximately 0.04 acres is located as shown on **Figure 2** and included with the transfer Property as a separate parcel. This early 20th century cemetery contains four graves and is fenced. Since it is surrounded by the West Further Investigation Area, a parcel that was recently transferred to USFWS, it was previously addressed in ECOP III as "Other Considerations" to disclose its presence and to ensure

that the cemetery remains accessible to the public. Hope No.2 cemetery was incorrectly considered as non-government owned property and therefore excluded from the transfer property proposed under ECOP III. Confirmation of government ownership was made during a recent review of historical documents. Although the government will retain ownership of the property, the Oscar Hope Cemetery Association will continue to manage the cemetery. The Point of Contact for the Oscar Hope Cemetery Association is Mr. Robert Cargill, P.O. Box 992, Longview, Texas 75606 (phone number: 903-757-3322).

2.3.2 Hayner Cemetery

Hayner Cemetery is located in the northwest portion of the former LHAAP, surrounded by CLNWR property as shown on **Figure 2**. It is included with the transfer Property as a separate parcel. It is a historic cemetery of approximately 1.24 acres and contains at least 42 graves dated as early as 1878.

3.0 ENVIRONMENTAL CONDITION OF PROPERTY

The Army has determined the Property's environmental condition through information obtained during the course of a series of environmental investigations that commenced at LHAAP in 1988. These investigations have included: RCRA Facility Assessment, Remedial Investigation, and Phase I and Phase II Site Assessments. The conditions of the Property are comprehensively presented in a February 2005 document entitled: Environmental Site Assessments, Phase I and II Report (ESA), Production Areas, Longhorn Army Ammunition Plant. The ESA meets the requirements of an Environmental Baseline Survey and shall be provided to the USFWS prior to transfer. A comprehensive list of the documents reviewed in determining the environmental conditions of the Property are listed in **Attachment 1**.

3.1 Environmental Condition of Property Categories

The DOD Environmental Condition of Property (ECP) categories for the property are shown in **Figure 3** and are as follows:

ECP Category 1: Approximately 63.34 acres as follows:

- Revised EFIA: 40 acres estimated (including areas where there is no potential for contaminant migration via drainage pathways)
- Production Area 1: 1.27 acres
- Production Area 2: 6.94 acres
- Production Area 3: 13.85 acres
- Hayner Cemetery: 1.24 acres
- Hope No. 2 Cemetery: 0.04 acre

ECP Category 1 is defined as areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).

ECP Category 3: Approximately 576.66 acres as follows:

- Production Area 1: 377.71 acres
- Production Area 4: 56.95 acres
- Revised EFIA: 142 acres (including acreage where there is a potential for limited contaminant migration via drainage pathways)

ECP Category 3 is defined as areas where release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial response.

No release or disposal of hazardous substances occurred at the EFIA as no operations were performed within the EFIA. The presence of elevated lead and mercury concentrations in EFIA soil represent residual concentrations from upgradient sources that are no longer actively contributing. Designation of ECP Category 3 for the EFIA is based solely on limited migration of these hazardous substances into drainages.

A summary of the ECP categories for specific parcels/subparcels are provided in **Table 1** – Description of Property.

Environmental sites adjacent to the Property are summarized in **Table 2** and shown on **Figure 5.**

4.0 ENVIRONMENTAL REMEDIATION SITES AND INFORMATION

Three environmental sites are located on the Property within Production Area 1 as shown on **Figure 4**. These include LHAAP-61 (Water Treatment Effluent Settling Ponds) and selected portions of LHAAP-46 (Plant 2) and LHAAP-47 (Plant 3). The settling ponds received effluent from backwashing water treatment sand filters. There is no evidence that a release or disposal of hazardous substances has occurred at LHAAP-61 and therefore, no remedial action at the site is required. Portions of LHAAP-46 and LHAAP-47 that are proposed for transfer were selected based on no further investigation or remediation required. The selected areas of LHAAP-46 and LHAAP-47 proposed for transfer are primarily located outside of the major production and operation areas of Plants 2 and 3. Remedial activities associated with contaminated soils and groundwater within the excluded portions of LHAAP-46 and LHAAP-47 are underway but all required actions have not yet been taken.

4.1 Storage, Release, or Disposal of Hazardous Substances

There is no evidence that hazardous substances were stored, released, or disposed of on the property in excess of the 40 CFR Part 373 reportable quantities.

4.2 Petroleum and Petroleum Products

4.2.1 Underground and Above-Ground Storage Tanks (UST/AST)

There is no evidence that petroleum or petroleum products were stored in underground or above-ground storage tanks on the Property.

4.2.2 Non-UST / AST

There is no evidence that non-UST/AST petroleum products in excess of 55 gallons were stored for one year or more on the Property.

4.3 Polychlorinated Biphenyls

There is no evidence that PCB-containing equipment is located or was previously located on the Property.

4.4 Asbestos

A base-wide survey was performed and asbestos-containing materials (ACM) identified have been abated. All buildings located on the Property have been demolished; however, some monolithic concrete walls were noted to remain. Therefore, a remaining potential for concealed ACM associated with buildings and underground thermal pipe insulation may be present (e.g. within the building expansion joints and cavities of the remaining monolithic concrete walls and/or underground piping that was not previously identified). The appropriate asbestos notice and covenant for inclusion into the transfer letter is provided in the Environmental Protection Provisions (**Attachment 2**).

4.5 Lead-Based Paint (LBP)

Most of the buildings constructed within the Property were built prior to 1978. Although all buildings have been demolished, slabs and monolithic concrete walls remaining on the Property may still contain some paint on the surfaces of these structures. All remaining painted surfaces should be presumed to contain one or more coats of lead based paint until tested and determined otherwise.

In accordance with the Residential Lead-Based Paint Reduction Act of 1992, the Army does not intend to abate the LBP presumed to be present on these structures because they are not intended to be used as residences. No sampling related to LBP in soil has occurred on the Property. In conformance with DoD policy, the subject property is to be transferred “as is” regarding any

LBP contained in buildings and associated structures. The appropriate LBP notice and covenant for inclusion into the transfer letter is provided in the Environmental Protection Provisions (**Attachment 2**).

4.6 Radiological Materials

There is no evidence that radioactive material or sources were stored or used on the Property.

4.7 Radon

The USEPA assigned Harrison County as a Radon Zone 3 county as it is within an area identified as a low potential for radon. Zone 3 indicates the average short-term radon measurement is expected to be less than 2 pCi/L in a building without the implementation of radon control methods. Although LHAAP is within a county with a predicted low radon potential, radon surveys were conducted at LHAAP for verification. Fifty representative buildings located installation-wide were surveyed between 1991 and 1992. Eight of these buildings surveyed were formerly located on the Property. Radon was not detected at or above the USEPA residential action level of 4 picocuries per liter (pCi/L) in these buildings. All buildings on the Property have been demolished.

4.8 Munitions and Explosives of Concern (MEC)

Munitions and Explosives of Concern (MEC), which distinguishes categories of military munitions that may pose unique explosives safety risks, means: (A) unexploded ordnance (UXO), as defined in 10 U.S.C. §101(e)(5); (B) discarded military munitions (DMM), as defined in 10 U.S.C. §2710(e)(2); or (C) munitions constituents (e.g., TNT, RDX), as defined in 10 U.S.C. §2710(e)(3), present in high enough concentrations to pose an explosive hazard. Three phases of range/site inventory were completed at LHAAP and concluded that the Property does not include any munitions response action sites nor is it known or suspected to contain MEC (EEM, 2002). However, MEC may potentially be present on adjacent property within Plant 2 (LHAAP-46) and Plant 3 (LHAAP-47) where the majority of the chemical mixtures and solid propellants were prepared and illuminants, signals and flares were prepared and assembled. The letter of Transfer will contain the notice for the potential presence of MEC provided in the Environmental Protection Provisions (Attachment 2).

4.9 Other Property Conditions

Although not an environmental issue, there are potential safety hazards associated with pits that remain on-site. Deep pits / holes (up to approximately 8 feet deep) are present on the ground in multiple areas of Plant 2 and Plant 3. These safety hazards are the consequence of building demolition activities performed at these locations.

5.0 ADJACENT PROPERTY CONDITIONS

Sites adjacent to the Property include ECP Category 1, 3, 4, 5, and 6 sites as these categories are defined in the DOD policy memorandum on the categorization of property that is to be transferred under BRAC procedures issued in October 1996. A list of adjacent environmental sites with corresponding ECP categories is presented in Table 2. Remedial investigations/ feasibility studies are currently ongoing for the Category 6 sites adjacent to the Property. Groundwater contamination of volatile organic compounds is present underlying Plant 2 and Plant 3 as depicted in **Figure 6**. The property within Plants 2 and 3 that has underlying groundwater contamination is excluded from this transfer. An extensive groundwater monitoring network has been established. The groundwater gradient is relatively flat and the groundwater plume is slow-moving.

Explosive and reactive materials processing that was conducted at LHAAP included compound of energetic mixtures and Load-Assemble-Package (LAP) operations. These activities were conducted at the various manufacturing areas of the plant. The majority of the chemical mixtures and solid propellants were prepared in Plant 2 (LHAAP-46). The Modernization Area (MOD Area) is on the east side of Plant 2 and was used for the assembly and preparation of illuminants, signals, and flares. Plant 3 (LHAAP-47), the propellant plant, was used for fuel preparation, and mixing, grinding, and casting of propellant mixtures. LAP operations were spread throughout the manufacturing areas.

An inspection of the buildings at LHAAP for contamination from energetic compounds used during the production of weapons and explosives has been completed. All of the buildings were reclassified to 5X[1] and have been demolished. Munitions Constituents (MC)[2] were handled in these buildings and during standard cleanup activities. Small quantities of these materials may have been deposited into cracks or beneath building foundations. Although many of the slabs in the production areas are monolithic and the potential is considered low, there may be concentrations of MC at high enough levels to present an explosive hazard.

There is no indication that potential contamination has migrated from the adjacent sites to the Property.

[1] 5X - Indicates that the equipment or facilities have been completely decontaminated, are free of explosive hazard, and may be released for general use or to the general public.

[2] Munitions Constituents (MC). Any materials originating from unexploded ordnance, discarded military munitions, or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions (10 U.S.C. §2710(e)(3)).

6.0 ENVIRONMENTAL REMEDIATION AGREEMENTS

The LHAAP Federal Facilities Agreement (FFA), effective as of December 30, 1991, by and between the LHAAP, the Texas Water Commission (currently known as the Texas Commission on Environmental Quality (TCEQ)), and the USEPA Region 6 applies to the Property. No further investigation or remedial action is required for the property proposed for transfer. The Letter of Transfer will include a provision reserving the Army's right to conduct remediation activities if necessary in the future.

7.0 GROUNDWATER MONITORING WELLS

The Property proposed for transfer contains 14 monitoring wells as shown on **Figure 6**. A list of monitoring wells including survey information is provided in **Table 3**. The Letter of Transfer will include the groundwater monitoring well notice and covenant provided in the Environmental Protection Provisions **(Attachment 2)**.

8.0 POTENTIAL WETLANDS

An official wetland survey has not been conducted at LHAAP. However, based on the presence of low lying areas associated with Goose Prairie Creek, wetlands are most likely present within the EFIA Property.

9.0 ENDANGERED OR THREATENED SPECIES

No Federally endangered species have been confirmed on the Property proposed for transfer. Following are the Federally listed threatened species that are known or suspected to occur in the vicinity of LHAAP (species that have been confirmed are listed in italics):

Federal Listed Threatened Species:
Bald Eagle
Louisiana Black Bear

Following is a list of State threatened species that are known or suspected to occur in the vicinity of LHAAP. Two State endangered species (in italics) have been confirmed on Longhorn and are potentially present on the Property proposed for transfer:

State Listed Threatened Species:
Louisiana Black Bear
Rafinesque's Big-Eared Bat
Alligator Snapping Turtle
Timber Rattlesnake

Bluehead Shiner

Some evidence is available regarding the potential presence of the Timber Rattlesnake at Longhorn. This State-listed species is described in historical site documents as being confirmed present on the site based on a visual observation documented in 1993. Wildlife experts familiar with the site have indicated that potential habitat suitable for the Timber Rattlesnake is present on site and LHAAP is within this species' historical range. However, there is no recent documented evidence of this species being present on site and it has not been observed by USFWS wildlife personnel stationed at the installation. It is assumed that the Timber Rattlesnake is potentially present **(Shaw, 2006b).**

10.0 ARCHEOLOGICAL PROPERTIES

The Property proposed for transfer contains the Hope No. 2 cemetery which is potentially eligible for inclusion in the National Register of Historic Places. This information was obtained from the review of the Longhorn Army Ammunition Plant Cultural Resources Management Plan (Geo-Marine, Inc., 1996) and the Archeological Survey 319 Hectares at the Longhorn Army Ammunition Plant, Harrison County, Texas (Gadus et. al, 1998). The USFWS will honor its responsibilities under the National Historic Preservation Act and will coordinate all activities in furtherance of its responsibilities with the Texas State Historic Preservation Office, appropriate Federally recognized tribes, and other interested parties. The Letter of Transfer will include the archaeological properties covenant and notice provided in the Environmental Protection Provisions **(Attachment 2)**.

11.0 REGULATORY/PUBLIC COORDINATION

The USEPA Region 6 and TCEQ were provided a copy of the initial Draft Final ECOP IV for review and comment. The USEPA Region 6 comments were addressed and incorporated into the Draft Final ECOP IV (Revision 1). Although TCEQ reviewed the initial document for informational purposes, they did not provide comments since the transfer property will remain under control of the U.S. Government. The USFWS and the Restoration Advisory Board were provided copies of the Draft Final ECOP IV (Revision 1) for review. The U.S. Army announced the availability of the document and invited the public to an information forum. This announcement was made in the Shreveport Times on February 22, 2007 and in the Marshall News Messenger newspaper on February 22, 2007 and March 11, 2007. The public information forum was held on March 13, 2007 within the 30-day public review period beginning on February 22, 2007 and ending on March 23, 2007. No comments were received.

12.0 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) COMPLIANCE

The environmental impacts associated with the proposed transfer of the Property have been analyzed in accordance with the National Environmental Policy Act. The results of this analysis have been documented in the Record of Environmental Consideration (U.S. Army, 2007) which is, in part, supported by a Final Environmental Assessment for establishment of the CLNWR, prepared by the USFWS on September 22, 2000, and the Final Environmental Site Assessment Phase I and II Report for the Production Areas, prepared by Plexus Scientific Corporation, February 2005. There were no encumbrances or condition identified in the NEPA analysis as necessary to protect human health or the environment.

13.0 ENVIRONMENTAL PROTECTION PROVISIONS

On the basis of the above results from the Environmental Baseline Survey and other environmental studies, and in consideration of the intended use of the Property, certain terms and conditions are required for the proposed transfer. These terms and conditions will be set forth in the Environmental Protection Provisions (**Attachment 2**) and will be included in the Letter of Transfer. In the event that the Property or any part thereof, is sold, conveyed, transferred, leased, or otherwise disposed of, the notices, covenants, and restrictions contained in the Environmental Protection Provisions (Attachment 2) shall be inserted in any instrument of conveyance.

14.0 CONCLUSION

Based on the above, the Property is determined to be suitable for transfer to the USFWS. The Property must be kept as a national wildlife refuge unless there is an act of Congress that removes the parcel or the land is exchanged in accordance with the National Wildlife Refuge System Act of 1966 and the National Wildlife Refuge System Act Amendments of 1974. The U.S. Army remains responsible for the completion of the environmental program at LHAAP as provided in the FFA.

Thomas C Lederle

Thomas E. Lederle
Industrial Branch Chief
BRAC Division, ASCIM
United States Army

Attachment 1
References

References

Childress, A.B.,1986, ***Pollution Incident Reports***, Longhorn AAP.

Engineering-Environmental Management, Inc. 2002, ***Final U.S. Army Closed, Transferring, and Transferred Range/Site Inventory for Longhorn Army Ammunition Plant, Texas***, September 15.

Gadus, E.F., Freeman, M.D., and Fields, R.C., 1998, ***Archaeological Survey of 319 Hectares at the Longhorn Army Ammunition Plant, Harrison County, Texas***, June.

Geo-Marine Inc., 1996, ***Draft Longhorn Army Ammunition Plant Cultural Resources Management Plan***, December.

Jacobs Engineering Group, Inc, 2002, ***Final Remedial Investigation Report, Volume 1: Report for Group 4 Sites, Sites 35A, 35B, 35C, 46, 47, 48, 50, 60, and Goose Prairie Creek, Longhorn Army Ammunition Plant, Karnack Texas***, January.

Pertulla, Timothy K. and Bo Nelson, 1999, ***An Archaeological Survey of Harrison Bayou Lease Lands at the Longhorn Army Ammunition Plant, Harrison County, Texas***. Archaeological and Environmental Consultants, Report of Investigation No. 12, Caddo Lake Institute, Aspen Colorado, December.

Plexus Scientific Corporation, 2005, ***Environmental Site Assessment Phase I and II Report, Final, Production Areas***, February. *(Note: This document meets the requirements of an Environmental Baseline Survey)*

Shaw Environmental, Inc., 2006 a, ***Site Investigation Report, LHAAP-59***, ***Draft***, November 2006.

Shaw Environmental, Inc., 2007, ***Installation-Wide Baseline Ecological Risk Assessment, LHAAP, Draft Final,*** January.

Texas Water Commission, 1988, ***RCRA Facility Assessment Conducted by Texas Water Commission, April 8***.

U.S. Army, 2007***, Record of Environmental Consideration for Proposed Transfer Addressed in ECOP IV***, March.

U.S. Army Corps of Engineers, 2006, ***Evaluation of 182 Acres of the 357-Acre East Further Investigation Area, Longhorn Army Ammunition Plant,*** March.

U.S. Fish and Wildlife Service, 2003, ***Contaminants Investigation of Northern Central and Eastern Portions of Caddo Lake National Wildlife Refuge***, Texas, November (http://www.fws.gov/southwest/es/arlingtontexas/pdf/LHAAP_Final_Report.pdf).

U.S. Fish and Wildlife Service, 2005, ***Contaminants Investigation of Former Production Area Within CaddoLake National Wildlife Refuge, Texas,*** September (http://www.fws.gov/southwest/es/arlingtontexas/pdf/CLNWR_Report_2005.pdf).

Villarreal, Chris, 2005. ***USEPA Region 6, Memorandum for Site File, LHAAP. Subject: EPA Evaluation of the U.S. Fish and Wildlife's Contaminants Investigation of the Former Production Area within the Caddo Lake National Wildlife Refuge***, October 6.

Villarreal Chris, 2006. ***USEPA Region 6, letter to Ms. Rose M. Zeiler, LHAAP. Subject: Evaluation of the East Further Investigation Area***, October 25.

Attachment 2
Environmental Protection Provisions

ATTACHMENT 2

Environmental Protection Provisions

The following conditions, restrictions, and notifications will be incorporated by reference into the Letter of Transfer from the Department of the Army to the Department of Interior (DOI) to ensure the protection of human health and the environment and in furtherance of ongoing and completed remediation activities at the Property.

Inclusion of Provisions:

The Federal agency to whom the Property is transferred shall neither transfer the Property, lease the Property, nor grant any interest, privilege, or license whatsoever in connection with the Property without the inclusion of the environmental protection provisions contained herein, and shall require the inclusion of such environmental protection provisions in all further deeds, transfers, leases, or grant of any interest, privilege, or license, unless there is a specific legal finding authorizing a change and specifically addressing any liabilities that will result from the change. The Property must be kept as a national wildlife refuge unless there is an act of Congress that removes the parcel or the land is exchanged in accordance with the National Wildlife Refuge System Act of 1966 and the National Wildlife Refuge System Act Amendments of 1974.

Federal Facilities Agreement:

The U.S. Army acknowledges that portions of Longhorn Army Ammunition Plant have been identified as National Priorities List (NPL) sites under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended. The USFWS acknowledges that the U.S. Army has provided it with a copy of the LHAAP Federal Facility Agreement (FFA) dated December 30, 1991 and will provide the USFWS with a copy of any amendments thereto. The USFWS, its successors and assigns, agree that should any conflict arise between the terms of the FFA as they presently exist or may be amended, and the provisions of this property transfer, the terms of the FFA will take precedence. The USFWS, its successors and assigns, further agree that notwithstanding any other provisions of the transfer, the U.S. Army assumes no liability to the USFWS, its successors and assigns, should implementation of the FFA interfere with the use of the Property. The USFWS, its successors and assigns, shall have no claim on account of any such interference against the U.S. Army or any officer, agent, employee or contractor thereof.

No Liability for Non-Army Contamination:

The U.S. Army shall not incur liability for response action or corrective action found to be necessary after the date of transfer, in any case in which the Federal agency to whom the Property is

transferred, or other non-Army person or entity, is identified as the party responsible for contamination of the Property.

CERCLA Access Notice:

The USEPA and TCEQ and their officers, agents, employees, contractors, and subcontractors have the right, upon reasonable notice to the USFWS, to enter upon the Property in any case in which a response action or corrective action is found to be necessary after the date of transfer of the Property, or such access is necessary to carry out a response action or corrective action on adjoining property, including, without limitation, the following purposes:

To conduct investigations and surveys, including, where necessary, drilling, soil and water sampling, testing-pitting, test soil borings and other activities;

To inspect field activities of the U.S. Army and its contractors and subcontractors;

To conduct any test or survey related to the environmental conditions at the transferred Property or to verify any data submitted to the USEPA or TCEQ by the U.S. Army relating to such conditions;

To construct, operate, maintain or undertake any other response or remedial actions as required or necessary including, but not limited to, monitoring wells, pumping wells and treatment facilities.

Notice of the Presence of Asbestos and Covenant

A. The Grantee is hereby informed and does acknowledge that friable and non-friable asbestos-containing material ("ACM") has been found on the Property. Although all buildings have been demolished, the Property may contain other improvements such as equipment, facilities, and pipelines, above and below the ground, that contain non-friable asbestos or ACM. The Occupational Safety and Health Administration and the Environmental Protection Agency have determined that such unprotected or unregulated exposure to airborne asbestos fibers increases the risk of asbestos-related diseases, including certain cancers that can result in disability or death.

B. The Grantee covenants and agrees that its use and occupancy of the Property will be in compliance with all applicable laws relating to asbestos. The Grantee agrees to be responsible for any remediation or abatement of asbestos found to be necessary on the Property, to include ACM in or on buried pipelines, that may be required under applicable law or regulation.

C. The Grantee acknowledges that it has inspected or has had the opportunity to inspect the Property as to its asbestos and ACM condition and any hazardous or environmental conditions relating thereto. The Grantee shall be deemed to have relied solely on its own judgment in assessing the overall condition of all or any portion of the Property, including, without limitation, any asbestos or ACM hazards or concerns.

Notice of the Presence of Lead-Based Paint and Covenant Against the Use of Property for Residential Purpose

A. All of the buildings located on the Property have been demolished; however, the Grantee is hereby informed and does acknowledge that all remaining structures (i.e., monolithic walls, slabs, equipment, etc.) on the Property, which were constructed or rehabilitated prior to 1978, are presumed to contain lead-based paint. Lead from paint, paint chips, and dust can pose health hazards if not managed properly. Every purchaser of any interest in Residential Real Property on which a residential dwelling was built prior to 1978 is notified that there is a risk of exposure to lead from lead-based paint that may place young children at risk of developing lead poisoning.

B. The Grantee covenants and agrees that it shall not permit the occupancy or use of any structures on the Property as Residential Property, as defined under 24 Code of Federal Regulations Part 35, without complying with this section and all applicable Federal, State, and local laws and regulations pertaining to lead-based paint and/or lead-based paint hazards. Prior to permitting the occupancy of the Property where its use subsequent to sale is intended for residential habitation, the Grantee specifically agrees to perform, at its sole expense, the Army's abatement requirements under Title X of the Housing and Community Development Act of 1992 (Residential Lead-Based Paint Hazard Reduction Act of 1992).

C. The Grantee acknowledges that it has inspected or has had the opportunity to inspect the Property as to its lead-based paint content and condition and any hazardous or environmental conditions relating thereto. The Grantee shall be deemed to have relied solely on its own judgment in assessing the overall condition of all or any portion of the Property, including, without limitation, any lead-based paint hazards or concerns.

Notice of the Potential for the Presence of Munitions and Explosives Concern, and Covenant:

Based upon a review of existing records and available information, none of the land proposed for transfer is known or suspected to contain munitions and explosives of concern (MEC). The term MEC means specific categories of military munitions that may pose unique explosives safety risks and includes: (1) Unexploded Ordnance (UXO), as defined in 10 U.S.C. §101(e)(5); (2) Discarded military munitions (DMM), as defined in 10 U.S.C. §2710(e)(2); or (3) Munitions constituents (e.g., TNT, RDX), as defined in 10 U.S.C. §2710(e)(3), present in high enough concentrations to pose an explosive hazard. In the event that USFWS, its successors, or assign should discover any MEC on the Property, they shall immediately stop any intrusive or ground-disturbing work in the area or in any adjacent areas and shall not attempt to remove or destroy it, but shall immediately notify the Harrison County Sheriff's Department (phone number: 903-923-4000), so that appropriate explosive ordnance disposal personnel can be dispatched to address such MEC as required under applicable law and regulations. An alternate contact is the City of Marshall Fire Department (phone number: 903-938-6711). Local authorities must contact the U.S. Army's 705th Explosives Ordnance Detachment (EOD) at Fort Polk, LA (phone number: 337-531-5502; the 24-hour emergency phone number is 337-531-5505).

Notice of Groundwater Monitoring Wells Covenant:

a. The USFWS is hereby informed and does acknowledge the presence on the Property of fourteen groundwater monitoring wells that may be necessary for the U.S. Army to complete monitoring after the date of transfer of title to the Property, or portions thereof.

b. Promptly upon the determination by the U.S. Army that a well is no longer necessary for monitoring, the Army will close such well at the Army's sole cost and expense in accordance with applicable laws, regulations, and ordinances.

Notice of Archaeological Property and Preservation Covenant:

In consideration of the conveyance of the real property that includes one archaeological property, 41HS485, the Hope No. 2 cemetery, located in the County of Harrison, Texas, the USFWS hereby covenants to the Texas State Historic Preservation Officer on behalf of itself, its heirs, successors, and assigns to, at all times, maintain and preserve all archaeological properties. The USFWS will honor its responsibilities under the National Historic Preservation Act and will coordinate all activities in furtherance of its responsibilities with the Texas State Historic Preservation Office, appropriate Federally recognized tribes, and other interested parties.

Conditions, Restrictions, and Covenants Binding and Enforceable:

These restrictions and covenants are binding on the USFWS, its successors and assigns, and shall be included in subsequent deeds; shall run with the land; are forever enforceable; shall benefit the public in general and the territory surrounding the Property, including lands retained by the U.S. Army; and shall further the common environmental objectives of the U.S. Army and the State of Texas and are therefore enforceable by the U.S. Army and the State of Texas.

Tables

TABLE 1 – DESCRIPTION OF PROPERTY
LONGHORN ARMY AMMUNITION PLANT (LHAAP), KARNACK, TEXAS

PARCEL	Site / Building Designation	Property Description	ECP Category	Remedial Actions
Production Area 1 (378.71 acres)	Portion of LHAAP-46 / Plant 2	LHAAP-46 encompasses Plant 2 which was used for pyrotechnic operations, including the mixing of pyrotechnics and illuminants. The compounds used include fuels, oxidizers, binders, and solvents. The Plant originally operated from 1952 to 1956. It was reactivated from 1963 to 1997. The portion of LHAAP-46 proposed for transfer does not include acreage where the former pyrotechnic production buildings were located and where the majority of pyrotechnic operations occurred.	3	A release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action. During June 2005, USFWS collected additional surface samples to further evaluate the suitability to transfer administrative control from the U.S. Army to the USFWS. Surface soils were analyzed for metals, organochlorine pesticides, polychlorinated biphenyls (PCBs), and perchlorate. Analytical results of surface soils obtained from this subparcel indicated elevated concentrations of several metals but at levels that do not pose an unacceptable risk to human health or the environment. The LHAAP-46 portion proposed for transfer does not have contaminated soils requiring remediation nor does it have underlying groundwater contamination.
	LHAAP-61	The potable water treatment plant effluent settling ponds consisted of two adjacent ponds each 0.1 hectares by 1.5 meters deep. The ponds were lined with synthetic waterproof sheeting with soil cover.	1	No evidence indicates a release or disposal of hazardous substances has occurred. The purpose of the settling ponds was to settle out solids from the backwash of the sand filters from the potable water treatment plant. Findings of the U.S. Army's PA in 1988 concluded that No Further Action is appropriate and received regulatory concurrence.

PARCEL	Site / Building Designation	Property Description	ECP Category	Remedial Actions
Production Area 1 (continued)	Portion of LHAAP-47 / Plant 3	LHAAP-47 encompasses Plant 3 which was used to produce rocket motors from 1953 to 1973. The plant was also used for production of pyrotechnic and illumination devices through 1997. In 1966, several buildings were used for production of anti-intrusion mines. The portion of LHAAP-47 proposed for transfer does not include acreage where any former production buildings were located.	3	A release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action. During June 2005, USFWS collected additional surface samples to further evaluate the suitability to transfer administrative control from the U.S. Army to the USFWS. Surface soils were analyzed for metals, organochlorine pesticides, polychlorinated biphenyls (PCBs), and perchlorate. Analytical results of surface soils obtained from this subparcel indicated elevated concentrations of several metals but at levels that do not pose an unacceptable risk to human health or the environment. The LHAAP-47 portion proposed for transfer does not have contaminated soils requiring remediation nor does it have underlying groundwater contamination.
Production Area 2 (6.94 acres)		Portion of Waste Disposal Buffer zone that lies between LHAAP-29 and LHAAP-32	1	No release or disposal of hazardous substances or petroleum products has occurred.
Production Area 3 (13.85 acres)		Southeast portion of Waste Disposal Buffer Zone that lies immediately south of Plant 3	1	No release or disposal of hazardous substances or petroleum products has occurred.

PARCEL	Site / Building Designation	Property Description	ECP Category	Remedial Actions
Production Area 4 (56.95 acres)		Battery Shop and Buffer Zone located south of Plant 3	3	A release, disposal, and/or migration of hazardous substances occurred, but at concentrations that do not require a removal or remedial action. An elevated fire protection water storage tank 19-I was formerly located within this parcel. During 1986, a mercury spill occurred when instruments and valves in a buried concrete vault were removed. Approximately 3-4 gallons of mercury and mercury-contaminated mud was collected and removed. The Pollution Incident Report specified that the spill was contained in the concrete structure. USFWS sampling performed during June 2005 indicated elevated concentrations of several metals but at levels that do not pose an unacceptable risk to human health or the environment.
Revised EFIA (183.14 acres)		This buffer zone for the production area consists of heavily wooded land, creeks, and wetlands. Although the original designation of EFIA consisted of approximately 357 acres, approximately 175 acres of the western portion of the EFIA is excluded from this Property transfer and will be separately addressed in the future.	3	A release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action. During March and April 2003, surface soil and sediment samples were obtained and analyzed for metals, organochlorine pesticides, polychlorinated biphenyls (PCBs), and perchlorate. Analytical results indicated elevated concentrations of lead and mercury. The presence of elevated concentrations of lead and mercury represent residual concentrations from upgradient sources that are no longer actively contributing. No release or disposal of hazardous substances occurred as no operations were performed at the EFIA. Designation of ECP Category 3 is based solely on limited migration of these hazardous substances.

PARCEL	Site / Building Designation	Property Description	ECP Category	Remedial Actions
Revised EFIA (continued)			1	No release or disposal of hazardous substances or petroleum products has occurred. Approximately 40 acres of the 183.14-acre EFIA is estimated not to have a potential for migration of hazardous substances via drainage pathways.
Hayner Cemetery (1.24 acres)		A historic cemetery containing at least 42 graves dated as early as 1878	1	No release or disposal of hazardous substances or petroleum products has occurred.
Hope No. 2 Cemetery (0.04 acres)		An early 20th century cemetery containing four graves	1	No release or disposal of hazardous substances or petroleum products has occurred.

Note: Environmental Conditions of the Property are defined as follows:

Category 1: Areas where no release or disposal of hazardous substances or petroleum products has occurred.

Category 2: Areas where only release or disposal of petroleum products has occurred.

Category 3: Areas where release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial action.

Category 4: Areas where release, disposal, and/or migration of hazardous substances has occurred, and removal or remedial actions to protect human health and the environment have been taken.

Category 5: Areas where release, disposal, and/or migration of hazardous substance has occurred, and removal or remedial actions are underway but all required remedial actions have not yet been taken.

Category 6: Areas where releases, disposal, and/or migration of hazardous substances have occurred but required actions have not yet been implemented.

Category 7: Areas that are not evaluated or require additional evaluation.

Table 2
Adjacent Properties
Longhorn Army Ammunition Plant, Karnack, Texas

Site No.	Site Name	ECP Category
LHAAP-1	Inert Burn Grounds	3 (This site transferred and addressed in ECOP I)
LHAAP-2	Vacuum Truck Overnight Parking	3
LHAAP-3	Waste Collection at Paint Shop Building 722	6
LHAAP-8	Sewage Treatment Plant	3
LHAAP-29	Former TNT Production Area (includes LHAAP-22, TNT Redwater Pipeline)	5
LHAAP-32	Former TNT Waste Disposal Plant	3
LHAAP-35	Sumps (145 Various)	5[(a)]
LHAAP-46	Plant 2 – portion excluded from transfer	5
LHAAP-47	Plant 3 –portion excluded from transfer	5
LHAAP-51	Silver Recovery Unit Building 60-B	1 (Site is undergoing additional investigation & evaluation)
LHAAP-58	Maintenance Complex	6[(b)]
LHAAP-59	Insecticide Storage Building 725	3
LHAAP-65	Building 209	4 Investigated as part of LHAAP-35
LHAAP-67	Above-Ground Storage Tanks	5

Notes

a. LHAAP-46 and LHAAP-47 sumps are addressed under LHAAP-35

b. LHAAP-2 and LHAAP-3 are addressed under LHAAP-58

.

TABLE 3 – Groundwater Monitoring Well Locations

Monitoring Well ID	Installation Date	Depth (feet)	State Plane Coordinate System, Texas North Central (4202), NAD 83, feet	
			Easting X_Coordinate	Northing Y_Coordinate
08WW02	11/29/2000	19	3310710.3	6957877.1
67WW05	11/30/2000	27	3311098.6	6957107.9
LHSMW04	8/23/1994	30	3305398.1	6960186.0
LHSMW08	8/25/1994	47	3306617.0	6961325.2
LHSMW09	8/31/1994	24	3306348.7	6961075.0
LHSMW10	8/27/1994	19	3305667.2	6960861.2
LHSMW11	8/26/1994	27	3305792.9	6961100.9
LHSMW14	8/27/1994	18	3303936.0	6962600.8
LHSMW15	8/31/1994	22	3304452.0	6962630.7
LHSMW21	9/7/1994	27	3306499.5	6963621.1
LHSMW26	9/9/1994	37	3307440.0	6962398.2
LHSMW28	9/19/1994	17	3307687.7	6960929.5
LHSMW30	9/19/1994	19	3308292.4	6960875.5
LHSMW38	9/12/1994	28	3308183.9	6961505.7

Figures

00113809

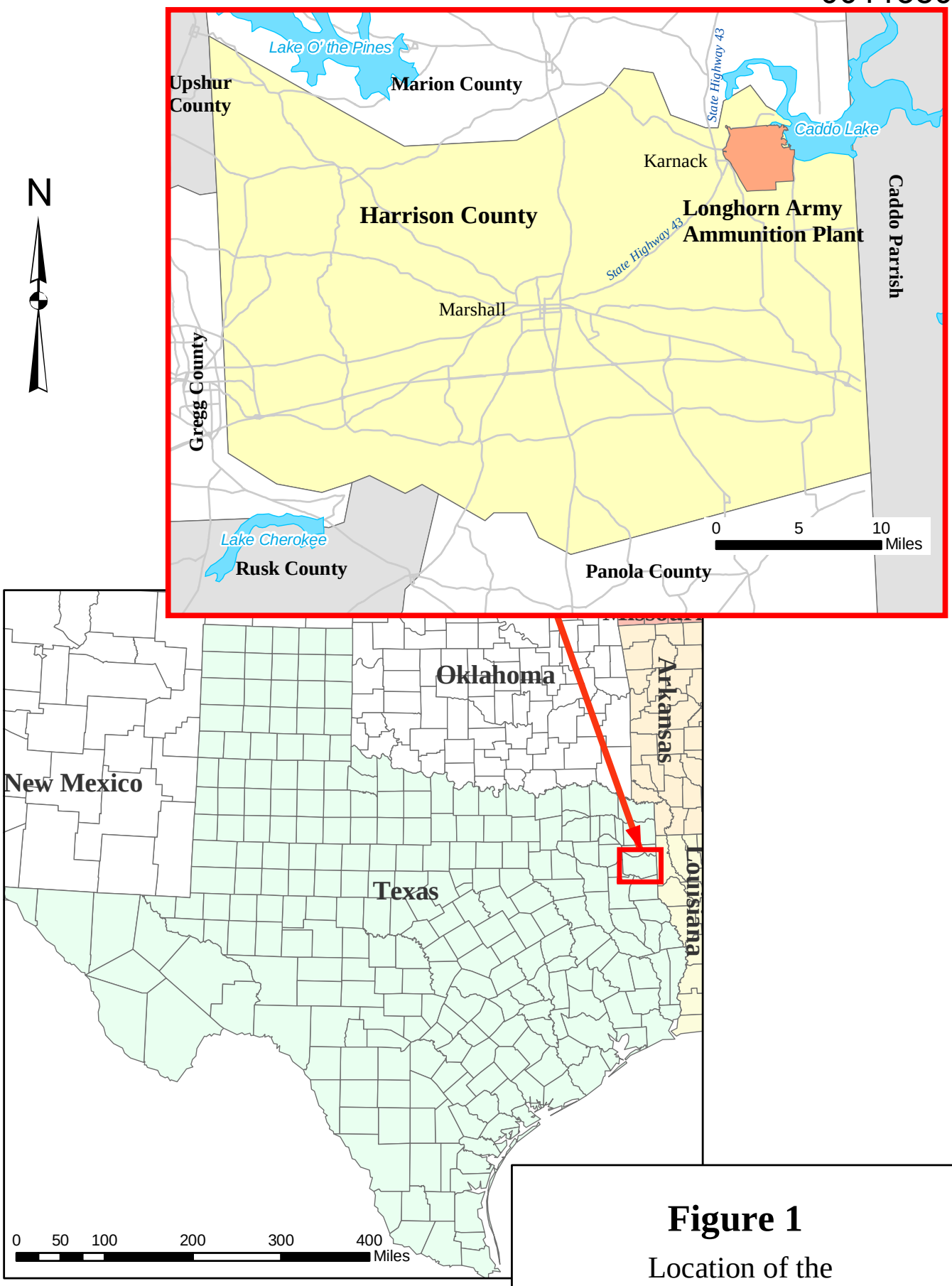
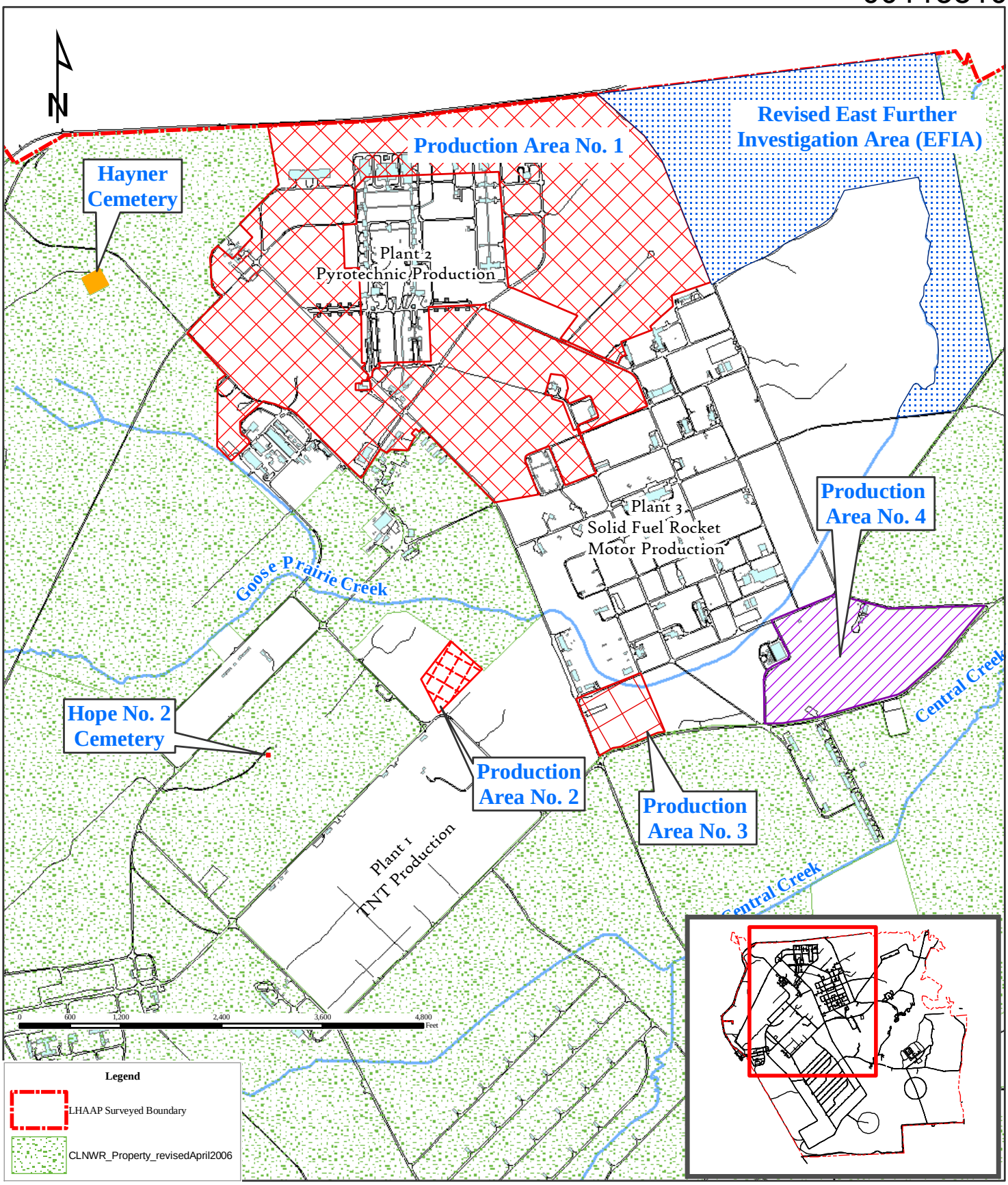


Figure 1

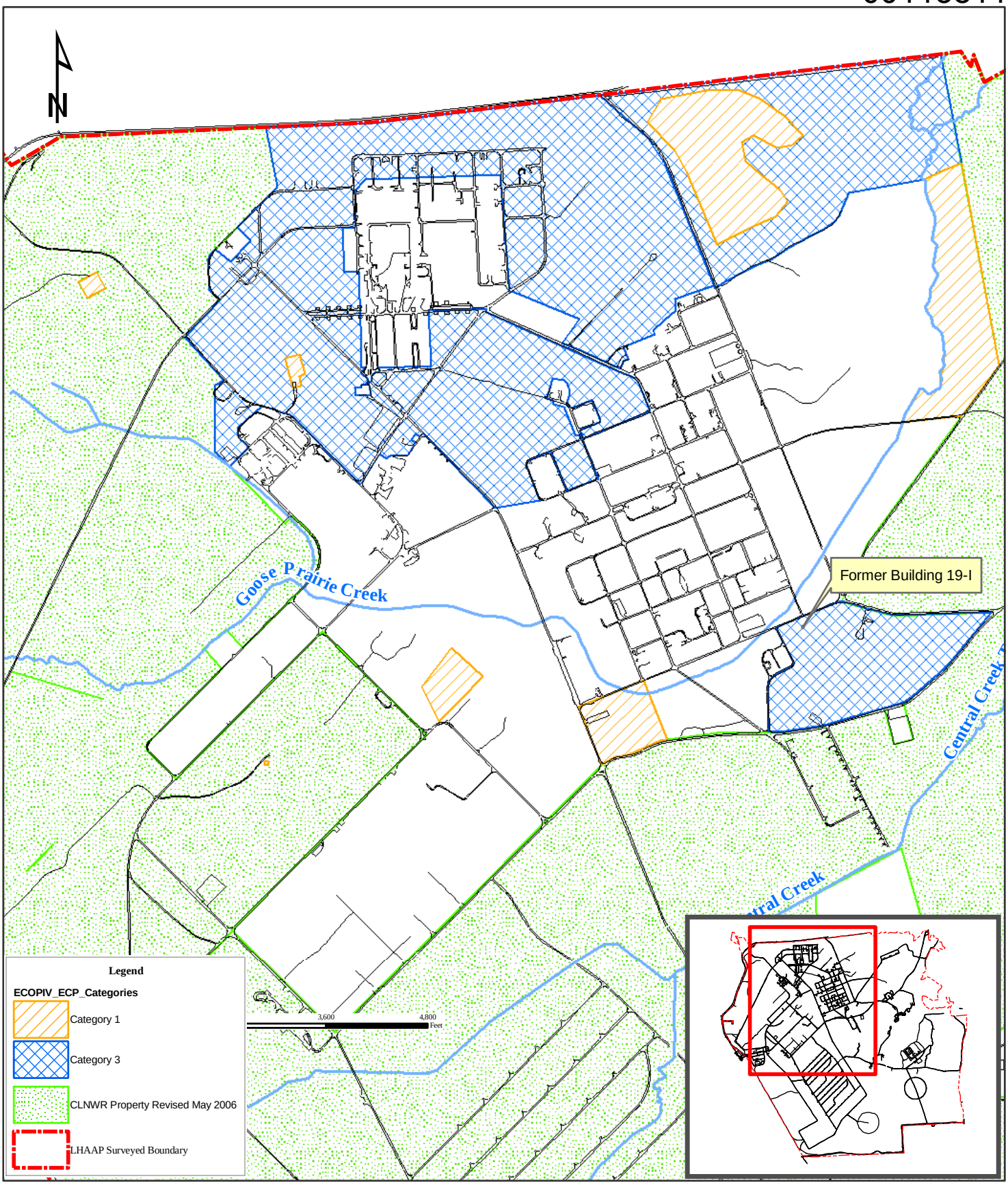
Location of the
Longhorn Army Ammunition Plant
Harrison County, Texas



LONGHORN ARMY AMMUNITION PLANT

ENVIRONMENTAL CONDITION OF PROPERTY (ECOP) IV

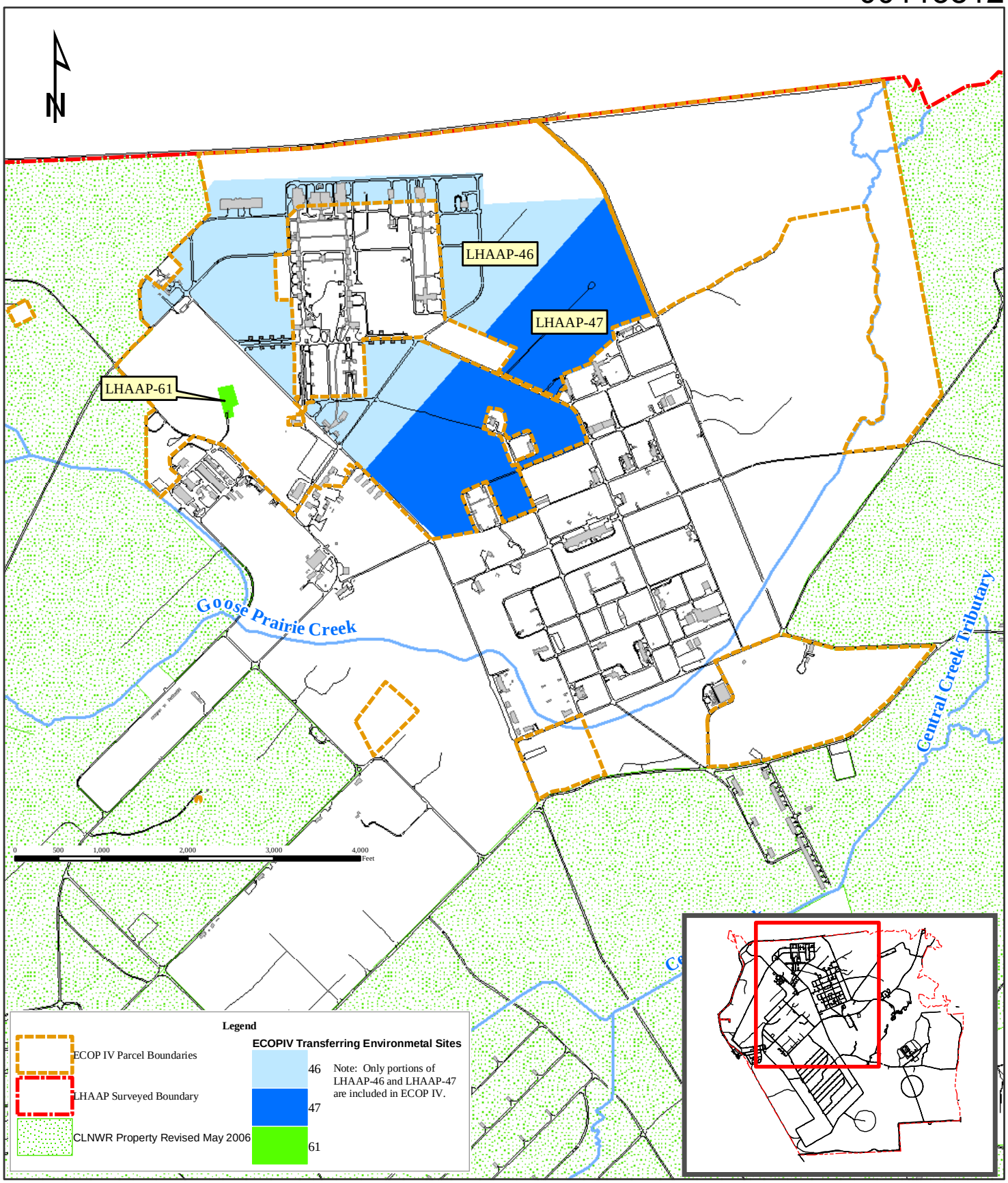
FIGURE 2. Location of Proposed Transfer Property



LONGHORN ARMY AMMUNITION PLANT

ENVIRONMENTAL CONDITION OF PROPERTY (ECOP) IV

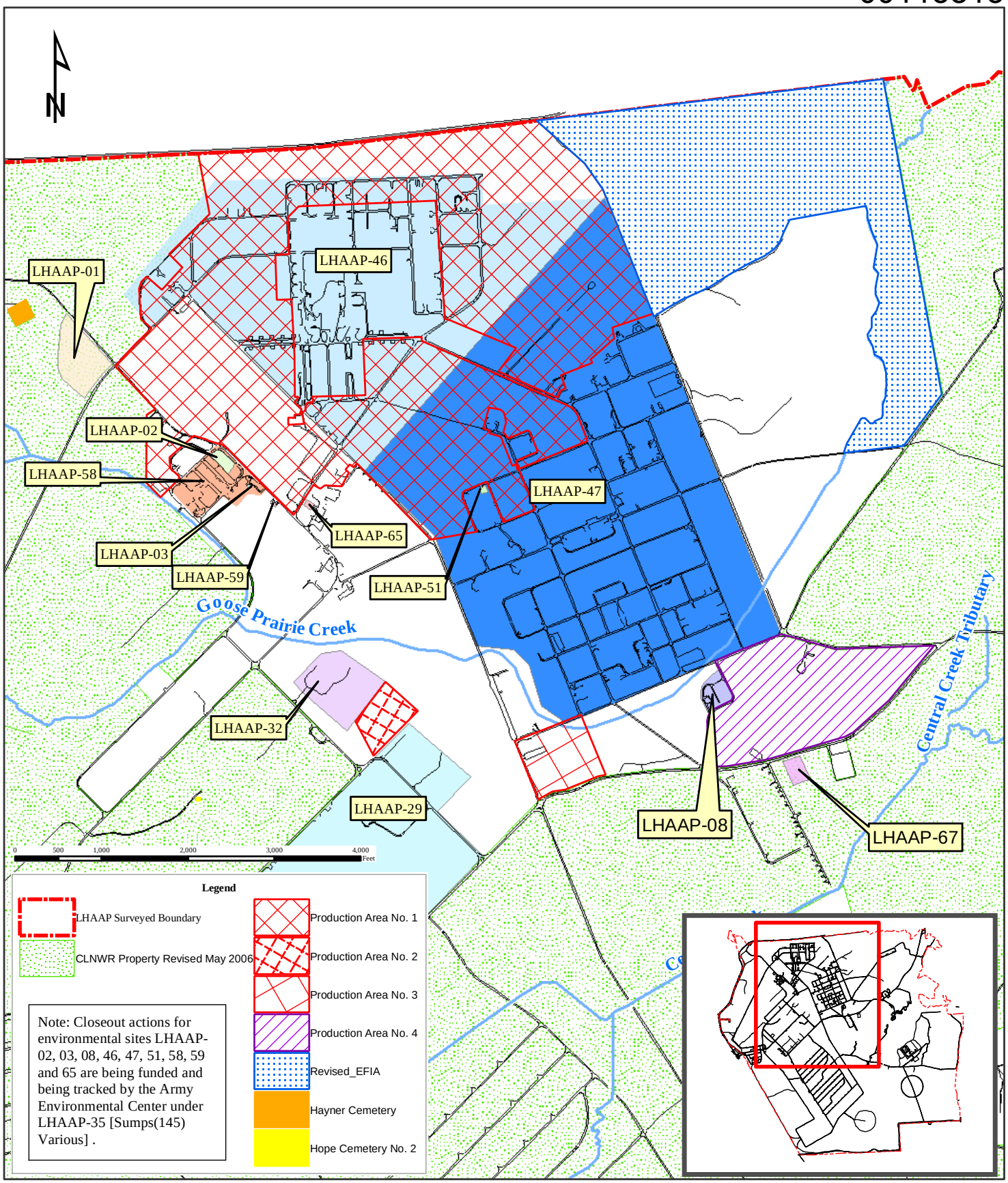
FIGURE 3. ECP Categories of ECOP IV Property



LONGHORN ARMY AMMUNITION PLANT

ENVIRONMENTAL CONDITION OF PROPERTY (ECOP) IV

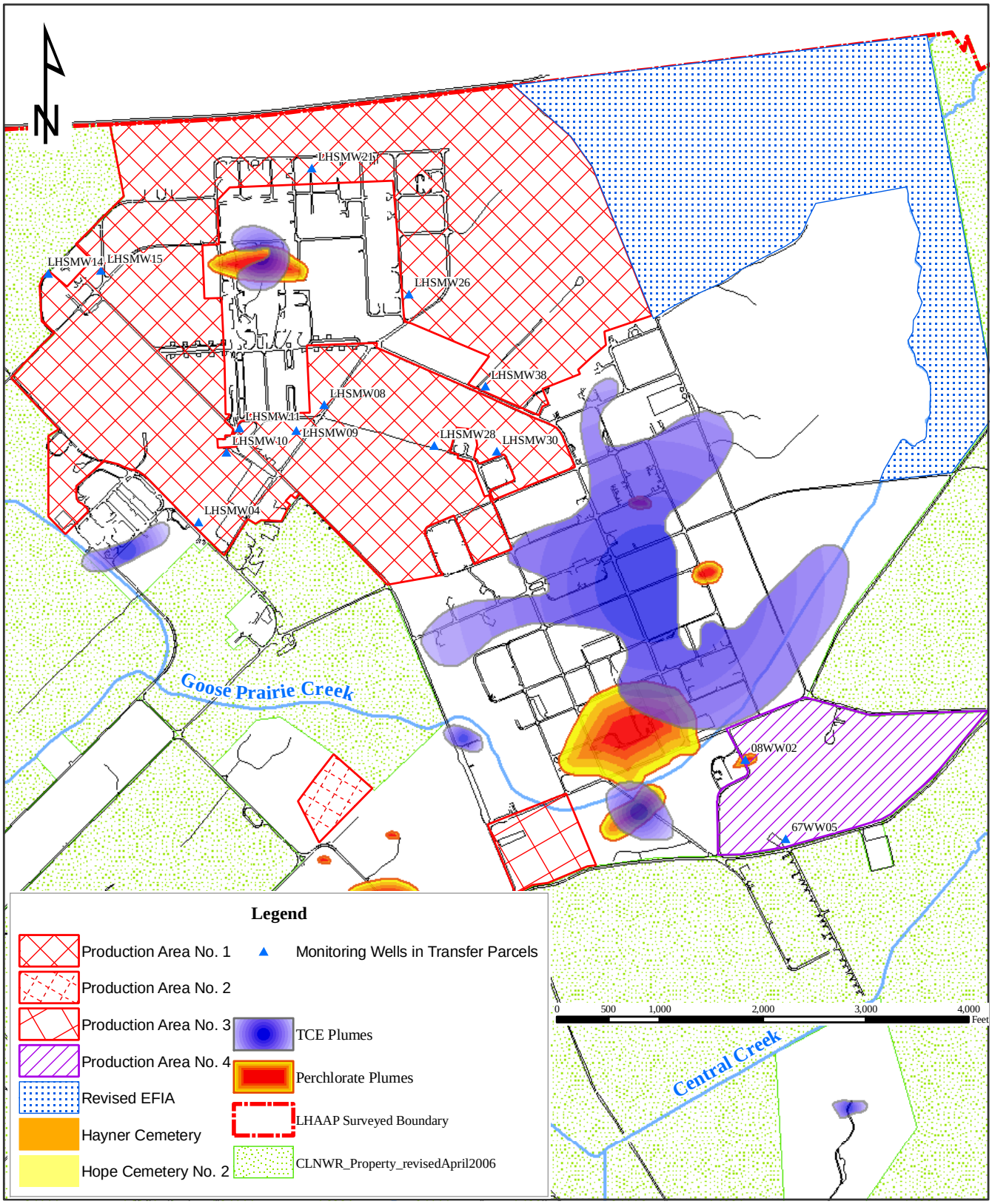
Figure 4. Transferring Environmental Sites



LONGHORN ARMY AMMUNITION PLANT

ENVIRONMENTAL CONDITION OF PROPERTY (ECOP) IV

Figure 5. Adjacent Environmental Sites



LONGHORN ARMY AMMUNITION PLANT

Environmental Condition of Property (ECOP) IV

Figure 6. Existing Monitoring Wells on Proposed Transfer Property
Trchloroethene (TCE) and Perchlorate Plumes Indicated

30990 Longhorn Army Ammunition

Unit Number	Unit Type	Unit Status	Date of Status	Classes of Waste Managed in Unit Onsite / Offsite	Unit Permit Number	Unit # on Permit	Regulatory Status	Deed Recording Needed/Date

** 'Inactive', 'Closed', 'Post Closure Care', 'Never Built' & 'Not Required' Units **

Description from Company: East Burning Cage
Capacity: 1.0000 Capacity Unit of Measure: U
System Types:
Biennial System Regulatory Status: Regulatory status unknown
Wastes Previously Managed in Unit: 0024316H 0029509H 0030303H 0075405H 00769011 00964032 0097219H 0098219H 0104315H 0105210H 0117609H
181450 951270 981450

---

004 Surface Impoundment Closed 07/01/02 1/ NA NA NA NA /
System Types: 141 Storage, bulking, and/or transfer off-site - no tr
Biennial System Regulatory Status: Regulatory status unknown
Wastes Previously Managed in Unit: 201560

---

007 Contain Store Area Closed 10/14/99 / NA NA OOZ RCRA Permitted NA /
Description from Company: Bldg 49-W
Capacity: 72500.0000 Capacity Unit of Measure: E
System Types: 010 Metals recovery including retorting, smelting, che
Biennial System Regulatory Status: Regulatory status unknown
Wastes Previously Managed in Unit:

0030303H	00383082	00393081	0040309H	00563032	00689012	01024891	01143031	113050	114210	150030
171060	171580	173240	177090	177530	179390	180400	182280	280590	370330	370360
370370	370520	370910	371290	900670	902700	903230	904120	904410	905340	905350
908910	909110	910140	910640	911150	911980	912030	912900	913250	913490	913860
916250	917260	917500	940470	942490	952620	970260	970503	971120	973080	974270
974530	974610	975930	976240	978030	978400	978850	980450	982810	984820	985710
989810	990005	990001	993051	993052	993092	998160				

---

008 Contain Store Area Closed 11/18/99 1 2 H/ NA NA 001 RCRA Permitted NA /
Description from Company: Bldg. 31-W
Capacity: 88000.0000 Capacity Unit of Measure: G
System Types: 141 Storage, bulking, and/or transfer off-site - no tr
Biennial System Regulatory Status: Regulatory status unknown
Wastes Previously Managed in Unit:

0007219H	0009219H	0010212H	0011212H	00121011	0013519H	00142101	00152031	00164971	00174961	0025106H
00262961	00281131	0029509H	0030303H	00313011	00334031	00344091	00354091	00364002	00374091	00393081
0040309H	00412961	00422061	00433101	0044202H	00459020	0047104H	0050203H	0051202H	0052202H	0053203H
0054203H	0055204H	0057212H	0058101H	0059101H	0060219H	0061201H	0062203H	0063219H	00704071	00713941
0072119H	00772191	00782191	00792191	0080105H	0081203H	0082209H	0083319H	00842121	00862191	00872121
0090204H	0091203H	0092202H	00932971	00942981	0095219H	00964032	00993191	0100696I	01016081	0103203H
0105210H	01072091	0108319H	01093193	01122191	01132191	01143031	0115212H	0116302H	0117609H	0118203H
0119203H	0120202H	101690	108320	110121	110450	110720	110910	111050	114210	114410
114950	149970	150030	150480	177090	177530	178160	179430	182280	184990	900050
900060	900070	900410	900670	901390	901690	902700	903230	903270	905350	905420
906810	908210	909110	910050	910060	910070	910110	910140	910450	910620	910640
910720	910750	910850	910870	910910	911150	911670	911980	912010	912030	912570
912850	912900	912920	913050	913180	913220	913230	913250	913260	913290	913490
913650	913700	913860	914380	914950	915010	915700	916250	917140	917180	917260
917340	917540	918670	919540	920010	920170	920180	940470	942490	951240	952620
970503	971120	973080	974270	974610	975930	976240	978030	978400	978850	980960
980450	982810	984220	984820	985810	990005	990007	993051	993052	993092	993102
993158	993160									

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

February 15, 2012

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Ms. Lynne Anderson
Assistant Chief of Staff for Installation Management
Department of the Army
600 Army Pentagon
Washington, DC 20310-0600

Ms. Beth Seaton (MC 225)
Director, Remediation Division
Texas Commission on Environmental Quality (TCEQ)
P.O. Box 13087
Austin, TX 78711-3087

Re: Written Statement of Agreements and Stipulated Penalties
Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas
Federal Facility Agreement (FFA) Under CERCLA Section 120

Dear Ms. Anderson and Ms. Seaton:

By this letter, the United States Environmental Protection Agency (EPA), Region 6 is submitting its final offer to the Dispute Resolution Committee (DRC) in an attempt to unanimously resolve this dispute, as provided in Section XV (Dispute Resolution) of the FFA. By signing the eight (8) Written Statements of Agreement enclosed herein, the DRC would effectively put an end to this dispute resolution proceeding.

This letter also notifies the United States Army (Army) that stipulated penalties will again begin to run for each of the four (4) operable units (i.e., LHAAP-16, LHAAP-17, LHAAP-001-R-01 MMRP, and LHAAP-003-R-01 MMRP) subject to this dispute, absent an agreement resolving in full the issues affecting that operable unit. I want to reiterate that EPA invoked dispute resolution on October 27, 2011, out of an abundance of caution. Section XV (Dispute Resolution) of the FFA requires the parties to invoke dispute resolution within thirty (30) days after submission of a draft final primary document. Although EPA invoked dispute resolution, EPA demonstrated its willingness to review revised documents/language (e.g., the Army's November 17, 2011, revised final draft Record of Decision (RODs); the Army's January 13, 2012, email response to proposed language submitted by EPA) in an effort to resolve this matter. EPA also demonstrated a willingness to draft proposed language/documents (e.g., December 23, 2011, EPA Letter and Revised ROD for LHAAP-16; January 9, 2012, EPA email with proposed language) for the DRC's review and approval.

The DRC members spent many hours attempting to reach a resolution for this dispute. During the months of October, November and December 2011, and January 2012, the DRC and assigned staff participated in conference calls, telephone discussions, letter and email communications exchanging

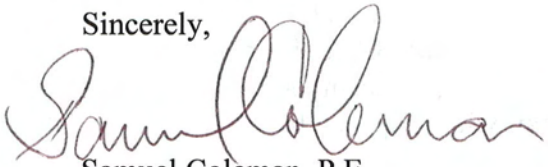
proposals, and a November 30, 2011, meeting as part of an effort to resolve the disputed issues. Although substantial progress has been made on several disputed issues, the time has come to agree to resolve all disputed issues. As such, the enclosed eight (8) Written Statements of Agreement represent a viable and reasonable approach to resolving this dispute in a manner that conforms to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Contingency Plan (NCP), and EPA Policy. Such an agreement by the DRC would result in the finalization of RODs that are both protective of human health and the environment, and in compliance with Section XIX (Selection, Design, and Implementation of Remedial Actions) of the FFA. If the DRC does not unanimously agree to resolve this dispute, Section XV (Dispute Resolution) provides that the dispute issues shall be forwarded to the Senior Executive Committee.

Per the EPA's October 13, 2011, Notice of Violations and Penalty Assessment letter and the Stipulated Penalties (Section XXIV) provisions of the FFA, EPA may take enforcement action resulting in stipulated penalties if the Army fails to submit primary documents, such as RODs, pursuant to the appropriate timetable or deadline in accordance with the requirements of the FFA, or fails to comply with a term or condition of the FFA which relates to an operable unit or final remedial action. Section XXIV (Stipulated Penalties) of the FFA does not require EPA to engage in informal or formal dispute resolution before assessing a stipulated penalty. As provided above, the DRC engaged in substantial efforts to resolve the disputed issues underlying the assessment of stipulated penalties. To date, such efforts have failed to yield a final resolution. Consistent with the October 13, 2011, written notification and an October 18, 2011, meeting, stipulated penalties commenced on September 30, 2011. At the close of the November 30, 2011, DRC meeting, EPA stayed the running of stipulated penalties on November 30, 2011. Provided this matter is not fully resolved with written agreements signed by the Army within five (5) days from the date of the Army's receipt of this letter, the stay of stipulated penalties is terminated, and stipulated penalties will again begin to run for each of the four (4) LHAAP operable units in question to include the timeframe between September 30, 2011 and November 30, 2011.

In conclusion, the disputed issues must be addressed in the Army's draft final RODs for the four (4) operable units at issue. The eight (8) Written Statements of Agreement serves as an appropriate mechanism to ensure that the above occurs in a timely manner. Once the disputed issues and language are properly addressed, the RODs in question will be protective of human health and the environment, and comply with CERCLA, the NCP, and EPA guidance. Section XIX (Selection, Design, and Implementation of Remedial Actions) of the FFA requires compliance with the above requirements. The Agency also believes that when the disputed issues and language are properly addressed and resolved, the Army's future submissions of draft RODs will be more complete per the FFA, and hopefully, will alleviate the need for substantial written Agency comments.

Please contact me at your earliest convenience if you have any questions, and to arrange for the finalization of the Written Statements of Agreement already signed by me. I remain committed to working with the DRC members to conclude this matter, and can be reached at 214.665.6701.

Sincerely,



Samuel Coleman, P.E.
Director
Superfund Division

Enclosures (8 Written Statements of Agreement)

cc: Reggie Cheatham
EPA Federal Facilities Restoration and Reuse Office

David Kling
EPA Federal Facilities Enforcement Office

Maureen Sullivan
Office of the Secretary of Defense, Installations and Environment

John Tesner
Office of the Deputy Assistant Secretary of the Army (Environment, Safety and Occupational Health)

WRITTEN STATEMENT OF AGREEMENT: ISSUE #1

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 1 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 1. The agreed upon language will be included in the LHAAP 16 and 17 RODs. Language that is inconsistent with the agreed upon language will be excluded from the RODs. The Written Statement of Agreement serves as the final agreement to issue number 1 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 1: When there is no Federal Maximum Contaminant Level (MCL) for a specific contaminant (e.g., perchlorate), the Texas MSC GW-Res may be an applicable or relevant and appropriate requirement (ARAR); in appropriate circumstances, it may be possible to use a protective Texas regulatory standard to establish a cleanup level for ground water determined to be a current or potential source of drinking water. Groundwater at the sites in question is designated as potential drinking water sources by the State of Texas in accordance with Texas regulation. Consistent with the expectations in the National Contingency Plan (NCP), it is appropriate to return contaminated ground waters to their beneficial uses wherever practicable.

DRC Agreement for Issue 1: "Per RODs 16 and 17 RAOs, and consistent with the NCP, groundwater will be returned to its beneficial use as drinking water. The groundwater cleanup level for perchlorate at LHAAP-16 and 17 that is protective of human health is the EPA Health Advisory level, 15 ug/L."

For LHAAP Site 16 only – "The Texas MSC GW-Res cleanup levels based on residential exposure of 730 ug/L for nickel and 1,715 ug/L for manganese, are potential ARARs at LHAAP Site 16. However, more stringent EPA Health Advisories for nickel (EPA Health Advisory - 100ug/L) and manganese (EPA Health Advisory – 320 ug/L) are "to be considered" (TBCs) for purposes of selecting a protective remedial action for LHAAP Site 16, and as such, the EPA Health Advisories will be used (not the Texas standards) ."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012

Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

_____ Executed on: February _____, 2012

Beth Seaton

TCEQ Remediation Division

For: United States Environmental Protection Agency

Executed on: February 14, 2012

Samuel Coleman, P.E.
Superfund Division Director

WRITTEN STATEMENT OF AGREEMENT: ISSUE #2

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 2 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 2. The agreed upon language will be included in the RODs for the four (4) operable units subject to this dispute. Language that is inconsistent with the agreed upon language will be excluded from the RODs. The DRC also agrees that the landfill land use control (LUC) language provided below only applies to LHAAP Operable Unit 16, while the remaining language applies to LHAAP Operable Units 16 and 17, 001-R-01 MMRP, and 003-R-01 MMRP. The Written Statement of Agreement serves as the final agreement to issue number 2 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 2: Adequate LUC objectives are missing from the RODs. The RODs should include objectives designed to protect the integrity of the groundwater monitoring system and landfill caps. This is because the groundwater monitoring system and the landfill caps are integral engineering components of the final remedies. The remedial systems must be protected from intrusive or other activities which could damage the engineered portion of the remedy. Additionally, to ensure protectiveness, the relevant RODs should also include a LUC objective to prohibit development and/or other intrusive activities such as digging which could result in detonation of explosive hazards or exposure to other contaminants.

DRC Agreement for Issue 2: "The LUC performance objectives include the prevention of human exposure to the landfill waste, and to preserve the integrity of the landfill cap. The LUCs will remain in place as long as the landfill waste materials remain at the site. In addition, a LUC performance objective to restrict the use of groundwater to environmental monitoring and testing only, and to preserve and protect the integrity of the groundwater monitoring system will remain in place until the contaminated groundwater attains groundwater cleanup levels to allow unlimited use and unrestricted exposure and in order to prevent human exposure to the contaminated groundwater. The LUC restricting land use and groundwater use to nonresidential will remain in place until it is demonstrated that surface soil, subsurface soil, and groundwater are at levels that allow for unlimited use and unrestricted exposure.

Land use controls would be implemented to protect the existing remedy (landfill cap), prevent ingestion of contaminated groundwater, restrict installation of groundwater extraction wells, and protect the infrastructure of the cap and groundwater remedies, including the Operations and Maintenance (O&M) components to ensure that the groundwater monitoring system is protected from damage and will operate as designed for the duration of the remedy.

LUCs – The LUCs would be implemented to support the RAOs. The U.S. Army would be responsible for long-term implementation, maintenance, inspection, reporting, and enforcement of the LUCs. The U.S. Army will provide details of the LUCs long-term implementation and long-term maintenance actions in the RD for the site. The LUCs would prevent human exposure to landfill contents and residual groundwater contamination that may present an unacceptable risk to human health, and would preclude the withdrawal or use of groundwater beneath the site for anything other than environmental monitoring and testing. Institutional controls would also be developed to protect the infrastructure of both the landfill and ground water components of the remedy, including the O&M components to ensure

that the groundwater monitoring system is protected from damage and will operate as designed for the duration of the remedy. The groundwater use prohibition LUCs (except for monitoring and testing) would be maintained until the groundwater can be used without restrictions. The nonresidential land use LUC restriction would remain in place until it is demonstrated that surface soil and subsurface soil, and groundwater are at levels that allow for unlimited use and unrestricted exposure.

To transfer LHAAP Sites, an Environmental Condition of Property (ECP) document would be prepared and the Environmental Protection Provision from the ECP would be attached to the letter of transfer. The ECP will include land use and groundwater use restrictions as part of the Environmental Protection Provisions. The property would be transferred subject to the LUCs identified in the ECP. These restrictions would prohibit or restrict property uses that may result in damage to the existing remedy (landfill cap) or exposure to the contaminated groundwater (e.g., drilling restrictions). The U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of a LUCs objective at the site after it has been transferred.

Specific Land Use Controls/Institutional Controls will be put in place to meet the following objectives:

Prevent ingestion of, exposure to, or dermal contact with, contaminated ground water;

Restrict the installation of ground water extraction wells, except for wells related to the remedy for the site;

Protect the infrastructure of the monitoring wells, including the O&M components to ensure that the groundwater monitoring system is protected from damage and will operate as designed for the duration of the remedy;

All land use and institutional controls will be maintained by the US Army until the ground water is approved for unrestricted use and unlimited exposure."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012

Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

_____ Executed on: February _____, 2012

Beth Seaton
TCEQ Remediation Division

For: United States Environmental Protection Agency

Samuel Coleman Executed on: February 14, 2012

Samuel Coleman, P.E.
Superfund Division Director

WRITTEN STATEMENT OF AGREEMENT: ISSUE #3

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 3 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 3. The agreed upon language will be included in the RODs for the four (4) operable units subject to this dispute. Language that is inconsistent with the agreed upon language will be excluded from the RODs. The Written Statement of Agreement serves as the final agreement to issue number 3 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 3: The RODs must ensure that LUCs (individually or together) are to remain in place until unlimited use and unrestricted exposure is reached for each engineering component of the remedy.

DRC Agreement for Issue 3: "The DRC Agreement for issue 2 and the language provided therein is sufficient to resolve the LUC duration issue provided in issue 3."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012
Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

_____ Executed on: February _____, 2012
Beth Seaton
TCEQ Remediation Division

For: United States Environmental Protection Agency

_____ Executed on: February 14, 2012
Samuel Coleman, P.E.
Superfund Division Director

WRITTEN STATEMENT OF AGREEMENT: ISSUE #4

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 4 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided and deleted below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 4. The agreed upon language will be included in the RODs for the four (4) operable units subject to this dispute. Language that is inconsistent with the agreed upon language will be excluded from the RODs. The Written Statement of Agreement serves as the final agreement to issue number 4 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 4: The Army does not have independent authority to modify a remedy. The LUC is part of the remedy which, under CERCLA, is both selected by Army and EPA. In the event of dispute, the EPA Administrator selects the remedy. Thus, the Army cannot unilaterally make modify or terminate a LUC remedy.

DRC Agreement for Issue 4: "The U.S. Army will be responsible for implementation, maintenance, inspection, reporting on, and enforcement of the LUCs. Although the U.S. Army may later pass these procedural responsibilities to the transferee by property transfer agreement, the U.S. Army shall retain ultimate responsibility for: (1) CERCLA 121(c) Five Year Reviews; (2) notification of the appropriate regulators of any known LUCs deficiencies or violations; (3) access to the property to conduct any necessary response; (4) reservation of the CERCLA and FFA authority to change, modify or terminate LUCs and any related transfer or lease provisions with the approval of EPA and in consultation with TCEQ; and (5) ensuring the protectiveness of the selected remedy. The U.S. Army shall retain the ultimate responsibility for remedy integrity as provided in the 1991 FFA."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012
Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

_____ Executed on: February _____, 2012
Beth Seaton
TCEQ Remediation Division

For: United States Environmental Protection Agency

Samuel Coleman Executed on: February 14, 2012
Samuel Coleman, P.E.
Superfund Division Director

WRITTEN STATEMENT OF AGREEMENT: ISSUE #5

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 5 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 5. The agreed upon language will be included in the LHAAP Operable Unit 16 ROD, one of the (4) operable units subject to this dispute. Language that is inconsistent with the agreed upon language will be excluded from the ROD. The Written Statement of Agreement serves as the final agreement to issue number 5 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 5: The identification of ARARs and rationale for exclusion. The presence of the LHAAP-16 landfill requires attainment of landfill post closure requirements as ARARs.

DRC Agreement for Issue 5: "Post-closure Care: Closure and post-closure ARARs were identified for LHAAP-16 in the IRA ROD and included 30 TAC 335.112, 335.118, 335.119 and 335.174 and 40 CFR Sections 264.228 and 264.310 addressing landfills and surface impoundments storing hazardous waste. Closure requirements were met during implementation of the (cap) presumptive remedy of the IRA. Post-closure requirements are relevant and appropriate, and include 40 CFR 264.228(b)(1), (3) and (4); 264.310(b)(1), (4), (5), and (6); and 30 TAC 335.174. Although there is no permanent benchmark inside the LHAAP-16 area, one is located adjacent to the Site. Therefore, 40 CFR 264.310(b)(6) is relevant and appropriate for a benchmark located near a landfill. In addition, those substantive requirements of 40 CFR 264.117 through 120 related to post-closure for the remedy in place are relevant and appropriate."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012
Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

_____ Executed on: February _____, 2012
Beth Seaton
TCEQ Remediation Division

For: United States Environmental Protection Agency

Samuel Coleman Executed on: February 14, 2012
Samuel Coleman, P.E.
Superfund Division Director

WRITTEN STATEMENT OF AGREEMENT: ISSUE #6

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 6 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 6. The agreed upon language will be included in the RODs for the four (4) operable units subject to this dispute. Language that is inconsistent with the agreed upon language will be excluded from the RODs. The Written Statement of Agreement serves as the final agreement to issue number 6 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 6: The selection of LUCs ("LUC" means the legal or administrative mechanism by which the LUC objective is implemented) in the RODs. The RODs must identify the legal or administrative mechanism by which the LUC objective is implemented. Thus, the RODs must specifically identify and select LUCs as remedial action components.

DRC Agreement for Issue 6: "The Army will implement, maintain, monitor, report on and enforce land use controls on property owned by the United States and under the accountability of the Army using the then current annual Comprehensive Land Use Plan.

Upon transfer of the Site or portions of the Site to USFWS or any other transferee, the Army will provide written notice of the land use controls to the USFWS or any other transferee, the EPA, TCEQ, and to local governments. Such notice shall include notice of the groundwater contamination and land use restrictions referenced in the ROD. The written notice shall be placed in the Administrative Record for this ROD. The Army shall retain responsibility for implementation, maintenance, and enforcement of all or any part of the land use controls for which the USFWS does not accept responsibility. Within 15-days of transfer, the Army shall provide EPA and TCEQ with written notice of the division of implementation, maintenance, and enforcement responsibilities unless such information has been provided in the LUC RD. In the event the property is transferred out of federal control, the land use controls shall be recorded in the deed and shall be enforceable by the United States and the State of Texas.

Following transfer, Army will monitor and report on the implementation, maintenance, and enforcement of land use controls. The Army will provide a copy of the final ROD and notice of the specific restrictions to the USFWS. The LUC RD will address the procedures to be used by the Army and the USFWS to document the agencies' compliance with the LUCs described in this ROD."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012

Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

_____ Executed on: February _____, 2012

Beth Seaton
TCEQ Remediation Division

For: United States Environmental Protection Agency

Samuel Coleman Executed on: February _____, 2012

Samuel Coleman, P.E.
Superfund Division Director

WRITTEN STATEMENT OF AGREEMENT: ISSUE #7

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 7 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 7. The agreed upon language will be included in the RODs for the four (4) operable units subject to this dispute. Language that is inconsistent with the agreed upon language will be excluded from the RODs. The Written Statement of Agreement serves as the final agreement to issue number 7 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 7: Currently, references to the MEC removal work plan for LUC implementation details are not appropriate as the removal work plan is not enforceable under the FFA. The below language applies to all RODs for the four (4) operable units in question.

DRC Agreement for Issue 7: "A LUC Remedial Design will be finalized as the land use component of the Remedial Design. Within 21 days of the issuance of the Record of Decision, the Army will propose deadlines for completion of the Remedial Design Work Plan, Remedial Design, and Remedial Action Work Plan. The documents will be prepared and submitted to EPA and TCEQ pursuant to the FFA. The LUC remedial design will contain implementation and maintenance actions, including periodic inspections."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012
Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

_____ Executed on: February _____, 2012
Beth Seaton
TCEQ Remediation Division

For: United States Environmental Protection Agency

Samuel Coleman Executed on: February 14, 2012
Samuel Coleman, P.E.
Superfund Division Director

WRITTEN STATEMENT OF AGREEMENT: ISSUE #8

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 8 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 8. The agreed upon language will be included in the two (2) MMRP Operable Units' ROD, of the four (4) operable units subject to this dispute. Language that is inconsistent with the agreed upon language will be excluded from the two (2) MMRP Operable Units' ROD. The Written Statement of Agreement serves as the final agreement to issue number 8 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 8: The identification of principal threat wastes at the Site. It should be clear that any munitions and explosives of concern (MEC) found at the MMRP ROD sites in the future will be evaluated to determine if they constitute principal threat wastes.

DRC Agreement for Issue 8: "There are currently no known principal threat wastes at these two MRS sites (LHAAP-001-R-01 MMRP and LHAAP-003-R-01 MMRP)."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012
Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

_____ Executed on: February _____, 2012
Beth Seaton
TCEQ Remediation Division

For: United States Environmental Protection Agency

Samuel Coleman Executed on: February 14, 2012
Samuel Coleman, P.E.
Superfund Division Director

Bryan W. Shaw, Ph.D., *Chairman*
Buddy Garcia, *Commissioner*
Carlos Rubinstein, *Commissioner*
Mark R. Vickery, P.G., *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

February 23, 2012

Mr. Samuel Coleman, P.E., Director
Superfund Division
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue
Dallas, Texas 75202

Ms. Lynne Anderson
Assistant Chief of Staff for Installation Management
Department of the Army
600 Army Pentagon
Washington, DC 20310-0600

Re: Written Statement of Agreements
Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas
Federal Facility Agreement (FFA) Under CERCLA Section 120

Dear Mr. Coleman and Ms. Anderson:

The Texas Commission on Environmental Quality (TCEQ) received the Environmental Protection Agency (EPA), Region 6's final offer to the Dispute Resolution Committee (DRC) dated February 15, 2012. The TCEQ has completed the review of the Written Statement of Agreements for the eight (8) disputed issues. Our concurrence with the Written Statement of Agreement for Issues 2 through 8 are attached.

The Written Statement of Agreement for Issues #2 and #3 stipulates that the groundwater restriction be in place until groundwater contaminants are at levels that allow for unlimited use and unrestricted exposure. We note that these agreements stipulate requirements that are more stringent than the requirements under the TCEQ rules. However, the TCEQ has provided concurrence on the Written Statement of Agreement for Issues #2 and #3 in order to further facilitate resolution of these disputed issues.

With regard to Issue #1, the TCEQ cannot concur at this time. The Texas Medium Specific Concentration (MSC) groundwater standards are risk based cleanup levels that are protective of human health under either residential or industrial/commercial land use scenarios. The use of the MSC Industrial standard for groundwater (MSC-GW-Ind) at the LHAAP site complies with State rules and is protective of human health as long as

the facility's land use is appropriately classified and institutional controls are placed to restrict the future use of the property. However, the TCEQ acknowledges that there is an expectation in the National Contingency Plan to return contaminated groundwater to their beneficial uses whenever practicable. Because LHAAP is a federal National Priorities List (NPL) site, the TCEQ will concur with the resolution to adopt a more stringent standard, such as the EPA's Health Advisory Level, upon agreement by both EPA and the U.S. Army.

Nonetheless, we believe that the current statement could lead to a misimpression, that Texas MSC groundwater standards would not be appropriate cleanup standards. Therefore, we request a slight modification to the first paragraph of the Written Statement of Agreement for Issue #1 as follows:

> *Per RODs 16 and 17 RAOs, and consistent with the NCP, groundwater will be returned to its beneficial use as drinking water. The groundwater cleanup level for perchlorate at LHAAP-16 and 17 is the EPA Health Advisory level, 15 ug/L, and is protective of human health."*

I very much appreciate your attention to this matter. Please contact me if you have any questions at 512-239-2526.

Sincerely,

Beth Seaton

Beth Seaton, Director
Remediation Division
Texas Commission on Environmental Quality

BS/FD/ms

WRITTEN STATEMENT OF AGREEMENT: ISSUE #2

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 2 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 2. The agreed upon language will be included in the RODs for the four (4) operable units subject to this dispute. Language that is inconsistent with the agreed upon language will be excluded from the RODs. The DRC also agrees that the landfill land use control (LUC) language provided below only applies to LHAAP Operable Unit 16, while the remaining language applies to LHAAP Operable Units 16 and 17, 001-R-01 MMRP, and 003-R-01 MMRP. The Written Statement of Agreement serves as the final agreement to issue number 2 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 2: Adequate LUC objectives are missing from the RODs. The RODs should include objectives designed to protect the integrity of the groundwater monitoring system and landfill caps. This is because the groundwater monitoring system and the landfill caps are integral engineering components of the final remedies. The remedial systems must be protected from intrusive or other activities which could damage the engineered portion of the remedy. Additionally, to ensure protectiveness, the relevant RODs should also include a LUC objective to prohibit development and/or other intrusive activities such as digging which could result in detonation of explosive hazards or exposure to other contaminants.

DRC Agreement for Issue 2: "The LUC performance objectives include the prevention of human exposure to the landfill waste, and to preserve the integrity of the landfill cap. The LUCs will remain in place as long as the landfill waste materials remain at the site. In addition, a LUC performance objective to restrict the use of groundwater to environmental monitoring and testing only, and to preserve and protect the integrity of the groundwater monitoring system will remain in place until the contaminated groundwater attains groundwater cleanup levels to allow unlimited use and unrestricted exposure and in order to prevent human exposure to the contaminated groundwater. The LUC restricting land use and groundwater use to nonresidential will remain in place until it is demonstrated that surface soil, subsurface soil, and groundwater are at levels that allow for unlimited use and unrestricted exposure.

Land use controls would be implemented to protect the existing remedy (landfill cap), prevent ingestion of contaminated groundwater, restrict installation of groundwater extraction wells, and protect the infrastructure of the cap and groundwater remedies, including the Operations and Maintenance (O&M) components to ensure that the groundwater monitoring system is protected from damage and will operate as designed for the duration of the remedy.

LUCs – The LUCs would be implemented to support the RAOs. The U.S. Army would be responsible for long-term implementation, maintenance, inspection, reporting, and enforcement of the LUCs. The U.S. Army will provide details of the LUCs long-term implementation and long-term maintenance actions in the RD for the site. The LUCs would prevent human exposure to landfill contents and residual groundwater contamination that may present an unacceptable risk to human health, and would preclude the withdrawal or use of groundwater beneath the site for anything other than environmental monitoring and testing. Institutional controls would also be developed to protect the infrastructure of both the landfill and ground water components of the remedy, including the O&M components to ensure

that the groundwater monitoring system is protected from damage and will operate as designed for the duration of the remedy. The groundwater use prohibition LUCs (except for monitoring and testing) would be maintained until the groundwater can be used without restrictions. The nonresidential land use LUC restriction would remain in place until it is demonstrated that surface soil and subsurface soil, and groundwater are at levels that allow for unlimited use and unrestricted exposure.

To transfer LHAAP Sites, an Environmental Condition of Property (ECP) document would be prepared and the Environmental Protection Provision from the ECP would be attached to the letter of transfer. The ECP will include land use and groundwater use restrictions as part of the Environmental Protection Provisions. The property would be transferred subject to the LUCs identified in the ECP. These restrictions would prohibit or restrict property uses that may result in damage to the existing remedy (landfill cap) or exposure to the contaminated groundwater (e.g., drilling restrictions). The U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of a LUCs objective at the site after it has been transferred.

Specific Land Use Controls/Institutional Controls will be put in place to meet the following objectives:

Prevent ingestion of, exposure to, or dermal contact with, contaminated ground water;

Restrict the installation of ground water extraction wells, except for wells related to the remedy for the site;

Protect the infrastructure of the monitoring wells, including the O&M components to ensure that the groundwater monitoring system is protected from damage and will operate as designed for the duration of the remedy;

All land use and institutional controls will be maintained by the US Army until the ground water is approved for unrestricted use and unlimited exposure."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012

Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

Beth Seaton

Executed on: February 23, 2012

Beth Seaton
TCEQ Remediation Division

For: United States Environmental Protection Agency

Samuel Coleman

Executed on: February 14, 2012

Samuel Coleman, P.E.
Superfund Division Director

WRITTEN STATEMENT OF AGREEMENT: ISSUE #3

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 3 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 3. The agreed upon language will be included in the RODs for the four (4) operable units subject to this dispute. Language that is inconsistent with the agreed upon language will be excluded from the RODs. The Written Statement of Agreement serves as the final agreement to issue number 3 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 3: The RODs must ensure that LUCs (individually or together) are to remain in place until unlimited use and unrestricted exposure is reached for each engineering component of the remedy.

DRC Agreement for Issue 3: "The DRC Agreement for issue 2 and the language provided therein is sufficient to resolve the LUC duration issue provided in issue 3."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012

Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

Beth Seaton Executed on: February 23, 2012

Beth Seaton
TCEQ Remediation Division

For: United States Environmental Protection Agency

Samuel Coleman Executed on: February 14, 2012

Samuel Coleman, P.E.
Superfund Division Director

WRITTEN STATEMENT OF AGREEMENT: ISSUE #4

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 4 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided and deleted below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 4. The agreed upon language will be included in the RODs for the four (4) operable units subject to this dispute. Language that is inconsistent with the agreed upon language will be excluded from the RODs. The Written Statement of Agreement serves as the final agreement to issue number 4 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 4: The Army does not have independent authority to modify a remedy. The LUC is part of the remedy which, under CERCLA, is both selected by Army and EPA. In the event of dispute, the EPA Administrator selects the remedy. Thus, the Army cannot unilaterally make modify or terminate a LUC remedy.

DRC Agreement for Issue 4: "The U.S. Army will be responsible for implementation, maintenance, inspection, reporting on, and enforcement of the LUCs. Although the U.S. Army may later pass these procedural responsibilities to the transferee by property transfer agreement, the U.S. Army shall retain ultimate responsibility for: (1) CERCLA 121(c) Five Year Reviews; (2) notification of the appropriate regulators of any known LUCs deficiencies or violations; (3) access to the property to conduct any necessary response; (4) reservation of the CERCLA and FFA authority to change, modify or terminate LUCs and any related transfer or lease provisions with the approval of EPA and in consultation with TCEQ; and (5) ensuring the protectiveness of the selected remedy. The U.S. Army shall retain the ultimate responsibility for remedy integrity as provided in the 1991 FFA."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012

Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

Beth Seaton Executed on: February 23, 2012

Beth Seaton
TCEQ Remediation Division

For: United States Environmental Protection Agency

Samuel Coleman Executed on: February 14, 2012

Samuel Coleman, P.E.
Superfund Division Director

WRITTEN STATEMENT OF AGREEMENT: ISSUE #5

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 5 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 5. The agreed upon language will be included in the LHAAP Operable Unit 16 ROD, one of the (4) operable units subject to this dispute. Language that is inconsistent with the agreed upon language will be excluded from the ROD. The Written Statement of Agreement serves as the final agreement to issue number 5 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 5: The identification of ARARs and rationale for exclusion. The presence of the LHAAP-16 landfill requires attainment of landfill post closure requirements as ARARs.

DRC Agreement for Issue 5: "Post-closure Care: Closure and post-closure ARARs were identified for LHAAP-16 in the IRA ROD and included 30 TAC 335.112, 335.118, 335.119 and 335.174 and 40 CFR Sections 264.228 and 264.310 addressing landfills and surface impoundments storing hazardous waste. Closure requirements were met during implementation of the (cap) presumptive remedy of the IRA. Post-closure requirements are relevant and appropriate, and include 40 CFR 264.228(b)(1), (3) and (4); 264.310(b)(1), (4), (5), and (6); and 30 TAC 335.174. Although there is no permanent benchmark inside the LHAAP-16 area, one is located adjacent to the Site. Therefore, 40 CFR 264.310(b)(6) is relevant and appropriate for a benchmark located near a landfill. In addition, those substantive requirements of 40 CFR 264.117 through 120 related to post-closure for the remedy in place are relevant and appropriate."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012

Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

Beth Seaton Executed on: February 23, 2012

Beth Seaton
TCEQ Remediation Division

For: United States Environmental Protection Agency

Samuel Coleman Executed on: February 14, 2012

Samuel Coleman, P.E.
Superfund Division Director

WRITTEN STATEMENT OF AGREEMENT: ISSUE #6

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 6 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 6. The agreed upon language will be included in the RODs for the four (4) operable units subject to this dispute. Language that is inconsistent with the agreed upon language will be excluded from the RODs. The Written Statement of Agreement serves as the final agreement to issue number 6 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 6: The selection of LUCs ("LUC" means the legal or administrative mechanism by which the LUC objective is implemented) in the RODs. The RODs must identify the legal or administrative mechanism by which the LUC objective is implemented. Thus, the RODs must specifically identify and select LUCs as remedial action components.

DRC Agreement for Issue 6: "The Army will implement, maintain, monitor, report on and enforce land use controls on property owned by the United States and under the accountability of the Army using the then current annual Comprehensive Land Use Plan.

Upon transfer of the Site or portions of the Site to USFWS or any other transferee, the Army will provide written notice of the land use controls to the USFWS or any other transferee, the EPA, TCEQ, and to local governments. Such notice shall include notice of the groundwater contamination and land use restrictions referenced in the ROD. The written notice shall be placed in the Administrative Record for this ROD. The Army shall retain responsibility for implementation, maintenance, and enforcement of all or any part of the land use controls for which the USFWS does not accept responsibility. Within 15-days of transfer, the Army shall provide EPA and TCEQ with written notice of the division of implementation, maintenance, and enforcement responsibilities unless such information has been provided in the LUC RD. In the event the property is transferred out of federal control, the land use controls shall be recorded in the deed and shall be enforceable by the United States and the State of Texas.

Following transfer, Army will monitor and report on the implementation, maintenance, and enforcement of land use controls. The Army will provide a copy of the final ROD and notice of the specific restrictions to the USFWS. The LUC RD will address the procedures to be used by the Army and the USFWS to document the agencies' compliance with the LUCs described in this ROD."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012

Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

Beth Seaton

Executed on: February 23, 2012

Beth Seaton
TCEQ Remediation Division

For: United States Environmental Protection Agency

Samuel Coleman

Executed on: February _____, 2012

Samuel Coleman, P.E.
Superfund Division Director

WRITTEN STATEMENT OF AGREEMENT: ISSUE #7

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 7 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 7. The agreed upon language will be included in the RODs for the four (4) operable units subject to this dispute. Language that is inconsistent with the agreed upon language will be excluded from the RODs. The Written Statement of Agreement serves as the final agreement to issue number 7 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 7: Currently, references to the MEC removal work plan for LUC implementation details are not appropriate as the removal work plan is not enforceable under the FFA. The below language applies to all RODs for the four (4) operable units in question.

DRC Agreement for Issue 7: "A LUC Remedial Design will be finalized as the land use component of the Remedial Design. Within 21 days of the issuance of the Record of Decision, the Army will propose deadlines for completion of the Remedial Design Work Plan, Remedial Design, and Remedial Action Work Plan. The documents will be prepared and submitted to EPA and TCEQ pursuant to the FFA. The LUC remedial design will contain implementation and maintenance actions, including periodic inspections."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012
Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

Beth Seaton Executed on: February 23, 2012
Beth Seaton
TCEQ Remediation Division

For: United States Environmental Protection Agency

Sam Coleman Executed on: February 14, 2012
Samuel Coleman, P.E.
Superfund Division Director

WRITTEN STATEMENT OF AGREEMENT: ISSUE #8

This Written Statement of Agreement represents the best interests of the United States Army (Army), the Texas Commission on Environmental Quality (TCEQ), and the Environmental Protection Agency in ensuring that the cleanup of the Longhorn Army Ammunition Plant Site (LHAAP) is protective of human health and the environment, and resolves disputed issue number 8 under the Site's Federal Facility Agreement (FFA), pursuant to CERCLA Section 120. All Dispute Resolution Committee (DRC) members hereby agree that the DRC agreement language provided below, as included in this Written Statement of Agreement constitutes a final resolution for dispute resolution issue number 8. The agreed upon language will be included in the two (2) MMRP Operable Units' ROD, of the four (4) operable units subject to this dispute. Language that is inconsistent with the agreed upon language will be excluded from the two (2) MMRP Operable Units' ROD. The Written Statement of Agreement serves as the final agreement to issue number 8 as provided in the EPA October 27, 2011, Written Statement of Dispute. The DRC Members agree that this Written Statement of Agreement will be implemented within twenty-one (21) days.

Issue 8: The identification of principal threat wastes at the Site. It should be clear that any munitions and explosives of concern (MEC) found at the MMRP ROD sites in the future will be evaluated to determine if they constitute principal threat wastes.

DRC Agreement for Issue 8: "There are currently no known principal threat wastes at these two MRS sites (LHAAP-001-R-01 MMRP and LHAAP-003-R-01 MMRP)."

Agreed upon by the DRC Members:

For: United States Army

_____ Executed on: February _____, 2012
Lynne Anderson
Assistant Chief of Staff for Installation Management

For: Texas Commission on Environmental Quality

Beth Seaton Executed on: February 23, 2012
Beth Seaton
TCEQ Remediation Division

For: United States Environmental Protection Agency

Samuel Coleman Executed on: February 14, 2012
Samuel Coleman, P.E.
Superfund Division Director

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

MAR 12 2012

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Ms. Lynne Anderson
Department of the Army
Assistant Chief of Staff for Installation Management
600 Army Pentagon
Washington, DC 20310-0600

Re: Request for Penalty Withdrawal
Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas

Dear Ms. Anderson:

This letter is in response to the Army's letter, dated November 4, 2011, and Tom Lederle's email, dated February 16, 2012. In the Army's letter, the Army requested that the Agency withdraw the stipulated penalties identified in the EPA Region 6 letter dated October 13, 2011. Consistent with the information provided below, the Agency declines to withdraw the stipulated penalties.

With respect to the stipulated penalties, it is appropriate to refer to the Agency's October 13, 2011, letter. The letter provides that, under the Stipulated Penalties (Section XXIV) provision of the Longhorn Federal Facilities Agreement (FFA), EPA may take enforcement action resulting in stipulated penalties if the Army fails to submit primary documents, such as Record of Decisions (RODs), pursuant to the appropriate timetable or deadline in accordance with the requirements of the FFA, or fails to comply with a term or condition of the FFA which relates to an operable unit or final remedial action. Section XXIV (Stipulated Penalties) of the FFA does not require EPA to engage in informal or formal dispute resolution before assessing a stipulated penalty.

On September 29, 2011, the Army submitted RODs for four (4) operable units, however, those RODs failed to comport with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Contingency Plan (NCP), and EPA policy. Those failures encompassed several areas including remedial action selection authority; remedial action selection criteria; applicable, relevant and appropriate criteria; and land use controls. Such failures do not satisfy Section XIX (Selection, Design, and Implementation of Remedial Actions) of the FFA, which provides that the parties will perform remedial action selection, design and implementation obligations and responsibilities in accordance with CERCLA, the NCP, and EPA Policy. These substantive failures, not timeliness, are the basis for the penalties.

As a result of the above, EPA could not sign the RODs for the four (4) operable units in dispute here (i.e., LHAAP-16, LHAAP-17, LHAAP-001-R-01 MMRP, and LHAAP-003-R-01 MMRP), as the Army failed to address many of the EPA comments provided during the months of August and September 2011 (See Enclosures). Despite the Agency's comments submitted, informal discussions and informal attempts to resolve issues with the Army during the months of August and September 2011, the Army

Recycled/Recyclable • Printed with Vegetable Oil Based Inks on 100% Recycled Paper (40% Postconsumer)

persisted in its submission of RODs for four (4) operable units that did not comport with CERCLA, the NCP, Agency Policy, and the FFA.

Based upon the prior history (e.g., 2009 notice of violation) and current circumstances of this action, the Agency believes it is inappropriate to withdraw the stipulated penalty which is continuing to accrue. The stipulated penalty is not inconsistent with the penalty provisions provided in the FFA. It is important to note that EPA met with the Army on October 18, 2011. This meeting was consistent with the process established by the Longhorn FFA and described in EPA's October 13, 2011, stipulated penalty assessment letter. This meeting afforded the Army the opportunity to discuss informally all of the underlying issues related to the stipulated penalty. These underlying issues also served as the basis for the Agency's October 27, 2011, statement of formal dispute.

I want you to know that EPA issued the October 13, 2011, notice of violation and penalty assessment after attempting to resolve the outstanding issues included in the Army's draft RODs for the four (4) operable units in question. These outstanding issues were also addressed in detail when EPA invoked dispute resolution on October 27, 2011. Your letter noted that under the Longhorn FFA, the parties are to attempt to resolve a dispute informally, which EPA has done here. Given the lack of progress in resolving the dispute informally, EPA determined it prudent to issue a notice of violation and penalty assessment, and invoke formal dispute resolution.

If there are any questions regarding this matter, please feel free to call me at 214.665.6701, or contact Charles Faultry at 214.665.2731, Carlos Sanchez at 214.665.8507, or Stephen Tzhone at 214.665.8409.

Sincerely,

Pamela Phillips, Acting

Samuel Coleman, P.E.
Director
Superfund Division

Enclosures (3):

1. Army Response (on September 28, 2011) to EPA Comments (from September 19, 2011 and September 20, 2011).
2. Army Response (on September 12, 2011) to EPA Comments (from August 28, 2011).
3. Army Response (on September 6, 2011) to EPA Comments (from August 31, 2011).

cc: Reggie Cheatham
EPA Federal Facilities Restoration and Reuse Office

David Kling
EPA Federal Facilities Enforcement Office

Maureen Sullivan
Office of the Secretary of Defense Installations and Environment

John Tesner
Office of the Deputy Assistant Secretary of the Army (Environment, Safety and Occupational Health)

Beth Seaton
TCEQ Remediation Division

ENCLOSURE 1:

Army Responses (on September 28, 2011) to EPA Comments (from September 19, 2011 and September 20, 2011).

Longhorn Response to EPA LUC Comments on LHAAP -16 and LHAAP-17 RODs

Zeiler, Rose Ms CIV USA OSA to: Stephen Tzhone 09/28/2011 10:25 AM
Cc: Fay Duke, "Lambert, John R SWT", "Wililams, Aaron"

From: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>
To: Stephen Tzhone/R6/USEPA/US@EPA
Cc: Fay Duke <fay.duke@tceq.texas.gov>, "Lambert, John R SWT" <John.R.Lambert@SWT03.usace.army.mil>, "Wililams, Aaron" <aaron.k.williams@usace.army.mil>

History: This message has been replied to.

1 attachment

Longhorn Response to Comments 28 SEP 2011.docx

Steve,

Please see the attached RTCs.

Army has provided substantive responses to all the EPA comments and believes there are no differences that affect the selected remedy or the protectiveness of the selected remedy. Army will proceed with completion of the document since EPA Region 6 has requested that the ROD be signed by the end of FY11.

Rose

Rose M. Zeiler, Ph.D.,
Site Manager
Longhorn Army Ammunition Plant
479-635-0110 (0112 - fax)

Region 6. Please note that our responses are keyed to the specific comment as numbered in our prior comments.

Longhorn OU 16

Comment #4, CL. 4 Objectives. We are appreciative that the Army has agreed to modify the groundwater LUC and add the prohibition on residential land use as we requested. Regarding the LUC to maintain the remedy integrity, we appreciate the offer to prohibit intrusive activities but there are other activities which could damage the wells. For instance at the Cameron Station BRAC site in Virginia a groundwater well was damaged when heavy equipment was driven over it. Strictly speaking, this was not an "intrusive activity' however the well was damaged.

Additionally, we would like to point out that the language we proposed has been used many times in Army documents. Please see page 2-22 of the Army's June 2009 Picatinny Area C Groundwater ROD where this precise language on maintaining a gw monitoring remedy.

Please add either one of the following objectives to address this issue:

"LUC to maintain the integrity of any current and/or future groundwater monitoring system such as monitoring wells. "

or:

"LUC to prohibit intrusive or any other activities which could damage the landfill cap and the groundwater monitoring system."

Army Response: Protection of the groundwater monitoring system will be addressed in post-ROD documents specifying the protective measures such as bollards, pads, protective casing, and locks. These documents will be provided to the federal agency with jurisdiction over the property, which will be the USF&WS. It is Army's understanding that implementation of these types of controls through the inclusion within site management documents has been acceptable to EPA in the past.

The early 1990's incident at Cameron Station involved a below-grade well located within a public roadway that was paved over by a paving contractor. While it is debatable whether recordation in county land records would have prevented this incident (Army replaced the well), the cited incident is unlike wells located on an environmental site owned by the United States and under the management of a federal agency. Whether the language proposed has or has not been used in some other circumstance is not relevant to this particular situation which differs from Picatinny. If EPA is correct that the exact language has been incorporated in the Picatinny ROD, that language was not recorded as a land use restriction as such would be contrary to GSA regulations and policy which prevents the placement of restrictions on federal real property titles.

In this particular situation, DOI, the agency with future jurisdiction, will be made aware of protective measures for the groundwater monitoring system via post-ROD documents. Army does not understand how placing a note in the county land records would improve DOI's awareness.

Comment # 5. Cl 5. LUC We think that the Army has misunderstood our comment. The "LUC"means the legal or administrative mechanism by which the LUC objective is implemented. In this case, if the property is still under Army control, then the Army should identify the current mechanism (some sort of internal Army procedures) and the future mechanism (ensure the controls are maintained by USFWS in the document transferring property).

Army Response: The LUCs will be incorporated into the documents transferring jurisdiction of the property to the Department of the Interior. The USF&WS will also be provided the Site-Wide LUC Management Plan.

Comment # 6. CL 6. Duration Because additional LUCs will be added, the Army must either add the general LUC checklist language to memorialize its understanding that LUCs are to remain in place until UUUE is reached for all of them or the Army needs to develop a specific duration statement for each separate LUC. It appears that the Army would prefer to have a separate statement for each LUC which is fine, but please send us the statements so that we can review.

Army Response: A description of the durations for the relevant LUCs are included in the ROD. See Army's prior responses to Comment #4 relative to the request for additional LUCs.

Comment #8. Cl 8. Remedy Integrity. The listing on pp. 1-4 and 2-49 is not equivalent to the Checklist language. Note also, that the language we requested has appeared in Army RODs all over the country. See Seneca Army Depot Activity ROD for OUs 59 and 71.

Additionally, the language we struck below is inaccurate because the Army does not have independent authority to modify a remedy. See CERCLA Section 120 (e)(4). Please make the following edits:

"Although the U.S. Army may transfer these responsibilities to another party through property transfer agreement or other means, the U.S. Army will remain ultimately responsible for: (1) CERCLA §121(c) five-year reviews; (2) notification of the appropriate regulators of any known LUC deficiencies or violations; (3) access to the property to conduct any necessary response; ~~(4) reservation of the authority to change, modify, or terminate the LUC and any related transfer or lease provisions ;~~ and (4) ensuring ~~that the LUC objectives are met to protect~~ the integrity of the selected remedy. U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of a LUC objective at these sites after they have been transferred."

Army Response: Army disagrees that the stricken language contained in point (4) asserts an independent authority to change the remedy. That language retains Army's authority to protect and if necessary modify the remedy to maintain its protectiveness following transfer of jurisdiction to the DOI. The language does not address the issue of whether this authority is or is not independent of EPA. Additionally, Army cannot agree to the compromise language ("reservation of authority to change, modify, or terminate the LUC with approval from EPA and consultation from TCEQ and any related transfer or lease provisions") offered in Mr. Tzhone's September 20, 2011 E-mail. Besides limiting Army's statutory authority that is independent of EPA's statutory authority, the subject language will be included in the documents transferring jurisdiction from Army to DOI. USEPA is no part of that transfer and therefore granting USEPA jurisdictional powers interferes with the proper functioning of the federal government. The language used in the ROD is appropriate to address the Army's responsibilities in this particular situation.

Army has no particular objection to striking the text "that the LUC objectives are met to protect," but believes that the word "protectiveness" is more appropriate than the word "integrity" because LUCs, in this instance, are intended to function either as the primary remedy or to protect the integrity of other remedy components. Army is fully aware of its responsibility to ensure the integrity of the selected remedy, which is the purpose of the retention of Army authority in point (4). Army will revise point (5) to read "...ensuring the protectiveness of the selected remedy."

Comment #9. Notification of state and county. A year is a long time to wait before notifying the state and county. We understand that the boundaries are not set. However, rather than risk that someone will be allowed to use groundwater that is not protective, it is prudent to notify the state and county within 90 days of ROD signature, with language that the boundaries are subject to change. Please send a preliminary notice and then update it in a year.

Army Response: Army currently has jurisdiction over this federal property and has no intention or need to use groundwater. Army is unaware that DOI has any similar desire or need. Clearly, any third party who would drill a well in this location would be trespassing on federal property, illegally appropriating a federally owned right (the water right), and would have to do so without the federal government's knowledge. As noted in the original response to comment, the notification will be placed in the county land records prior to transfer of jurisdiction. Army has no objection to notifying the Texas Department of Licensing and Regulation within 90-days of signing the ROD since drillers do not in any event have access to the property.

Comment #10. Modification/Termination of LUCs. Region 6- the following revision must be made. Nationally, we do not agree to a qualifier in terms of letting the Army determine whether it needs to seek our approval to modify or terminate any LUC. The LUC is part of the remedy which, by law, we both select. In the event of a dispute, EPA independently selects the

remedy. Thus, the Army cannot unilaterally make this decision. Regarding its response that EPA is a support agency, in this instance EPA is an oversight agency rather than a mere support agency. Additionally, this language has been used in Army RODs nationally there is no justification from departing from it here.

"The U.S. Army shall consult with TCEQ and obtain USEPA concurrence prior to termination or ~~significant~~ modification of a LUC, or in the highly unlikely event of a land use change ~~inconsistent with the LUC objectives and industrial use assumptions of the remedy~~."

Army Response: The current language in the ROD is in accordance with 40 CFR 300.435(c)(2), which requires consultation with EPA in the event of a significant change. Clearly, termination of a LUC would be a significant change. Whether the language has been used nationally or not, in this instance the property will continue in federal ownership but under the jurisdiction of an agency other than Army, which is an atypical situation.

The term "support agency" is defined in the NCP at 40 CFR 300.5, and used throughout Subpart E of the NCP, Hazardous Substance Response, to differentiate the lead agency, acting under authority delegated by the President in Executive Order 12580 and related delegations, from the support agency, usually either EPA or a State environmental regulator but possibly other Federal agencies, who provide technical support to the lead agency with regard to the conduct of response actions, including regulatory review and consultation. It is the correct term to refer to EPA's role in the response actions being conducted by the Army at LHAAP.

<u>Longhorn 17</u>

Comment #2, Map. The Army has agreed to add a preliminary LUC boundary and notes that the final boundary will be determined later. Please revise the following language on p. 1-3 to ensure that the public knows that the LUC boundary is subject to change: "A land use control (LUC) to prevent human exposure to contaminated groundwater by restricting the use of groundwater to environmental monitoring and testing only. A preliminary LUC boundary is provided on Figure 2-5 and a final LUC boundary will be determined during the RD/RA. When the cleanup level is achieved, the LUC will be terminated.

Army Response: Army will revise the language as requested.

Comment # 5, CL 4. LUC objective. Because additional LUCs will be added, the Army must either add the general LUC checklist language to memorialize its understanding that LUCs are to remain in place until UUUE is reached for all of them or the Army needs to develop a specific duration statement for each separate LUC. It appears that the Army would prefer to have a separate statement for each LUC which is fine, but please send us the statements so that we can review.

Army Response: Army has already agreed to revise the groundwater LUC language as requested in the original comment.

Protection of the groundwater monitoring system will be addressed in post-ROD documents specifying the protective measures such as bollards, pads, protective casing, and locks. These documents will be provided to the federal agency with jurisdiction over the property, which will be the USF&WS. It is Army's understanding that implementation of these types of controls through the inclusion within site management documents has been acceptable to EPA in the past.

In this particular situation, DOI, the agency with future jurisdiction, will be made aware of protective measures for the groundwater monitoring system via post-ROD documents. Army does not understand how placing a note in the county land records would improve DOI's awareness.

With respect to the notice that no residential use is allowed, the following language used in LHAAP 16 has been added:

> ***The LUC restriction of land use to non- residential will remain in place until it is demonstrated that surface soil and subsurface soil are at levels that allow for unlimited use and unrestricted exposure.***

Comment #6. Cl 5. LUC. We think that the Army has misunderstood our comment. The "LUC"means the legal or administrative mechanism by which the LUC objective is implemented. In this case, if the property is still under Army control, then the Army should identify the current mechanism (some sort of internal Army procedures) and the future mechanism (ensure the controls are maintained by USFWS in the document transferring property).

Army Response: The LUCs will be incorporated into the documents transferring jurisdiction of the property to the Department of the Interior. The USF&WS will also be provided the Site-Wide LUC Management Plan.

Comment #7. Cl. 6 Duration. We think the Army has misunderstood our comment. The LUC duration on p. 2-34 does not address the duration for prohibiting non residential development or for the intrusive activities. We suggest the following revision to the Army's language on p. 2-34 to address this gap:

" The LUCs ~~for the restriction of groundwater use~~ shall remain in place at the site unless the hazardous substances remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure."

Army Response: There is no restriction on intrusive activities at LHAAP 17. With respect to the notice that no residential use is allowed, the following language used in LHAAP 16 has been added:

> ***The LUC restriction of land use to non- residential will remain in place until it is demonstrated that surface soil and subsurface soil are at levels that allow for unlimited use and unrestricted exposure.***

Comment # 9. Cl 8 Remedy Integrity. The listing on pp. 1-3 and 2-33 is not equivalent to the Checklist language. Note also, that the language we requested has appeared in Army RODs all over the country. See Seneca Army Depot Activity ROD for OUs 59 and 71.

Additionally, the language we struck below is in accurate because the Army does not have independent authority to modify a remedy. Please make the following edit:

"Although the U.S. Army may transfer these responsibilities to another party through property transfer agreement or other means, the U.S. Army will remain ultimately responsible for: (1) CERCLA §121(c) five-year reviews; (2) notification of the appropriate regulators of any known LUC deficiencies or violations; (3) access to the property to conduct any necessary response; (4) ~~reservation of the authority to change, modify, or terminate the LUC and any related transfer or lease provisions ;~~ and (4) ensuring ~~that the LUC objectives are met to protect~~ the integrity of the selected remedy. U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of a LUC objective at these sites after they have been transferred."

Army Response: Army disagrees that the stricken language contained in point (4) asserts an independent authority to change the remedy. That language retains Army's authority to protect and if necessary modify the remedy to maintain its protectiveness following transfer of jurisdiction to the DOI. The language does not address the issue of whether this authority is or is not independent of EPA. Additionally, Army cannot agree to the compromise language ("reservation of authority to change, modify, or terminate the LUC with approval from EPA and consultation from TCEQ and any related transfer or lease provisions") offered in Mr. Tzhone's September 20, 2011 E-mail. Besides limiting Army's statutory authority that is independent of EPA's statutory authority, the subject language will be included in the documents transferring jurisdiction from Army to DOI. USEPA is no part of that transfer and therefore granting USEPA jurisdictional powers interferes with the proper functioning of the federal government. The language used in the ROD is appropriate to address the Army's responsibilities in this particular situation.

Army has no particular objection to striking the text "that the LUC objectives are met to protect," but believes that the word "protectiveness" is more appropriate than the word "integrity" because LUCs, in this instance, are intended to function either as the primary remedy or to protect the integrity of other remedy components. Army is fully aware of its

responsibility to ensure the integrity of the selected remedy, which is the purpose of the retention of Army authority in point (4). Army will revise point (5) to read "...ensuring the protectiveness of the selected remedy."

Comment #10. Modification/Termination of LUCs. Region 6- the following revision must be made. Nationally, we do not agree to a qualifier in terms of letting the Army determine whether it needs our approval to modify or terminate any LUC. The LUC is part of the remedy which, by law, we both select. In the event of a dispute, EPA independently selects the remedy. Thus, the Army cannot unilaterally make this decision. Regarding its response that EPA is a support agency, in this instance EPA is an oversight agency rather than a mere support agency. Additionally, this language has been used in Army RODs nationally there is no justification from departing from it here:
"The U.S. Army shall consult with TCEQ and obtain USEPA concurrence prior to termination or ~~significant~~ modification of a LUC, or in the highly unlikely event of a land use change ~~inconsistent with the LUC objectives and industrial use assumptions of the remedy~~."

Army Response: The current language in the ROD is in accordance with 40 CFR 300.435(c)(2), which requires consultation with EPA in the event of a significant change. Clearly, termination of a LUC would be a significant change. Whether the language has been used nationally or not, in this instance the property will continue in federal ownership but under the jurisdiction of an agency other than Army, which is an atypical situation.

The term "support agency" is defined in the NCP at 40 CFR 300.5, and used throughout Subpart E of the NCP, Hazardous Substance Response, to differentiate the lead agency, acting under authority delegated by the President in Executive Order 12580 and related delegations, from the support agency, usually either EPA or a State environmental regulator but possibly other Federal agencies, who provide technical support to the lead agency with regard to the conduct of response actions, including regulatory review and consultation. It is the correct term to refer to EPA's role in the response actions being conducted by the Army at LHAAP.

Comment #11. Notification of state and county. A year is a long time to wait before notification. We understand that the boundaries are not set. However, rather than risk that someone will be allowed to use groundwater that is not protective, it is prudent to notify the state and county within 90 days of ROD signature, with language that the boundaries are subject to change. Please send a preliminary notice and then update it in a year.

Army Response: Army currently has jurisdiction over this federal property and has no intention or need to use groundwater. Army is unaware that DOI has any similar desire or need. Clearly, any third party who would drill a well in this location would be trespassing on federal property, illegally appropriating a federally owned right (the water right), and would have to do so without the federal government's knowledge. As noted in the original response to comment, the notification will be placed in the county land records prior to transfer of jurisdiction. Army has no objection to notifying the Texas Department of Licensing and Regulation within 90-days of signing the ROD since drillers do not in any event have access to the property.

Fw: Responses to EPA (HQ LUC) Comments on RODs for 16 and 17

Stephen Tzhone to: Zeiler, Rose Ms CIV USA OSA, Lambert, John R SWT, Williams, Aaron K SWT 09/20/2011 12:50 PM

Cc: Fay Duke

From: Stephen Tzhone/R6/USEPA/US
To: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@SWT03.usace.army.mil>, "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>
Cc: Fay Duke <Fay.Duke@tceq.texas.gov>

Rose,

See language agreeable to EPA for the specified comments dealing with comment #8 (LHAAP-16) and #9 (LHAAP-17). The "...with approval from EPA and consultation from TCEQ...", as discussed.

Let me know as soon as you can on the others, thanks.

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

Sally Dalzell Carlos: Thank you so much for your proposal on... 09/20/2011 12:27:11 PM

From: Sally Dalzell/DC/USEPA/US
To: Carlos Sanchez/R6/USEPA/US@EPA
Cc: Allison Abernathy/DC/USEPA/US@EPA, Stephen Tzhone/R6/USEPA/US@EPA, George Malone/R6/USEPA/US@EPA, Monica McEaddy/DC/USEPA/US@EPA, Gracie Pendleton/DC/USEPA/US@EPA, Timothy Mott/DC/USEPA/US@EPA, Charles Faultry/R6/USEPA/US@EPA
Date: 09/20/2011 12:27 PM
Subject: Re: Responses to EPA (HQ LUC) Comments on RODs for 16 and 17

Carlos:

Thank you so much for your proposal on Checklist Item 8. We are fine with your suggested revision.

However, there are many other LUC comments to be addressed.

Will we be hearing about those soon as well?

Sally

Sally M. Dalzell, 2261A
Federal Facilities Enforcement Office
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20004
(202) 564-2583

(202) 501-0644 (fax)
http://www.fedcenter.gov

Carlos Sanchez Allison, EPA Region 6 is proposing the following... 09/20/2011 12:21:06 PM

From: Carlos Sanchez/R6/USEPA/US
To: Allison Abernathy/DC/USEPA/US@EPA
Cc: Stephen Tzhone/R6/USEPA/US@EPA, George Malone/R6/USEPA/US@EPA, Monica McEaddy/DC/USEPA/US@EPA, Gracie Pendleton/DC/USEPA/US@EPA, Sally Dalzell/DC/USEPA/US@EPA, Timothy Mott/DC/USEPA/US@EPA, Charles Faultry/R6/USEPA/US@EPA
Date: 09/20/2011 12:21 PM
Subject: Re: Responses to EPA (HQ LUC) Comments on RODs for 16 and 17

Allison,

EPA Region 6 is proposing the following language for that we believe would address the EPA's and Army's issue. Please it us know if this would work for you. We have looked at it internally and agree with this language. Thanks CAS

Longhorn AAP RODs.docx

Carlos A. Sanchez
Chief, AR/TX Section
Region 6, Superfund Division (6SF-RA)
sanchez.carlos@epa.gov
(214) 665-8507

Allison Abernathy Stephen- The following are our thoughts on the... 09/19/2011 02:12:28 PM

Longhorn AAP RODs

Longhorn OU 16

Comment #8. CI8. Remedy Integrity

(4) reservation of authority to change, modify, or terminate the LUC with approval from EPA and consultation from TCEQ and any related transfer or lease provisions; and (5) ensuring the integrity of the selected remedy…….

Fw: Responses to EPA (HQ LUC) Comments on RODs for 16 and 17

Stephen Tzhone to: Zeiler, Rose Ms CIV USA OSA, Lambert, John R SWT, Williams, Aaron K SWT 09/19/2011 05:58 PM

Cc: Fay Duke, Carlos Sanchez

From: Stephen Tzhone/R6/USEPA/US
To: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@SWT03.usace.army.mil>, "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>
Cc: Fay Duke <Fay.Duke@tceq.texas.gov>, Carlos Sanchez/R6/USEPA/US@EPA

Rose,

See below for EPA HQ responses to Army RTCs. Carlos and I will call you Tuesday Sep 20 morning before our other 10:30am Longhorn call.

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

Allison Abernathy Stephen- The following are our thoughts on the... 09/19/2011 02:12:28 PM

From: Allison Abernathy/DC/USEPA/US
To: Stephen Tzhone/R6/USEPA/US@EPA
Cc: Carlos Sanchez/R6/USEPA/US@EPA, George Malone/R6/USEPA/US@EPA, Monica McEaddy/DC/USEPA/US@EPA, Gracie Pendleton/DC/USEPA/US@EPA, Sally Dalzell/DC/USEPA/US@EPA, Timothy Mott/DC/USEPA/US@EPA
Date: 09/19/2011 02:12 PM
Subject: Re: Responses to EPA (HQ LUC) Comments on RODs for 16 and 17

Stephen-

The following are our thoughts on the two RODs. We find that significant issues remain that were not addressed by the Army's responses.

Also, for OU 16, the Army has not fully answered our question about the surface water. We note that p. 1-3, 4th bullet which states that surface water will be monitored and also the RAOs address "Protection of human health and the environment by preventing contaminated groundwater from migrating into nearby surface water."

Do you agree that no LUC is needed for the surface water?

LonghornRTC.docx

Allison Abernathy
phone 703-603-0052
Fax 703-603-0043
Website: http://www.epa.gov/fedfac

ENCLOSURE 2:

Army Response (on September 12, 2011) to EPA Comments (from August 29, 2011).

Responses to EPA (HQ LUC) Comments on RODs for 16 and 17

Zeiler, Rose Ms CIV USA OSA to: Stephen Tzhone 09/12/2011 01:05 PM
Cc: Fay Duke, "Lambert, John R SWT", "Wililams, Aaron"

From: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>
To: Stephen Tzhone/R6/USEPA/US@EPA
Cc: Fay Duke <fay.duke@tceq.texas.gov>, "Lambert, John R SWT" <John.R.Lambert@SWT03.usace.army.mil>, "Wililams, Aaron" <aaron.k.williams@usace.army.mil>

History: This message has been replied to.

2 attachments

Response to EPA August 29, 2011 Comments - LHAAP-16 ROD.doc

Response to EPA August 29, 2011 Comments - LHAAP-17 ROD.docx

Steve,
Please see attached responses to comments for the Site 16 and 17 RODs.
Rose

Rose M. Zeiler, Ph.D.,
Site Manager
Longhorn Army Ammunition Plant
479-635-0110 (0112 - fax)

ARMY RESPONSE TO EPA AUGUST 29, 2011 COMMENTS ON THE JUNE 2011 DRAFT RECORD OF DECISION FOR LHAAP-16 LONGHORN ARMY AMMUNITION PLANT, KARNACK, TEXAS

The following are our comments on LHAAP-16

1. On page 1-1, under 1.2, 3rd full paragraph, last sentence. Please make the following changes to account for EPA's statutory role in selecting (not concurring with) the remedy:

The USEPA and the Army jointly select the remedy and TCEQ concurs with the selected remedy in this Record of Decision (ROD).

Response: Concur. Text will be revised as requested.

2. Please clarify whether the whole of LHAAP-29 is owned by the USFWS. In Section 2.6.2, p. 2-11 it notes that most, but not all of LHAAP was transferred to the USFWS to become the Caddo Lake National Wildlife Refuge yet in Section 2.9.2, p. 2-26, it refers into a future transfer but does not name the transferee.

Response: The response assumes that EPA is referring to LHAAP-16 (not LHAAP-29) and Section 2.6.1. Although most of the former Longhorn Army Ammunition Plant has transferred to USFWS (Caddo Lake National Wildlife Refuge), LHAAP-16 has not yet transferred. The property will continue in United States ownership. For clarification the text in Section 2.6.1 will be revised as indicated below.

The reasonably anticipated future use of LHAAP-16 is as part of a national wildlife refuge. This anticipated future use is based on a Memorandum of Agreement (MOA) (U.S. Army, 2004) between the USFWS and the U.S. Army. That MOA documents the transfer process of the LHAAP acreage to USFWS to become the Caddo Lake National Wildlife Refuge and will be used to facilitate a future transfer of LHAAP-16. Presently the Caddo Lake National Wildlife Refuge occupies approximately 7,000 acres of the 8,416-acre former installation. In accordance with the National Wildlife Refuge System Administration Act of 1966 and its amendments (16 USC 668dd), the land will remain as a national wildlife refuge unless there is a change brought about by an act of Congress, or the land is part of an exchange authorized by the Secretary of the Interior.

3. Checklist item 2. Site risks and land uses. Please see section 2.6.3, p. 2-11. We are concerned about the unclear analysis of the site risks and groundwater use. In section 2.6.3, in the first paragraph, there are a number of statements about active wells and depths, but the average reader will not know at what depth the wells are completed and also the aquifer and overlying GW zone may vary in depth. Also, the depths given are inconsistent as they are not always "bgs" and its not clear whether that is an oversight or intentional. In the second paragraph, a number of active wells are discussed but in this case the depths are not given and instead lateral distances are given. This section should be clarified with the reference to each well clearly stating whether the well is completed in the aquifer or the contaminated deep GW. Also, completing the wells to different depths may not be sufficient to ensure no cross contamination. Please clarify in the text that there is no connectivity between the contaminated zone and the aquifer.

Response: Text will be revised for clarification as requested.

4. Checklist Item 4, page page 2-22 (top of page) and page 2-49, 2nd bullet. Please modify the gw objective to make it clear that except for monitoring and testing groundwater use is prohibited until cleanup levels are met: This will be more clear than "restricted."

Response: Concur. Text will be revised as requested.

Also, please add a LUC objective to preserve the groundwater monitoring system and prohibit residential, etc., uses as suggested below.

Also, we are not clear on p. 2-50 about the LUC objective for release to surface water. How will a LUC prevent release to surface water?

Response: The LUC is for groundwater, not surface water.

- LUC for ~~restriction~~ prohibition of groundwater use (except for monitoring and testing) until the cleanup levels are attained.

Response: Concur. Text will be revised as requested.

o LUC to maintain the integrity of any current and/or future groundwater monitoring system such as monitoring wells.

Response: A requirement to maintain the integrity of a monitoring system is not a LUC. Rather it is a maintenance requirement that should be part of an O&M plan. Provisions for protection of the monitoring system are also included in the transfer documentation.

- LUC to maintain the integrity of the landfill cap.

Response: Maintenance and repair of the existing landfill cap is part of the remedy. In addition, the IRA ROD (U.S. Army and USEPA, 1995) called for warning signage, use restrictions, regular inspections, maintenance and repair of the cover system and 5-year reviews.

To be clear, however, a LUC to prohibit intrusive activities will be added.

o LUC to prohibit the development and use of the property for residential housing, elementary and secondary schools, and child care facilities and playgrounds.

Response: A LUC stating that the property is suitable for non-residential use only will be added. It should be noted, however, that Army is not aware that DOI has authority to engage in any of these activities and, as noted in the response to Comment 2, the property is statutorily a wildlife refuge. However, Army has no objection to placing a notice in the county land records that the property is suitable for non-residential purposes only. It should be recognized, however, that Army is recording notices of those uses prohibited by the Army and, by its agreement, the DOI. Neither Army nor DOI possesses the authority to place land use restrictions upon the property that are enforceable by any third party, since federal property cannot be encumbered in such a manner.

Is a LUC objective needed for release to surface water?

Response: No LUC objective for release to surface water is required.

5. Checklist item 5. It is not clear what the LUC will be. Part of the confusion is that its not clear who owns the property-- see our comment #2 about property ownership. This need to be clarified and the LUC must be identified.

Response: The United States owns the property and that ownership will continue. See response to Comment 2. The LUCs are described in Section 1.4.

6. Checklist item 6. Duration. We see that duration language is Section 1.4, p. 1-3, next to the last bullet, however, we believe that additional LUCs are needed (see our comment #4).Therefore it would be simpler to use the standard checklist language because it will address all possible LUC objectives: "Land Use Controls will be maintained until the concentration of hazardous substances in the soil and groundwater are at such levels to allow for unrestricted use and exposure." Additionally, there is another duration listed on p. 2-50, 1st paragraph, 3rd sentence, for releases into surface water.

Response: The ROD will utilize LUC language appropriate to the site and the risks posed by the site contaminants. The reasonably anticipated future use of the site is as a wildlife refuge which in this specific instance is considered industrial/recreational.. Five year reviews will confirm that the land use assumptions are still valid. As stated in the response to Comment 4, Army has no objection to placing a notice in the county land records that the property is not used for residential purposes.

For groundwater - the reference on p. 2-50 is made in the context of groundwater reaching cleanup levels, not surface water. In addition, it is stated in the text that the LUC will be maintained until the concentrations of contaminants and by-product (daughter) contaminants have been reduced to below their respective cleanup levels (SDWA MCLs or GW-Ind if no MCL is available). The TCEQ GW-Ind value is the cleanup level for perchlorate and others. Therefore, although the term unrestricted use and exposure is appropriate with respect to those contaminants with MCLs, it is not applicable to those without. The existing language is considered appropriate for this ROD.

7. Checklist Item 7, please modify the following statement from page 1-3, 2nd paragraph, 5th sentence from the top of the page. We have already experienced attempts to limit a military service's responsibility to "report" to EPA and the state:

The U.S. Army will be responsible for implementation, maintenance, periodic inspection, reporting on and enforcement of the LUC in accordance with the RD.

Response: There is no attempt by Army "to limit a military service's responsibility to report to EPA and the state." Page 2-49 of the ROD clearly includes reporting as an Army responsibility. The text on page 1-3 will be revised to include "reporting on."

8. Checklist Item 8, please use the checklist language and delete the listing that shows up on page 1-4, second paragraph, line 9, conclusion of the 2nd paragraph, and 2-49, last paragraph. This listing makes it very complicated and it is also troublesome and inconsistent with EPA's authority. For example, the Army seems to be forgetting that it does NOT have independent authority to modify a remedy. The Army does not have the authority referenced in number (4) to

reserve. This was not the only problem with the listing, but we provide it to give you an idea of what we observed.

Response: The ROD will use language appropriate to the site and the specific situation, rather than to a generic checklist. The referenced text addresses only the retention of Army responsibilities following transfer of jurisdiction to the Department of the Interior, and is applicable to those two agencies only. One of the retained responsibilities is the exercise of Army authority to change, modify or terminate the remedy. However, Army is confused by the commenter's assertion that Army lacks authority to implement, modify, and terminate remedies. As an agency of the federal government, Army can take no action without a grant of authority. There is no claim here that Army has an unfettered authority to do so, however. Provision is made for EPA's role in termination or significant modification of the LUC in existing language on page 1-3 and again on page 2-33. This is also described in Section XIX and XX of the Federal Facilities Agreement. The text does not require modification.

9. Page 2-26, 1st paragraph, last sentence and page 2-50 1st paragraph,4--th sentence, please make it clear that it is the Amy who notifies the county and insert a deadline. ~~If it's the Army (and it seems like it would be better to have the Army do it rather than request Texas to do it), please make the following change:~~

In addition, within 90 days of signature of this ROD, the Army shall: 1) request the Texas Department of Licensing and Regulation ~~will be requested~~ to notify well drillers of groundwater restrictions; and 2) ~~the Army shall~~ notify the ~~a notification of the LUC with the~~ Harrison County Courthouse of the LUC to include ~~would include~~ a map showing the areas of groundwater restriction at the site, in accordance with 30 TAC 335.565.

Response: Concur with the text revision with an exception. The final groundwater LUC boundary must be finalized prior to recording the notifications. Although the RD is to be finalized within 90 days of ROD signature, it is anticipated that the LUC boundary will be finalized during the RD/RA phase, after additional well installation has occurred and with EPA review and approval. If a time limit is required, a one-year post ROD period may be appropriate and would be well in advance of land transfer. The text will be revised as follows:

In addition, within one year of signature of this ROD, the Army shall: 1) request the Texas Department of Licensing and Regulation ~~will be requested~~ to notify well drillers of groundwater restrictions; and 2) notify the Harrison County Courthouse of the LUC to include a map showing ~~recordation of~~ the area of groundwater restriction ~~would be filled in the Harrison County Courthouse~~ at the site, in accordance with 30 TAC 335.565.

10. Please also modify the following sentence on page 1-4, second full paragraph (towards the end of the paragraph) and on page 2-26, under 2.9.2, 2nd full paragraph, second to last sentence as shown below. The Army must get EPA concurrence on the modification and termination of LUCs as stated above. The Army should not be able to determine if a proposed modification is "significant" as EPA may not agree. There should be no qualifier as EPA, by law, selects or modifies a chosen remedy (not just significant or insignificant changes to a remedy). EPA relies on the land use restriction found in the ROD to find that the remedy is protective. The Army

cannot independently decide whether a land use change will be inconsistent with the LUC objectives and industrial use assumptions of the remedy. EPA may disagree. Finally, the way the Army has structured the language, the Army never has to tell us of the change (if the Army deems the change insignificant) and such change could result in a huge environmental problem. EPA cannot allow that. Please delete the second and third sentences and substitute the following language as seen below:

The U.S. Army shall consult with TCEQ and obtain USEPA concurrence prior to termination or ~~significant~~ modification of a LUC, or in the highly unlikely event of a land use change ~~inconsistent with the LUC objectives and industrial use assumptions of the remedy~~.

Response: The ROD is consistent with the applicable regulation, which Army believes is found at 40 CFR 300.435(c)(2):

> **After the adoption of the ROD, if the remedial action or enforcement action taken, or the settlement or consent decree entered into, differs significantly from the remedy selected in the ROD with respect to scope, performance, or cost, the lead agency shall consult with the support agency, as appropriate**

Army is the lead agency in this instance. Like the regulation, the proposed language seeks to strike a balance between Army's and (later) DOI's statutory authority to manage lands under their jurisdictional control and EPA's mandate to enforce environmental laws. There is no objection to deleting the phrase "LUC objectives and."

> **The U.S. Army shall consult with TCEQ and obtain USEPA concurrence prior to termination or significant modification of a LUC, or in the highly unlikely event of a land use change inconsistent with the ~~LUC objectives and~~ industrial/recreational use assumptions of the remedy.**

ARMY RESPONSE TO EPA AUGUST 29, 2011 COMMENTS ON THE AUGUST 2011 FINAL RECORD OF DECISION FOR LHAAP-17 LONGHORN ARMY AMMUNITION PLANT, KARNACK, TEXAS

The following are our comments on LHAAP-17

1. On page 1-1, under 1.2, 3rd full paragraph, last sentence. Please make the following changes to account for EPA's statutory role in selecting (not concurring with) the remedy:

The USEPA and the Army jointly select the remedy and TCEQ concurs with the selected remedy in this Record of Decision (ROD).

Response: Concur. Text will be revised as requested.

2. Checklist Item I, the maps do not contain an item in the key indicating the LUC boundary. Please add it to one of the map keys; otherwise the reader is guessing that the "site boundary" is the same as the LUC boundary (and it may not be).

Response: Figure 2-5 will be revised to depict a preliminary groundwater LUC boundary. A final LUC boundary will be determined during the RD/RA phase. See response to Comment 11.

Also, please clarify whether the whole of LHAAP-29 is owned by the USFWS. On P. 2-9 it notes that most, but not all of LHAAP was transferred to the USFWS to become the Caddo Lake National Wildlife Refuge yet in Section 2.9.2, p. 2-20, it refers into a future transfer but does not name the transferee.

Response: The response assumes that EPA is referring to LHAAP-17 (not LHAAP-29) and Section 2.6.1. The transfer status of Site17 is explained on page 2-9. The current and anticipated future owner of the property is the same, the United States Government. Army currently holds administrative control of the Site 29 property but will hand that control to USFWS upon transfer. For clarification the text in Section 2.6.1 will be revised as indicated below:

The reasonably anticipated future use of LHAAP-17 is as part of a national wildlife refuge. This anticipated future use is based on a Memorandum of Agreement (MOA) (U.S. Army, 2004) between the USFWS and the U.S. Army. That MOA documents the transfer process of the LHAAP acreage to USFWS to become the Caddo Lake National Wildlife Refuge and will be used to facilitate a future transfer of LHAAP-17. Presently the Caddo Lake National Wildlife Refuge occupies approximately 7,000 acres of the 8,416-acre former installation. In accordance with the National Wildlife Refuge System Administration Act of 1966 and its amendments (16 USC 668dd), the land will remain as a national wildlife refuge unless there is a change brought about by an act of Congress, or the land is part of an exchange authorized by the Secretary of the Interior.

3. Page 1-3, 2nd to the last bullet, last sentence, please modify as follows because the ROD seems imply that the LUC will be terminated automatically and you may want additional

sampling to confirm the answer or EPA may disagree that the level has been "achieved:"

When EPA and the Army determine that the cleanup level is achieved, the LUC will be terminated.

Response: The referenced text is one of the bullets listing the components of the selected remedy – addition of the suggested text is not consistent with the content and purpose of the bullets. Further, the authorities and process related to LUCs are presented later in this section where it is stated that "The U.S. Army shall consult with TCEQ and obtain USEPA concurrence prior to termination or significant modification of a LUC, or in the highly unlikely event of a land use change inconsistent with the LUC objectives and use assumptions of the remedy".

4. Checklist item 2. Site risks and land uses. Please see section 2.6.3, p. 2-10. We are concerned about the unclear analysis of the site risks and groundwater use. In section 2.6.3, in the first paragraph, there are a number of statements about active wells and depths, but the average reader will not know at what depth the wells are completed and also the aquifer and overlying GW zone may vary in depth. Also, the depths given are inconsistent as they are not always "bgs" and its not clear whether that is an oversight or intentional. In the second paragraph, a number of active wells are discussed but in this case the depths are not given and instead lateral distances are given. This section should be clarified with the reference to each well clearly stating whether the well is completed in the aquifer or the contaminated deep GW. Also,

Response: Concur. Text will be revised to clarify.

5. Checklist Item 4, page 2-20 and 2-33, please modify the gw objective to make it clear that except for monitoring and testing groundwater use is prohibited until cleanup levels are met: This will be more clear than "restricted." Also, please add a LUC objective to preserve the groundwater monitoring system and prohibit residential, etc., uses as suggested below.

· LUC for ~~restriction~~ prohibition of groundwater use (except for monitoring and testing) until the cleanup levels are attained.

Response: Concur. Text will be revised as requested.

o LUC to maintain the integrity of any current and/or future groundwater monitoring system such as monitoring wells.

Response: A requirement to maintain the integrity of a monitoring system is not a LUC. Rather, it is a maintenance requirement that should be part of an O&M plan. Provisions for protection of the monitoring system are also included in the transfer documentation.

o LUC to prohibit the development and use of the property for residential housing, elementary and secondary schools, and child care facilities and playgrounds.

Response: A LUC stating that the property is suitable for non-residential use only will be added. The reasonably anticipated future use of the site is industrial/recreational, consistent with a national wildlife refuge. This use is dictated by federal statute. However, Army has no objection to placing a notice in the county land records that the property is suitable for non- residential purposes only. It should be recognized, however, that Army is recording notices of those uses prohibited by the Army and, by its agreement, the DOI. Neither Army nor DOI possesses the authority to place land use restrictions upon the property that are enforceable by any third party, since federal property cannot be encumbered in such a manner.

completing the wells to different depths may not be sufficient to ensure no cross contamination. Please clarify in the text that there is no connectivity between the contaminated zone and the aquifer.

Response: Text will be revised as requested.

6. Checklist item 5. It is not clear what the LUC will be. Part of the confusion is that its not clear who owns the property-- see our comment #2 about property ownership. This need to be clarified and the LUC must be identified.

Response: See response to Comment 2. For a statement of the LUC, please refer to *Section 1.4 Description of the Selected Remedy*, where it is stated: *A land use control (LUC) to prevent human exposure to contaminated groundwater by restricting the use of groundwater to environmental monitoring and testing only.* Please also see Section 2.12.2 for a discussion of property transfer and description of the LUC.

Note: The referenced text will be revised to reflect Comment 5.

7. Checklist item 6. Duration. We see that the duration is listed on p. 2-34 for the GW LUC objective, but as noted in our comment above, we think you need to provide other objectives, so please use the following language which would apply to all the objectives: : "Land Use Controls will be maintained until the concentration of hazardous substances in the soil and groundwater are at such levels to allow for unrestricted use and exposure."

Response: See response to Comment 5. For groundwater, it is stated in the text that the LUC will be maintained until the concentrations of contaminants and by-product (daughter) contaminants have been reduced to below their respective cleanup levels (SDWA MCLs or GW-Ind if no MCL is available). The TCEQ GW-Ind value is the cleanup level for perchlorate. Therefore, although the term unrestricted use and exposure is appropriate with respect to those contaminants with MCLs, it is not applicable to those without. The existing language with respect to groundwater is considered appropriate for this ROD.

8. Checklist Item 7, please modify the following statement from page 1-3, 3rd paragraph, 5th sentence (this will make it consistent with the ROD language that shows up on page 2-33) in the

first sentence following the last bullet. We have already experienced attempts to limit a military service's responsibility to "report" to EPA and the state:

The U.S. Army will be responsible for implementation, maintenance, periodic inspection, reporting on and enforcement of the LUC in accordance with the RD.

Response: There is no attempt by Army "to limit a military service's responsibility to report to EPA and the state." Page 2-33 of the ROD clearly includes reporting as an Army responsibility. The text on page 1-3 will be revised to include "reporting on" consistent with the text on page 2-33.

9. Checklist Item 8, please use the checklist language and delete the listing that shows up on page 1-3, conclusion of the last full paragraph, and 2-33, at the end of the last full paragraph. This listing makes it very complicated and it is also troublesome and inconsistent with EPA's authority. For example, the Army seems to be forgetting that it does NOT have independent authority to modify a remedy. The Army does not have the authority referenced in number (4) to reserve. This was not the only problem with the listing, but we provide it to give you an idea of what we observed.

Response: The referenced text addresses only the retention of Army responsibilities following transfer of jurisdiction to the Department of the Interior, and is applicable to those two agencies only. One of the retained responsibilities is the exercise of Army authority to change, modify or terminate the remedy. However, Army is confused by the commenter's assertion that Army lacks authority to implement, modify, and terminate remedies. As an agency of the federal government, Army can take no action without a grant of authority. There is no claim here that Army has an unfettered authority to do so, however. Provision is made for EPA's role in termination or significant modification of the LUC in existing language on page 1-3 and again on page 2-33. This is also described in Section XIX and XX of the Federal Facilities Agreement. Please also see response to comment 3. The text does not require modification.

10. On page 1-4, top of the page, and on page 2-34, under 2.12.2, top of the page, the Army must get EPA concurrence on the modification and termination of LUCs as stated above. The Army should not be able to determine if a proposed modification is "significant" as EPA may not agree. There should be no qualifier as EPA, by law, selects or modifies a chosen remedy (not just significant or insignificant changes to a remedy). EPA relies on the land use restriction found in the ROD to find that the remedy is protective. The Army cannot independently decide whether a land use change will be inconsistent with the LUC objectives and industrial use assumptions of the remedy. EPA may disagree. Finally, the way the Army has structured the language, the Army never has to tell us of the change (if the Army deems the change insignificant) and such change could result in a huge environmental problem. EPA cannot allow that. Please delete the second and third sentences and substitute the following language as seen below:

The U.S. Army shall consult with TCEQ and obtain USEPA concurrence prior to termination or

~~significant~~ modification of a LUC, or in the highly unlikely event of a land use change ~~inconsistent with the LUC objectives and industrial use assumptions of the remedy~~.

Response: The ROD is consistent with the applicable regulation, which Army believes is found at 40 CFR 300.435(c)(2):

> **After the adoption of the ROD, if the remedial action or enforcement action taken, or the settlement or consent decree entered into, differs significantly from the remedy selected in the ROD with respect to scope, performance, or cost, the lead agency shall consult with the support agency, as appropriate**

Army is the lead agency in this instance. Like the regulation, the proposed language seeks to strike a balance between Army's and (later) DOI's statutory authority to manage lands under their jurisdictional control and EPA's mandate to enforce environmental laws. There is no objection to deleting the phrase "LUC objectives and."

> **The U.S. Army shall consult with TCEQ and obtain USEPA concurrence prior to termination or significant modification of a LUC, or in the highly unlikely event of a land use change inconsistent with the ~~LUC objectives and~~ industrial/recreational use assumptions of the remedy.**

11. Page 2-20, 1st full paragraph, page 2-34, 2nd paragraph, please make it clear that it is the Amy who notifies the county and insert a deadline. ~~If it's the Army (and it seems like it would be better to have the Army do it rather than request Texas to do it), please make the following change:~~

Response: Concur. The text will be modified to indicate that the Army will make the request.

In addition, within 90 days of signature of this ROD, the Army shall: 1) request the Texas Department of Licensing and Regulation ~~will be requested~~ to notify well drillers of groundwater restrictions; and 2) ~~the Army shall~~ notify the ~~a notification of the LUC with the~~ Harrison County Courthouse of the LUC to include ~~would include~~ a map showing the areas of groundwater restriction at the site, in accordance with 30 TAC 335.565.

Response: Exception. The final groundwater LUC boundary must be finalized prior to recording the notifications. Although the RD is to be finalized within 90 days of ROD signature, it is anticipated that the LUC boundary will be finalized during the RD/RA phase, after additional well installation has occurred and with EPA review and approval. If a time limit is required, a one-year post ROD period may be appropriate and would be well in advance of land transfer.

Fw: LUC Team Comments on Longhorn LHAAP -16 and LHAAP-17 RODs

Stephen Tzhone to: Zeiler, Rose Ms CIV USA OSA, 'Lambert, John R SWT', Williams, Aaron K SWT, Srivastav, Praveen, Watson, Susan, 08/29/2011 10:04 AM

Cc: Fay Duke, "Dale Vodak", Terry Burton, Forsythe.Barry, kdbecher

From: Stephen Tzhone/R6/USEPA/US
To: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "'Lambert, John R SWT'" <John.R.Lambert@SWT03.usace.army.mil>, "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>, "Srivastav, Praveen"
Cc: Fay Duke <Fay.Duke@tceq.texas.gov>, "Dale Vodak" <Dale.Vodak@tceq.texas.gov>, Terry Burton/R6/USEPA/US@EPA, Forsythe.Barry@epamail.epa.gov, kdbecher@usgs.gov

---

Allison Abernathy Dear Steve: Thank you for sending up your RO... 08/29/2011 08:45:02 AM

From: Allison Abernathy/DC/USEPA/US
To: Stephen Tzhone/R6/USEPA/US@EPA
Cc: Sally Dalzell/DC/USEPA/US@EPA, Monica McEaddy/DC/USEPA/US@EPA, Gracie Pendleton/DC/USEPA/US@EPA
Date: 08/29/2011 08:45 AM
Subject: Longhorn 16 & 17 RODs

Dear Steve:

Thank you for sending up your ROD to headquarters for the LUC Team's review.

The following are our comments on LHAAP -17

1. On page 1-1, under 1.2, 3rd full paragraph, last sentence. Please make the following changes to account for EPA's statutory role in selecting (not concurring with) the remedy:

The USEPA and the Army jointly select the remedy and TCEQ concurs with the selected remedy in this Record of Decision (ROD).

2. Checklist Item I, the maps do not contain an item in the key indicating the LUC boundary. Please add it to one of the map keys; otherwise the reader is guessing that the "site boundary" is the same as the LUC boundary (and it may not be). Also, please clarify whether the whole of LHAAP-29 is owned by the USFWS. On P. 2-9 it notes that most, but not all of LHAAP was transferred to the USFWS to become the Caddo Lake National Wildlife Refuge yet in Section 2.9.2, p. 2-20, it refers into a future transfer but does not name the transferee.

3. Page 1-3, 2nd to the last bullet, last sentence, please modify as follows because the ROD seems imply that the LUC will be terminated automatically and you may want additional sampling to confirm the answer or EPA may disagree that the level has been "achieved:"

- When EPA and the Army determine that the cleanup level is achieved, the LUC will be terminated.

4. Checklist item 2. Site risks and land uses. Please see section 2.6.3, p. 2-10. We are concerned

about the unclear analysis of the site risks and groundwater use. In section 2.6.3, in the first paragraph, there are a number of statements about active wells and depths, but the average reader will not know at what depth the wells are completed and also the aquifer and overlying GW zone may vary in depth. Also, the depths given are inconsistent as they are not always "bgs" and its not clear whether that is an oversight or intentional. In the second paragraph, a number of active wells are discussed but in this case the depths are not given and instead lateral distances are given. This section should be clarified with the reference to each well clearly stating whether the well is completed in the aquifer or the contaminated deep GW. Also,

5. Checklist Item 4, page 2-20 and 2-33, please modify the gw objective to make it clear that except for monitoring and testing groundwater use is prohibited until cleanup levels are met. This will be more clear than "restricted." Also, please add a LUC objective to preserve the groundwater monitoring system and prohibit residential, etc., uses as suggested below.

> • **LUC for ~~restriction~~ prohibition of groundwater use (except for monitoring and testing) until the cleanup levels are attained.**
>
> **o LUC to maintain the integrity of any current and/or future groundwater monitoring system such as monitoring wells.**
>
> **o LUC to prohibit the development and use of the property for residential housing, elementary and secondary schools, and child care facilities and playgrounds.**
>
> completing the wells to different depths may not be sufficient to ensure no cross contamination. Please clarify in the text that there is no connectivity between the contaminated zone and the aquifer.

6. Checklist item 5. It is not clear what the LUC will be. Part of the confusion is that its not clear who owns the property-- see our comment #2 about property ownership. This need to be clarified and the LUC must be identified.

7. Checklist item 6. Duration. We see that the duration is listed on p. 2-34 for the GW LUC objective, but as noted in our comment above, we think you need to provide other objectives, so please use the following language which would apply to all the objectives: : "Land Use Controls will be maintained until the concentration of hazardous substances in the soil and groundwater are at such levels to allow for unrestricted use and exposure."

8. Checklist Item 7, please modify the following statement from page 1-3, 3rd paragraph, 5th sentence (this will make it consistent with the ROD language that shows up on page 2-33) in the first sentence following the last bullet. We have already experienced attempts to limit a military service's responsibility to "report" to EPA and the state:

The U.S. Army will be responsible for implementation, maintenance, periodic inspection, reporting on and enforcement of the LUC ~~in~~ accordance with the RD.

9. Checklist Item 8, please use the checklist language and delete the listing that shows up on page 1-3, conclusion of the last full paragraph, and 2-33, at the end of the last full paragraph. This listing makes it very complicated and it is also troublesome and inconsistent with EPA's

authority. For example, the Army seems to be forgetting that it does NOT have independent authority to modify a remedy. The Army does not have the authority referenced in number (4) to reserve. This was not the only problem with the listing, but we provide it to give you an idea of what we observed.

10. On page 1-4, top of the page, and on page 2-34, under 2.12.2, top of the page, the Army must get EPA concurrence on the modification and termination of LUCs as stated above. The Army should not be able to determine if a proposed modification is "significant" as EPA may not agree. There should be no qualifier as EPA, by law, selects or modifies a chosen remedy (not just significant or insignificant changes to a remedy). EPA relies on the land use restriction found in the ROD to find that the remedy is protective. The Army cannot independently decide whether a land use change will be inconsistent with the LUC objectives and industrial use assumptions of the remedy. EPA may disagree. Finally, the way the Army has structured the language, the Army never has to tell us of the change (if the Army deems the change insignificant) and such change could result in a huge environmental problem. EPA cannot allow that. Please delete the second and third sentences and substitute the following language as seen below:

The U.S. Army shall consult with TCEQ and obtain USEPA concurrence prior to termination or ~~significant~~ modification of a LUC, or in the highly unlikely event of a land use change ~~inconsistent with the LUC objectives and industrial use assumptions of the remedy~~.

11. Page 2-20, 1st full paragraph, page 2-34, 2nd paragraph, please make it clear that it is the Amy who notifies the county and insert a deadline. ~~If it's the Army (and it seems like it would be better to have the Army do it rather than request Texas to do it), please make the following change:~~

In addition, within 90 days of signature of this ROD, the Army shall: 1) request the Texas Department of Licensing and Regulation ~~will be requested~~ to notify well drillers of groundwater restrictions; and 2) ~~the Army shall~~ notify the ~~a notification of the LUC with the~~ Harrison County Courthouse of the LUC to include ~~would include~~ a map showing the areas of groundwater restriction at the site, in accordance with 30 TAC 335.565.

The following are our comments on LHAAP -16

1. On page 1-1, under 1.2, 3rd full paragraph, last sentence. Please make the following changes to account for EPA's statutory role in selecting (not concurring with) the remedy:

The USEPA and the Army jointly select the remedy and TCEQ concurs with the selected remedy in this Record of Decision (ROD).

2. Please clarify whether the whole of LHAAP-29 is owned by the USFWS. In Section 2.6.2, p. 2-11 it notes that most, but not all of LHAAP was transferred to the USFWS to become ethe Caddo Lake National Wildlife Refuge yet in Section 2.9.2, p. 2-26, it refers into a future transfer but does not name the transferee.

3. Checklist item 2. Site risks and land uses. Please see section 2.6.3, p. 2-11. We are concerned about the unclear analysis of the site risks and groundwater use. In section 2.6.3, in the first paragraph, there are a number of statements about active wells and depths, but the average reader will not know at what depth the wells are completed and also the aquifer and overlying GW zone may vary in depth. Also, the depths given are inconsistent as they are not always "bgs" and its not clear whether that is an oversight or intentional. In the second paragraph, a number of active wells are discussed but in this case the depths are not given and instead lateral distances are given. This section should be clarified with the reference to each well clearly stating whether the well is completed in the aquifer or the contaminated deep GW. Also, completing the wells to different depths may not be sufficient to ensure no cross contamination. Please clarify in the text that there is no connectivity between the contaminated zone and the aquifer.

4. Checklist Item 4, page page 2-22 (top of page) and page 2-49, 2nd bullet. Please modify the gw objective to make it clear that except for monitoring and testing groundwater use is prohibited until cleanup levels are met: This will be more clear than "restricted." Also, please add a LUC objective to preserve the groundwater monitoring system and prohibit residential, etc., uses as suggested below. Also, we are not clear on p. 2-50 about the LUC objective for release to surface water. How will a LUC prevent release to surface water?

- **LUC for ~~restriction~~ prohibition of groundwater use (except for monitoring and testing) until the cleanup levels are attained.**

o LUC to maintain the integrity of any current and/or future groundwater monitoring system such as monitoring wells.

- LUC to **maintain the integrity of** the landfill cap.

o LUC to prohibit the development and use of the property for residential housing, elementary and secondary schools, and child care facilities and playgrounds.

- **Is a LUC objective needed for release to surface water?**

5. Checklist item 5. It is not clear what the LUC will be. Part of the confusion is that its not clear who owns the property-- see our comment #2 about property ownership. This need to be clarified and the LUC must be identified.

6. Checklist item 6. Duration. We see that duration language is Section 1.4, p. 1-3, next to the last bullet, however, we believe that additional LUCs are needed (see our comment #4).Therefore it would be simpler to use the standard checklist language because it will address all possible LUC objectives: "Land Use Controls will be maintained until the concentration of hazardous substances in the soil and groundwater are at such levels to allow for unrestricted use and exposure." Additionally, there is another duration listed on p. 2-50, 1st paragraph, 3rd sentence, for releases into surface water.

7. Checklist Item 7, please modify the following statement from page 1-3, 2nd paragraph, 5th sentence from the top of the page. We have already experienced attempts to limit a military service's responsibility to "report" to EPA and the state:

The U.S. Army will be responsible for implementation, maintenance, periodic inspection, reporting on and enforcement of the LUC ~~in~~ accordance with the RD.

8. Checklist Item 8, please use the checklist language and delete the listing that shows up on page 1-4, second paragraph, line 9, conclusion of the 2nd paragraph, and 2-49, last paragraph. This listing makes it very complicated and it is also troublesome and inconsistent with EPA's authority. For example, the Army seems to be forgetting that it does NOT have independent authority to modify a remedy. The Army does not have the authority referenced in number (4) to reserve. This was not the only problem with the listing, but we provide it to give you an idea of what we observed.

9. Page 2-26, 1st paragraph, last sentence and page 2-50 1st paragraph,4th sentence, please make it clear that it is the Amy who notifies the county and insert a deadline. ~~If it's the Army (and it seems like it would be better to have the Army do it rather than request Texas to do it), please make the following change:~~

In addition, within 90 days of signature of this ROD, the Army shall: 1) request the Texas Department of Licensing and Regulation ~~will be requested~~ to notify well drillers of groundwater restrictions; and 2) ~~the Army shall~~ notify the ~~a notification of the LUC with the~~ Harrison County Courthouse of the LUC to include ~~would include~~ a map showing the areas of groundwater restriction at the site, in accordance with 30 TAC 335.565.

10. Please also modify the following sentence on page 1-4, second full paragraph (towards the end of the paragraph) and on page 2-26, under 2.9.2, 2nd full paragraph, second to last sentence as shown below. The Army must get EPA concurrence on the modification and termination of LUCs as stated above. The Army should not be able to determine if a proposed modification is "significant" as EPA may not agree. There should be no qualifier as EPA, by law, selects or modifies a chosen remedy (not just significant or insignificant changes to a remedy). EPA relies on the land use restriction found in the ROD to find that the remedy is protective. The Army cannot independently decide whether a land use change will be inconsistent with the LUC objectives and industrial use assumptions of the remedy. EPA may disagree. Finally, the way the Army has structured the language, the Army never has to tell us of the change (if the Army deems the change insignificant) and such change could result in a huge environmental problem. EPA cannot allow that. Please delete the second and third sentences and substitute the following language as seen below:

The U.S. Army shall consult with TCEQ and obtain USEPA concurrence prior to termination or ~~significant~~ modification of a LUC, or in the highly unlikely event of a land use change ~~inconsistent with the LUC objectives and industrial use assumptions of the remedy~~.

Allison Abernathy
phone 703-603-0052
Fax 703-603-0043
Website: http://www.epa.gov/fedfac

ENCLOSURE 3:

Army Response (on September 6, 2011) to EPA Comments (from August 31, 2011).

MMRP RTCs to EPA
Zeiler, Rose Ms CIV USA OSA to: Stephen Tzhone
Cc: Fay Duke, "Lambert, John R SWT", "Wililams, Aaron"

09/06/2011 03:16 PM

From: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>
To: Stephen Tzhone/R6/USEPA/US@EPA
Cc: Fay Duke <fay.duke@tceq.texas.gov>, "Lambert, John R SWT" <John.R.Lambert@SWT03.usace.army.mil>, "Wililams, Aaron" <aaron.k.williams@usace.army.mil>

History: This message has been replied to.

Steve,
Please see attached RTCs to the MMRP comments.
Rose

Rose M. Zeiler, Ph.D.,
Site Manager
Longhorn Army Ammunition Plant
479-635-0110 (0112 - fax)

Army Responses to EPA Legal Comments on MMRP RODs.docx Meeting Minutes re EPA on NFA RODs.pdf

Army Response
EPA Region 6 Legal Comments dated August 31, 2011
LHAAP-001-R and LHAAP-003-R Draft Final ROD (August 2011)

1) The ROD needs to be specific that it is an institutional controls/LUCs ROD, and not imply that it is a no action ROD. As written, the draft ROD does not purport to select LUCs as the selected remedy, but instead, selects no action when it is fairly clear that the long-term implementation of LUCs is the selected remedy for the LHAAP MMRP Sites. It is not permissible to use the removal program to circumvent compliance with remedial action selection requirements. In other words, long-term LUCs are remedial actions, not removal actions. Thus, long-term LUCs should be selected remedial actions to be properly documented in the ROD (see below comments) so that EPA, if necessary, can take an enforcement action against the Army for failure to properly implement and enforce LUCs.

Response: Section 1.3 of the document clearly describes the remaining remedy as LUCs and limited groundwater monitoring. The document also makes clear that a removal action has already occurred. The document will clarify that the selected remedy is a removal action with LUCs and limited groundwater monitoring. The statutory determination in Section 1.4 will be corrected to state that the ROD selects the stated remedy and that the selection is statutorily compliant. The EE/CA fulfilled the statutory requirement for an FS because it evaluated the risks posed, identified, compared, and contrasted remedies and selected the removal action with LUCs. Army solicited public comment and coordinated repeatedly on the removal action approach at these sites and the type of documentation that would be required by EPA. Please see attached meeting minutes – 2 documented instances – in which EPA Region VI (George Malone and Steve Tzhone) stated that a no (further) action ROD would be appropriate after a removal action – a removal action conducted under Army's CERCLA Removal Action Authority. However, at this late date and in an attempt to move forward with this document, Army agrees to EPA's requested change and will edit the terminology used in the ROD to indicate that it is NOT a no action ROD, but is a ROD with LUCs.

2) This draft ROD states "this decision presents the continued land use controls (LUCs) already in place as a result of removal actions at ... in 2008." However, the LUCs at the Site do not appear to be incorporated into an enforceable mechanism (*although the Army could enforce a LUC per a future property transfer agreement, EPA has no mechanism to take an enforcement action against Army for failure to implement and enforce LUCs

under a removal action). Also, the LUCs have not been recorded in the deed records for the Site per the language provided in the draft ROD.

Response: The LUCs were presented in the Removal Action work plan and included the LUC design and LUC plan that were approved by EPA. The recordation is that of a notice, rather than a use restriction. There is no deed because there is no change in ownership with transfer of administrative control from one federal agency to another. The letter of transfer includes the environmental protection provisions of the Environmental Condition of Property (ECP), a document that will be provided to EPA for review prior to transfer. Per GSA regulations, the United States cannot place encumbrances upon federal property. Even if such were allowed, both the servient estate subject to the restriction and the dominant estate with the right to enforce the restriction would be the same estate – the United States. Such are void as restrictions. Therefore the LUCs will not be "enforceable" in manner desired by the commenter, unless the property encumbered by the restrictions is transferred into private ownership, an occurrence that is not reasonably foreseeable.

Although it was Army's intention to record the LUC notice after finalization of the Removal Action Report, EPA Region 6 stated that the recordation should wait until after the ROD was signed.

In response to this change in EPA's position, Army will undertake recordation of the LUC notice in the county on the 15th of September 2011.

3) In light of the fact that institutional controls are basically the sole remedy here (*note: 40 C.F.R. § 300.430(a)(1)(iii)(D) makes it clear that, while not preferred, institutional controls may serve as the sole remedial action selection under certain circumstances (e.g., active measures are determined impracticable)) , the Army's ROD should include language clearly identifying the LUCs/institutional controls; clearly identifying the purposes of the controls or why they are needed; clearly delineating who is responsible for implementing, enforcement, monitoring, reporting on, and notifying stakeholders concerning the LUCs in place, and events that impact the LUCs; and address the LUC/IC checklist items 1-9 (*see recent comments from EPA HQ LUC team on LHAAP-16, LHAAP-17, LHAAP-29). The ROD should also include language stating that the details and description of the LUCs and the roles/responsibilities will be included in the remedial design workplan.

Response: LUCs are not the sole remedial action (removal action) at these sites. MEC clearance was conducted and signs were installed at both

sites, visible one to the next. Because it was determined that a guarantee of 100% clearance cannot be made in the event a single MEC item remains, LUCs were selected by Army and such selection was approved by EPA.

The ROD will be revised to include language stating that the details and description of the LUCs and roles/responsibilities can be found in the approved LUC design and plan.

4) This draft ROD does not include the necessary analysis required under the NCP to constitute a CERCLA remedial action decision. The no action alternative, and nine remedy selection criteria analysis will have to be addressed in the ROD in order to satisfy the CERCLA remedy selection and decision document requirements found in the NCP. As such, the following sections should be included in this ROD: Assessment of the Site; ROD Data Certification Checklist; Remedial Action Objectives; Description of Alternatives; Comparative Analysis of Alternatives; Principle Threat Waste; Selected Remedy; and Statutory Determinations. Also, the long-term and permanent use of ICs/LUCs require compliance with the remedial action selection criteria (i.e., Threshold, Primary, and Modifying Criteria). The long-term effectiveness and permanence of ICs and LUCs are included under the Primary Criteria.

Response: See response to Comment 1. The document will be revised to include the nine selection criteria along with the no action alternative and the format of the ROD will be changed accordingly.

5) The administrative record should reflect that an RI/FS or a munitions constituents (MC), debris (MD) and munitions and explosives of concern (MEC) investigation, and a Risk Hazard Assessment for MEC and MC were conducted. The above information should be found in the administrative record which forms the basis for the selection of the selected remedy. A Risk Hazard Assessment should provide important insight concerning the risks presented by the Site if no remedial action, including institutional controls, is applied to the Site.

Response: The EECA containing this information is in the Administrative Record – 2008.

6) The remedy seems like it should also include engineered controls/engineered LUCs such as fencing. Pursuant to the removal action performed, it is clear signs have been installed to warn people that explosive hazard materials and unexploded ordnance (UXO) may remain in certain areas. Although MEC and explosive hazard materials were located

and removed from the Sites, these areas should be fenced because MEC and explosive hazard materials may remain at the LHAAP MMRP Sites. Any fencing should also have a plan (i.e., an O&M Plan) establishing a process for the protection and maintenance of the fencing in light of the fact that this property will more likely than not be transferred to the U.S. Fish and Wildlife Service.

Response: Because a clearance has been completed, DoD considers the probability of encountering additional MEC items at the site to be low. The signs, while not required after a removal action, have been provided as an additional layer of protection. Coordination among stakeholders, including EPA, was conducted at all phases of the MMRP work. Considerable discussion on the LUC approach at Longhorn was undertaken by EPA at all levels. The LUCs presented in the Action Memorandum were followed up in the Removal Action work plan that included the LUC design and a LUC plan and these did not include fencing. These documents have undergone EPA review and approval.

Shaw® Shaw Environmental, Inc.

Subject: **Draft Final Minutes, Monthly Managers Meeting, Longhorn Army Ammunition Plant (LHAAP)**

Location of Meeting: Region 6, USEPA, Dallas, Texas
Date of Meeting: October 25, 2006, 1:30 – 4:30 PM

Meeting Participants:

BRAC:	Rose M. Zeiler
USACE-Tulsa:	Cliff Murray, Rick Smith
USACE – Fort Worth:	Beverly Post
USAEC:	Jeff Armstrong (phone)
USFWS:	Paul Bruckwicki
Shaw Environmental:	Praveen Srivastav
	Phone: Dave Cobb, John Elliot, Kay Everett, Greg Jones, Van Vangala, Susan Watson, Tarek Ladaa
USEPA Region 6:	Chris Villarreal, Scott Harris, George Malone (EPA Legal)
TCEQ:	Fay Duke, Dale Vodak (phone)

Prior to the meeting Shaw and Army had distributed copies of the meeting agenda, minutes of September 26, 2006 Monthly Managers' Meeting, and document status tables for the TERC and PBC work via e-mail.

Rose Zeiler opened the meeting and welcomed those in attendance and those joining on the phone. There was a review of the September Meeting Minutes and Action Items.
Dr. Zeiler went through the list of action items from the previous monthly managers' meeting. Below are the highlights of this discussion:

- **Army – Provide MMRP report to EPA when available** - Beverly Post indicated MMRP report should be available for EPA review any day.
- **EPA – Provide input on the use of TCRA for remedial action at LHAAP-50 and similar sites:** Chris Villarreal invited George Malone, EPA Legal, to discuss the use of TCRA for remedial action at LHAAP-50. The summary of the discussion is as follows:
  - The Army is the lead agency and can conduct removal actions under the DOD CERCLA Removal Authority with EPA in an observatory role.

- Factors considered while implementing a removal action include: (a) administrative record; (b) length of time available before removal action, i.e. urgency of the situation; (c) action memorandum documenting need for removal action; (d) EE/CA, TCRA action memorandum, and TCRA execution do not require approval by EPA, however, sampling and analysis plan (SAP) will need EPA approval; (e) a No Action ROD will be required to delist the site from NPL
- Groundwater responses are typically considered long-term remedial responses that are not suited for removal actions. They require traditional CERCLA response with RI/FS and ROD
- To a question from Jeff Armstrong regarding the use of treatability study to remediate perchlorate sites, GM replied that treatability studies are typical not considered remedial actions and would still require RI/FS and ROD before the site is de-listed.
- JA stated that AEC attorneys may want to discuss with EPA attorneys. JA asked if they could contact GM. GM provided his contact information.

- **Shaw –Provide chromium results for LHAAP-12 and LHAAP-48, perimeter well sampling results, and MNA sampling results at the next monthly managers' meeting**. These action items refer to material presented during the October 25 meeting.

Defense Environmental Restoration Program (DERP) PBC Update (Dave Cobb)

Field Activities Update. Shaw completed the field work in September 2006 at LHAAP-03, -04, -06, -07, -29, -51, -55, -64, and -68. Data is coming in. Shaw is currently providing documentation to the USACE for completion of field activities. Sampling for the BERA was completed in the first part of October 2006. Samples are currently being analyzed. Toxicity tests are underway. A first draft to Army is planned for the first week of December 2006.

Document Status. PBC document status table was provided to the participants. The GWTP optimization memorandum is in comment resolution stage.

GWTP. Van Vangala provided an update on the GWTP operation. The plant is performing as usual. 936,000 gallons of groundwater from LHAAP-18/24 were treated. 20,000 gallons of groundwater from LHAAP-16 were treated. The drought-like conditions are affecting operations. In August 2006, 26,000 pounds of waste were shipped off site. In August 2006, perchlorate exceeded discharge parameters. A nutrient feed pump failed on Saturday (October 22) and was replaced. System took a couple days to restabilize. Perchlorate exceeded daily maximum because of the pump failure. The water was sprinkled at the burning ground on the days of exceedance. Shaw will estimate the volume of water discharged during the time of exceedance and report in the next monthly report. A new tractor is available and kept on site to assist in moving sludge and drums around, for bush-hogging, and mowing grass. Freeboard is about 2 feet. No rain, so in last quarter no water was discharged to Harrison Bayou.

BERA. Shaw is planning to submit the BERA report in two parts. The first part will cover the sections up to Step 3 and the second part will present field and toxicity data and steps beyond.

Shaw® Shaw Environmental, Inc.

Subject: **Draft Final Minutes, Monthly Managers Meeting, Longhorn Army Ammunition Plant (LHAAP)**

Location of Meeting: Shaw offices, Houston, Texas
Date of Meeting: **April 4, 2007, 08:00 PM – 11:30 PM**
Post IAP Work Shop

Meeting Participants:

BRAC:	Rose M. Zeiler
USACE-Tulsa:	Cliff Murray, John Lambert, Rick Smith
USAEC	Jeff Armstrong
Shaw Environmental:	Dave Cobb, Praveen Srivastav, John Elliott, Van Vangala, Kay Everett, Greg Jones, Frank Eidson, Amar Bumb (phone)
USEPA Region 6:	Steve Tzhone, Scott Harris (phone), Raji Josiam (phone)
TCEQ:	Fay Duke
USFWS:	Paul Bruckwicki, Barry Forsythe

Prior to the start of the meeting, Jeff Armstrong led a discussion on some funding issues regarding TERC and MMRP. He mentioned that the AEC has earmarked money for MMRP for this fiscal year. Rose Zeiler stated that Shaw's rate adjustment on the TERC task order has resulted in the overall cost for the task order to be higher than previously known. This may make it difficult to complete the scope of work with available funds. Rick Smith said that money can be added to the Longhorn TERC task order with a modification as long as the scope of work does not change.

Rose Zeiler asked Steve Tzhone if a NFA ROD can be submitted for the MMRP sites following an NTCRA Action Memorandum without having to go through a proposed plan. Steve Tzhone said he would check on this. He further added that while the Action Memo can normally be the final decision document, LHAAP is an NPL site and may require a ROD because of that. Rose said that Army requires a ROD after a removal action for NPL sites. Praveen Srivastav asked how the use of a non-TCRA was justified for MMRP work. Rose responded that UXO was a safety issue, especially with the public asking for access. It is within DOD's removal authority. Praveen asked if Army legal may foresee a problem using non-TCRA. Jeff Armstrong replied that this approach can be used in other places if successful and they were moving very carefully through this process.

Shaw® Shaw Environmental, Inc.

Subject: **Draft Minutes, Monthly Managers Meeting, Longhorn Army Ammunition Plant (LHAAP)**

Location of Meeting: **Teleconference**
Date of Meeting: **May 15, 2007, 01:00 PM – 4:30 PM**

Meeting Participants:

BRAC:	Rose M. Zeiler
USACE-Tulsa:	John Lambert
USAEC	Jeff Armstrong
Shaw Environmental:	Dave Cobb, Praveen Srivastav, John Elliott, Van Vangala, Kay Everett, Greg Jones, Jon Lindberg, Amar Bumb
USEPA Region 6:	Steve Tzhone, Scott Harris, Mike Overbay, Gary Miller
TCEQ:	Fay Duke, Dale Vodak
USFWS:	Paul Bruckwicki
USGS:	Kent Becher, Phil Harte

Action Items from April 2007 Manager's Meeting

Army Action Items

- **Forward MMRP report to EPA and TCEQ when available.** The MMRP report was forwarded to EPA and TCEQ.
- **Utility easement transfer status.** The utility easement transfer status was discussed. Army indicated that the easement would be transferred to FWS when details are worked out.

Shaw Action Item

- **Provide additional information on LHAAAP-16 to TCEQ.** Shaw provided additional information on LHAAP-16 to TCEQ.

EPA Action Item

- **Steve Tzhone to determine if a proposed plan and public comment period is required with an NFA ROD that follows implementation of an Action Memorandum and EE/CA that had already undergone public review.** Steve indicated that an NFA ROD will still need to have a proposed plan with public review, but that those do not have to be complicated.

Longhorn: EPA legal comments for Draft Final MMRP Sites ROD for LHAAP 001-R and LHAAP-003-R

Stephen Tzhone to: Zeiler, Rose Ms CIV USA OSA, Lambert, John R SWT, Williams, Aaron K SWT, Elliott, John, Mayila, Agnes, Srivastav,
Cc: Fay Duke, Richard Mayer

08/31/2011 01:52 PM

From: Stephen Tzhone/R6/USEPA/US
To: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@SWT03.usace.army.mil>, "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>, "Elliott, John" <John.Elliott@shawgrp.com>, "Mayila,
Cc: Fay Duke <Fay.Duke@tceq.texas.gov>, Richard Mayer/R6/USEPA/US@EPA

Hi Rose:

Please address these comments from EPA legal on the MMRP ROD for for LHAAP 001-R and LHAAP-003-R. Let me know if we need to have a call to discuss.

---

1) The ROD needs to be specific that it is an institutional controls/LUCs ROD, and not imply that it is a no action ROD. As written, the draft ROD does not purport to select LUCs as the selected remedy, but instead, selects no action when it is fairly clear that the long-term implementation of LUCs is the selected remedy for the LHAAP MMRP Sites. It is not permissible to use the removal program to circumvent compliance with remedial action selection requirements. In other words, long-term LUCs are remedial actions, not removal actions. Thus, long-term LUCs should be selected remedial actions to be properly documented in the ROD (see below comments) so that EPA, if necessary, can take an enforcement action against the Army for failure to properly implement and enforce LUCs.

2) This draft ROD states "this decision presents the continued land use controls (LUCs) already in place as a result of removal actions at ... in 2008." However, the LUCs at the Site do not appear to be incorporated into an enforceable mechanism (*although the Army could enforce a LUC per a future property transfer agreement, EPA has no mechanism to take an enforcement action against Army for failure to implement and enforce LUCs under a removal action). Also, the LUCs have not been recorded in the deed records for the Site per the language provided in the draft ROD.

3) In light of the fact that institutional controls are basically the sole remedy here (*note: 40 C.F.R. § 300.430(a)(1)(iii)(D) makes it clear that, while not preferred, institutional controls may serve as the sole remedial action selection under certain circumstances (e.g., active measures are determined impracticable)) , the Army's ROD should include language clearly identifying the LUCs/institutional controls; clearly identifying the purposes of the controls or why they are needed; clearly delineating who is responsible for implementing, enforcement, monitoring, reporting on, and notifying stakeholders concerning the LUCs in place, and events that impact the LUCs; and address the LUC/IC checklist items 1-9 (*see recent comments from EPA HQ LUC team on LHAAP-16, LHAAP-17, LHAAP-29). The ROD should also include language stating that the details and description of the LUCs and the roles/responsibilities will be included in the remedial design workplan.

4) This draft ROD does not include the necessary analysis required under the NCP to constitute a CERCLA remedial action decision. The no action alternative, and nine remedy selection criteria analysis will have to be addressed in the ROD in order to satisfy the CERCLA remedy selection and decision document requirements found in the NCP. As such, the following sections should be included in this ROD: Assessment of the Site; ROD Data Certification Checklist; Remedial Action Objectives; Description of Alternatives; Comparative Analysis of Alternatives; Principle Threat Waste; Selected Remedy; and Statutory Determinations. Also, the long-term and permanent use of ICs/LUCs require compliance with the remedial action selection criteria (i.e., Threshold, Primary, and Modifying Criteria). The long-term effectiveness and permanence of ICs and LUCs are included under the Primary Criteria.

5) The administrative record should reflect that an RI/FS or a munitions constituents (MC), debris (MD) and munitions and explosives of concern (MEC) investigation, and a Risk Hazard Assessment for MEC and MC were conducted. The above information should be found in the administrative record which forms the basis for the selection of the selected remedy. A Risk Hazard Assessment should provide important insight concerning the risks presented by the Site if no remedial action, including institutional controls, is applied to the Site.

6) The remedy seems like it should also include engineered controls/engineered LUCs such as fencing. Pursuant to the removal action performed, it is clear signs have been installed to warn people that explosive hazard materials and unexploded ordnance (UXO) may remain in certain areas. Although MEC and explosive hazard materials were located and removed from the Sites, these areas should be fenced because MEC and explosive hazard materials may remain at the LHAAP MMRP Sites. Any fencing should also have a plan (i.e., an O&M Plan) establishing a process for the protection and maintenance of the fencing in light of the fact that this property will more likely than not be transferred to the U.S. Fish and Wildlife Service.

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

"Elliott, John" Steve and Fay- Attached please find the Draft Fi... 08/19/2011 03:33:10 PM

From: "Elliott, John" <John.Elliott@shawgrp.com>
To: Stephen Tzhone/R6/USEPA/US@EPA, "Fay.duke@tceq.texas.gov" <Fay.duke@tceq.texas.gov>
Cc: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>, "Lambert, John R SWT" <John.R.Lambert@SWT03.usace.army.mil>, "Mayila, Agnes" <Agnes.Mayila@shawgrp.com>
Date: 08/19/2011 03:33 PM
Subject: Draft Final ROD for LHAAP 001-R and LHAAP-003-R

Steve and Fay-

Attached please find the Draft Final ROD for LHAAP 001-R and LHAAP-003-R. Please contact me if you have any questions or require additional information. Thank you.

Draft Final ROD LHAAP-001-R and 003-R.docx

Figs 2-1 thru 2-6.pdf

John C. Elliott, PMP
Project Manager
Federal Services/Project Management
Shaw Environmental & Infrastructure Group
1401 Enclave Parkway, Suite 250
Houston, Texas 77077
281.531.3117 direct
713.201.4638 cell
281.531.3101 fax

john.elliott@shawgrp.com

Shaw™ a world of Solutions™
www.shawgrp.com

Please consider the environment before printing this e-mail.

****Internet Email Confidentiality Footer**** Privileged/Confidential Information may be contained in this message. If you are not the addressee indicated in this message (or responsible for delivery of the message to such person), you may not copy or deliver this message to anyone. In such case, you should destroy this message and notify the sender by reply email. Please advise immediately if you or your employer do not consent to Internet email for messages of this kind. Opinions, conclusions and other information in this message that do not relate to the official business of The Shaw Group Inc. or its subsidiaries shall be understood as neither given nor endorsed by it. _____ The Shaw Group Inc.
http://www.shawgrp.com

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
600 ARMY PENTAGON
WASHINGTON, DC 20310-0600

MAR 30 2012

Dr. Al Armendariz
Regional Administrator
U.S. Environmental Protection Agency, Region 6
Fountain Place 12th Floor, Suite 1200
1445 Ross Avenue
Dallas, TX 75202-2733

Mr. Mark Vickery
Executive Director
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Dear Messrs. Armendariz and Vickery:

By this letter I am elevating the dispute regarding the procedural and substantive bases for the assessment of stipulated penalties at the former Longhorn Army Ammunition Plant (LHAAP) asserted in Mr. Coleman's letter of 13 October 2011, to the Senior Executive Committee (SEC) pursuant to Section XV, "Dispute Resolution" of the Federal Facilities Agreement (FFA). In Army's 27 October 2011 response, Mr. Lederle explained that Section XXIV, "Stipulated Penalties", paragraph A of the FFA allows the assessment of stipulated penalties by the U.S. Environmental Protection Agency (EPA) "in the event the Army fails to submit a primary document ... pursuant to the appropriate timetable or deadline in accordance with the requirements of this Agreement, or fails to comply with a term or condition of this Agreement which relates to an operable unit or final remedial action." The Army has not failed to meet an FFA deadline or failed to comply with a relevant term or condition of the FFA, but rather has sought to engage in good faith efforts to consult with EPA and the Texas Commission on Environmental Quality (TCEQ) throughout the remedy selection process.

Deadlines for primary document submittal are set forth in Section XVI, "Deadlines", paragraph A of the FFA, which requires that "Army shall propose deadlines for completion of the following *draft* primary documents." (Emphasis added.) EPA recognizes that Army timely submitted the draft and draft final RODs for each of the sites subjected to stipulated penalties.

EPA is left with arguing in its 13 October 2011 letter that the "sites do not have approved RODs." The FFA does not establish a deadline for finalizing an approved ROD or any other primary document. Instead, RODs are finalized through the consultation process required by the FFA. Section VIII, "Consultation with EPA and TWC" (TWC is the predecessor to TCEQ) describes an equitable procedure by which the Army submits a draft primary document, EPA and TCEQ comment on that draft document, and Army *considers* the comments and responds with a draft final primary document. Section VIII.B.1 of the FFA provides that a draft final primary document is the only document subject to dispute, and that it becomes the final primary document thirty days after issuance of the draft final unless dispute resolution is invoked by EPA or TCEQ under Section XV of the FFA. Therefore, invoking dispute resolution is the correct agency response to a final draft document that does not incorporate its comments.

Printed on Recycled Paper

To conclude instead that Army can be subjected to stipulated penalties unless it accepts EPA's comments is contrary to the FFA's carefully crafted consultation procedure and the related FFA dispute resolution process. The EPA letter of 12 March 2012 asserts that the RODs failed to satisfy Section XIX "Selection, Design, and Implementation of Remedial Actions" and must therefore be subject to stipulated penalties. Paragraph XIX.A makes clear that the referenced tasks include submission of "documents prepared and incorporated in accordance with Section VIII, (Consultation)." Specifically, Paragraph XIX.C requires that RODs be finalized *jointly* by the Army and EPA, or that the remedy be selected by the EPA Administrator if there if there is a failure to reach agreement on selection of the remedy. In this instance, there is no disagreement regarding the selection of the remedies, with which all three agencies expressly agreed, or that these remedies were not selected in accordance with CERCLA, the NCP, guidance and policy, and RCRA. There is only a disagreement regarding a limited amount of text in the RODs. As late as eleven days prior to the submittal of the RODs for signature, EPA Region 6 had informed Army that it was prepared to sign the draft final RODs. Documents that a Region is ready to sign cannot be so deficient as to warrant the imposition of stipulated penalties even if such were in accord with the FFA.

The assessment of stipulated penalties in this situation is a blunt effort by EPA to force the Army to accept its exact demanded text in the RODs, notwithstanding agreement by all the parties with the selected remedial alternatives. It undermines any assertion by EPA that it is engaging in good faith dispute resolution as required by the FFA for disagreements regarding the contents of a primary document. The EPA letter of 12 March 2012 demonstrates again that EPA is seeking to use stipulated penalties to punish the Army for its disagreement with the language EPA demands for the RODs at issue. This letter purports to reinstate penalties EPA had agreed to hold in abeyance during dispute resolution, solely because the Army did not agree to all the language in dispute at the first dispute resolution level. This attempted use of stipulated penalties as punishment for disagreement on text is not provided in Section XXIV of the FFA, and is fundamentally inconsistent with Federal policy favoring good faith cooperative dispute resolution. *See* OMB/CEQ Memorandum on Environmental Conflict Resolution, dated Nov. 28, 2005 (currently in the process of reissuance).

Unfortunately, the EPA representative on the Dispute Resolution Committee refused to recognize the assessment of stipulated penalties as being subject to the dispute resolution process, and was unwilling to discuss the procedural and substantive defects relating to their assessment. Army is therefore elevating this dispute to the SEC for resolution. It is our sincere hope that EPA will withdraw its assessment of stipulated penalties and allow the SEC to attempt to resolve the outstanding issues related to the RODS in question without any associated threats of punitive measures for daring to disagree. In the absence of EPA withdrawing this threat, the Army refers the matter to the SEC.

LYNNE ANDERSON
Chief, Base Realignment
And Closure Division

CC
DASA(ESOH)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

APR 05 2012

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Hershell E. Wolfe
Deputy Assistant Secretary of the Army for
Environment, Safety, and Occupational Health
110 Army Pentagon
ATTN: SAIE-ESOH; Room 3D453
Washington, DC 20310-0110

Mr. Mark R. Vickery, P.G.
Executive Director
Texas Commission on Environmental Quality
P.O. Box 13087, MC-109
Austin, TX 78711-3087

Mr. Al Armendariz
Regional Administrator
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

RE: Notice of Written Statement of Dispute - Unresolved Issues
Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas
Federal Facility Agreement (FFA) Under CERCLA Section 120

Dear Senior Executive Committee Members:

By this letter, the United States Environmental Protection Agency (EPA), Region 6 is elevating this dispute resolution proceeding to the Senior Executive Committee (SEC). Section XV (Dispute Resolution) of the LHAAP FFA required the Dispute Resolution Committee (DRC) to attempt to resolve the eight (8) disputed issues provided in the Agency's October 27, 2011, Written Statement of Dispute. This dispute involves certain provisions the Army included in the final draft Records of Decision (RODs) at four (4) LHAAP operable units requiring the selection, design and implementation of remedial actions. In addition, on October 27, 2011, Army disputed the stipulated penalties that the EPA assessed for each operable unit. Section XV of the FFA (Dispute Resolution) provides that if the DRC is unable to unanimously resolve the dispute via a written agreement signed by all the parties within twenty-one (21) days, the dispute shall be forwarded to the SEC. As such, enclosed as Attachment 1 is the Notice of Violation and Stipulated Penalty Assessment; Attachment 2 is the EPA's original Written Statement of Dispute; Attachment 3 is Army's dispute of the stipulated penalties; and Attachment 4 is the EPA's Unresolved Disputed Issues Matrix document that specifically identifies the issues being

elevated to the SEC. Issues one through eight are unresolved, as well as EPA's assessment of stipulated penalties, despite the DRC's diligent effort to resolve all disputed issues.

The DRC included the TCEQ Remediation Division Director, the Army Assistant Chief of Staff for Installation Management, and the Superfund Division Director. Per the FFA, the SEC includes the federal and state officials to whom this letter is directed. During the months of October 2011 through February 2012, the DRC and assigned staff participated in conference calls, telephone discussions, email communications and a November 30, 2011, meeting as part of an effort to resolve all of the eight (8) disputed issues. Because disputed issues one through eight and the stipulated penalties remain unresolved, such issues warrant elevation to the SEC for resolution.

Section XV of the FFA also provides that the SEC shall have twenty-one (21) days to unanimously resolve the dispute by written agreement signed by all parties. If the SEC is unable to unanimously resolve the dispute, then the EPA Region 6 Administrator shall issue the EPA's written position regarding the dispute. Issues addressed in the Region 6 Administrator's Written Position may be elevated to the EPA Administrator within fourteen (14) days of the Regional Administrator's issuance of EPA's Position. The EPA Administrator will issue a final Written Decision for all disputed issues elevated to her. The EPA remains committed to resolving this dispute, and ensuring that remedies selected at the Longhorn Site are protective of human health and the environment.

In summary, the EPA believes the failure to address the disputed issues in the Army's draft final RODs for the four (4) operable units at issue is a violation of the FFA and a basis for stipulated penalties. Once the disputed issues and language are properly addressed, the Agency believes the RODs will be protective of human health and the environment, and comply with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Contingency Plan (NCP), and EPA guidance. Section XIX (Selection, Design, and Implementation of Remedial Actions) of the FFA requires compliance with the above statutory and regulatory requirements. The Agency also believes when the disputed issues and language are properly addressed and resolved, the Army's future submissions of draft RODs for other operable units will be more complete per the FFA, and will alleviate the need for substantial written Agency comments.

Please contact me at your earliest convenience if you have any questions, and to arrange a meeting and/or conferences of the SEC for this disputed matter. I am looking forward to working with you and please feel free to contact me at 214.665.6701.

Sincerely,

Pamela Phillips

Pamela Phillips
Acting Director
Superfund Division

Enclosures (4):
1. EPA's Notice of Violation and Stipulated Penalty Assessment (October 13, 2011, letter only)
2. EPA's Written Statement of Dispute (October 27, 2011, letter only)

3. Army's dispute of the stipulated penalties (October 27, 2011, letter only)
4. EPA's Unresolved Disputed Issues Matrix

cc: Reggie Cheatham
EPA Federal Facilities Restoration and Reuse Office

David Kling
EPA Federal Facilities Enforcement Office

Maureen Sullivan
Office of the Secretary of Defense Installations and Environment

John Tesner
Office of the Deputy Assistant Secretary of the Army for Environment, Safety, and Occupational Health

Lynne Anderson
Office of Assistant Chief of Staff for Installation Management Base Realignment & Closure Division

Beth Seaton
TCEQ Remediation Division

ENCLOSURE 1:

EPA's Notice of Violation and Stipulated Penalty Assessment (October 13, 2011, letter only)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

OCT 13 2011

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Colonel Clarence D. Turner
Department of the Army
Assistant Chief of Staff for Installation Management
600 Army Pentagon
Washington, DC 20310-0600

Re: Notice of Violations and Stipulated Penalty Assessment
Army Commitments on FY2011 Records of Decisions
Longhorn Army Ammunition Plant, Karnack, Texas

Dear Colonel Turner:

This letter notifies the Army that it has failed to comply with the requirements of the Longhorn Army Ammunition Plant (LHAAP) Federal Facility Agreement (FFA). In addition, this letter assesses stipulated penalties for those violations and describes the dispute resolution process for the Environmental Protection Agency's (EPA's) determinations.

The Army submitted an updated Site schedule with FY2011 commitments on July 28, 2011. EPA approved the schedule on August 5, 2011. Under the approved schedule, the Army is required to complete Records of Decision (RODs) for four sites by the end of FY2011 (i.e., September 30, 2011). The four sites subject to this notice of violation and penalty assessment are:

- LHAAP-16: Old Landfill
- LHAAP-17: No. 2 Flashing Area Burning Ground
- LHAAP-001-R-01 MMRP: South Test Area/Bomb Test Area
- LHAAP-003-R-01 MMRP: Ground Signal Test Area

As of the date of this letter, the above listed sites do not have approved RODs. The violations commenced before September 30, 2011, and are continuing violations of the EPA approved Site schedule until these RODs comply with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Contingency Plan (NCP), and EPA guidance, as required by the FFA.

It is important to note that the Army has a history of failing to submit adequate documents by the Site schedule deadlines at the LHAAP facility. On September 23, 2009, EPA issued the Army a notice of violation concerning twelve sites at the LHAAP facility for failure to comply with 2009 deadlines. The four sites subject to this notice of violation and stipulated penalty assessment were also subject to the September 23, 2009, notice of violation.

In this case, EPA agreed to multiple extensions on Primary Documents for LHAAP-16 and LHAAP-17 throughout 2010 and 2011. The above extensions were approved by EPA on February 4, 2010, February 26, 2010, April 2, 2010, and August 5, 2011. These deadlines were extended for the Army in order to accommodate the Army in fulfilling its ROD commitments for FY2011. The EPA received draft final RODs for the four sites subject to this notification, on September 27, 2011, (for MMRP-1, MMRP-3) and on September 29, 2011, (for LHAAP-16, LHAAP-17). The EPA also received nearly identical documents, titled "final" and bearing the Army's signature, on September 29, 2011.

Unfortunately, even with the above extensions, the Army submitted draft RODs that were substantially deficient and flawed in terms of the analysis required under CERCLA and the NCP, requiring voluminous EPA comments (e.g., thirty-seven EPA Region 6 comments for the LHAAP-16 Draft ROD were sent to the Army on August 17, 2011; comments regarding missing analysis required under the NCP remedial action selection criteria, land use controls, and remedy selection authority for LHAAP-001-R and LHAAP-003-R Draft ROD were sent to the Army on August 31, 2011; and land use controls and remedy selection authority comments from EPA HQs on LHAAP-16 and LHAAP-17 on August 29, 2011).

Despite EPA's comments addressing these flaws, the submitted draft final RODs do not comply with CERCLA, the NCP, and EPA guidance, as required by the FFA. The same holds true for the submitted "final" Army-signed RODs. These inconsistencies are the basis for this assessment of stipulated penalties because they constitute failures to submit a primary document in accordance with the requirements of the FFA and/or failures to comply with a term or condition of the FFA which relates to an operable 'unit' or final remedial action.

Under Longhorn FFA Section XIX.C. and CERCLA 120(e)(4)(A), the Army and EPA jointly select the remedy, and if they are unable to agree, the remedy will be selected by EPA. The September 29 RODs signed only by the Army cannot constitute the selected remedy as they are inconsistent with the statutory requirement that we both sign. The EPA cannot sign the RODs because they are inadequate as identified in EPA's numerous comments on the RODs.

Under Section XXIV.A. of the FFA, the EPA may take enforcement action and assess stipulated penalties if the Army fails to submit primary documents, such as these RODs, pursuant to the appropriate timetable or deadline in accordance with the requirements of the FFA, or fails to comply with a term or condition of the FFA which relates to an operable 'unit' or final remedial action. A stipulated penalty in an amount of $5,000 for the first week (or part thereof), and $10,000 for each additional week (or part thereof) is being assessed for each of the four sites' draft final ROD failure to comply with the FFA requirement that the draft final RODs be consistent with CERCLA, the NCP, and EPA guidance.

As a matter of convenience, the starting date for the calculation of the stipulated penalties is September 30, 2011, although the date that Army submitted each noncompliant draft final ROD (September 27, 2011 for MMRP-1 and MMRP-3; September 29, 2011 for LHAAP-16 and LHAAP-17) precedes it. The assessment of stipulated penalties and the penalty amount will continue to run and accrue for as long as the violations remain unresolved. Although the amount of the stipulated penalty is not subject to dispute resolution, the Army may submit mitigating factors it would like EPA to consider within fifteen days after receipt of this letter. The Army may also submit a revised Site schedule it would like EPA to consider within fifteen days after receipt of this letter.

Under Section XXIV.B. of the FFA, the Army has fifteen days after receipt of this letter to invoke dispute resolution by submitting a written statement of dispute explaining whether these violations did in fact occur. If the Army does not submit its written statement of dispute within the time-frame provided under the FFA, then stipulated penalties are due and owning from the starting date of September 30, 2011, and will continue to accrue for as long as the violations continue. The due date for payment of stipulated penalties will be thirty days from the date EPA sends the Army written notification concerning the final penalty amount assessed.

EPA will be available to informally discuss and meet with you to address your questions within the fifteen day time-frame provided above. If there are any questions regarding this matter, please feel free to contact Mr. Charles Faultry (214.665.2731), Mr. Carlos Sanchez (214.665.8507), or Mr. Stephen Tzhone (214.665.8409) of my staff.

Sincerely,

Samuel Coleman, P.E.
Director
Superfund Division

cc: Reggie Cheatham
EPA FFRRO

David Kling
EPA FFEO

Enclosures (4)

1. Army FY11 schedule update and request letter (July 28, 2011) and EPA schedule approval letter (August 5, 2011).
2. First EPA NOV letter on schedule and commitments (September 23, 2009).
3. EPA extensions on Primary Documents for LHAAP-16 and LHAAP-17 (February 4, 2010, February 26, 2010, April 2, 2010; August 5, 2011).
4. EPA Region 6 and HQs comments LHAAP-16, LHAAP-17, LHAAP-001-R, LHAAP-003-R (August 17, 2011; August 29, 2011; August 31, 2011).

ENCLOSURE 2:

EPA's Written Statement of Dispute (October 27, 2011, letter only)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

OCT 2 7 2011

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Colonel Clarence D. Turner
Department of the Army
Assistant Chief of Staff for Installation Management
600 Army Pentagon
Washington, DC 20310-0600

RE: Written Statement of Dispute
Longhorn Army Ammunition Plant (LHAAP)
Federal Facility Agreement (FFA) Under CERCLA Section 120

Dear Colonel Turner:

The United States Environmental Protection Agency Region 6 (EPA) is submitting a written statement of dispute pursuant to Section XV (Dispute Resolution) of the LHAAP FFA to invoke dispute resolution under FFA's formal dispute resolution process. The EPA is disputing the Army's compliance with the terms and conditions of the FFA concerning four sites. The four sites subject to dispute resolution include:

- LHAAP-16: Old Landfill
- LHAAP-17: No. 2 Flashing Area Burning Ground
- LHAAP-001-R-01 MMRP: South Test Area/Bomb Test Area
- LHAAP-003-R-01 MMRP: Ground Signal Test Area

Pursuant to Section XVI (Deadlines) of the FFA, the Army submitted an updated site schedule, and their FY2011 commitments on July 28, 2011. EPA approved the schedule on August 5, 2011. Under the approved schedule, the Army was required to complete Records of Decision (RODs) for the four sites by September 30, 2011. Before approving the above schedule, EPA agreed to multiple extensions on Primary Documents (i.e., RODs) for LHAAP-16 and LHAAP-17 throughout 2010 and 2011. The above extensions were approved by EPA on February 4, 2010, February 26, 2010, April 2, 2010, and August 5, 2011. These deadlines were granted in order to help the Army in fulfilling its ROD commitments for FY2011.

The EPA received draft final RODs for the four sites subject to this notification, on September 27, 2011 (for MMRP-1, MMRP-3), and on September 29, 2011 (for LHAAP-16, LHAAP-17). Also, the EPA received nearly identical documents, titled "final" and bearing the Army's signature, with a signature date of September 29, 2011.

As of the date of this letter, the above listed sites do not have approved RODs. Despite the additional time provided, the Army submitted draft RODs that were either incomplete, substantially deficient or included flawed analysis not in compliance with CERCLA and the NCP, requiring voluminous EPA comments (e.g., thirty-seven EPA comments for the LHAAP-16 draft ROD were sent to the Army on August 17, 2011; comments regarding missing analysis required under the NCP remedial action selection criteria, land use controls, and remedy selection authority for LHAAP-001-R and LHAAP-003-R Draft ROD were sent to the Army on August 31, 2011; and land use controls and remedy selection authority comments on LHAAP-16 and LHAAP-17 on August 29, 2011).

While the Army has agreed to address some of the issues noted above, most issues remain outstanding and are disputed under the FFA. The issues in dispute concern the Army's failure to include appropriate land use controls language in the RODs regarding the appropriate controls for the engineered remedies; the length of time that the controls will remain in place (e.g., duration of land use controls); implementation of land use controls; failure to provide an enforceable deadline for submitting the LUCs Remedial Design; and language that contravenes EPA's statutory remedy selection authority. EPA is also disputing Army's principal threat waste determination. In addition, the RODs do not properly identify applicable, relevant and appropriate requirements (ARARs) under Resource Conservation and Recovery Act (RCRA) nor do they identify ARARs for restoration of groundwater to beneficial use which has been determined to be residential drinking water. The issues in dispute have the potential to have a detrimental effect on the CERCLA program in terms of remedy selection authority, remedy selection criteria, and remedy selection documentation.

The enclosed formal Statement of Dispute fully explains the nature of the dispute, the work affected by the dispute, EPA's position, and the information relied upon by EPA. Having engaged in an informal dispute resolution process, including a meeting on October 18, 2011, the EPA elevates the above matters for formal dispute resolution.

As provided in Paragraphs A through E, Dispute Resolution section of the FFA, upon receipt of the Statement of Dispute, the Dispute Resolution Committee (DRC) shall have 21 days to resolve the dispute and issue a written decision signed by all the parties. The FFA designates the members of the DRC for the Army, the State of Texas and EPA. If the DRC is unable to resolve the dispute within the 21-day period, then the dispute shall be forwarded to the Senior Executive Committee (SEC). The SEC shall have 21 days to unanimously resolve the dispute. If the SEC is unable to resolve the dispute, the EPA Region 6 Administrator shall issue a written position regarding the dispute.

The EPA's goals in resolving this dispute are addressed in the enclosed Statement of Dispute with the primary driver of ensuring that remedies at Longhorn are protective of human health and the environment. In summary, the Army must correct the deficiencies in the RODs to ensure the remedies are protective of human health and the environment. Thus in draft final RODs for all four sites, the Army must ensure that it complies with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Contingency Plan (NCP), and EPA guidance, as required by the FFA. In addition, the Army must ensure that future submissions of draft RODs will be complete, and include language and analysis that comply with CERCLA, the NCP, EPA Policy, and the FFA. Given the complexity of the documents and the numerous deficiencies, EPA plans to follow this statement of dispute with additional details for the DRC shortly.

Should you have any questions or need to arrange a meeting with DRC for this dispute matter, please feel free to call me at 214.665.3110, or contact Charles Faultry at 214.665.2731, Carlos Sanchez at 214.665.8507 or Mr. Stephen Tzhone at 214.665.8409.

Sincerely,

Samuel Coleman, P.E.
Director
Superfund Division

Enclosures (3):
1. Statement of Dispute
2. EPA Comment Letters on Draft Final RODs (October 2011)
3. Army Longhorn Response to Comments (September 28, 2011)

cc: Reggie Cheatham
EPA Federal Facilities Restoration and Reuse Office

David Kling
EPA Federal Facilities Enforcement Office

Maureen Sullivan
Office of the Secretary of Defense Installations and Environment

John Tesner
Office of the Deputy Assistant Secretary of the Army (Environment, Safety and Occupational Health)

Beth Seaton
TCEQ Remediation Division

ENCLOSURE 3:

Army's Dispute of the Stipulated Penalties (October 27, 2011, letter only)

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
600 ARMY PENTAGON
WASHINGTON, DC 20310-0600

OCT 27 2011

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Re: Notice of Violations and Stipulated Penalty Assessment
Army Commitments on FY2011 Records of Decision
Longhorn Army Ammunition Plant, Karnack, Texas

Dear Mr. Tzhone:

This letter notifies the U.S. Environmental Protection Agency (EPA) Region 6 (Region 6) that the U.S. Department of the Army (Army), under Subsection XXIV.B of the 1991 Federal Facilities Agreement (FFA) between the Army, Region 6, and the Texas Commission on Environmental Quality (TCEQ) as successor to the Texas Water Commission, is invoking dispute resolution on the question of whether the failures cited as the basis for the stipulated penalties assessed in EPA's October 13, 2011 "Notice of Violations and Stipulated Penalty Assessment" (NOV letter) did in fact occur. According to the NOV letter, EPA's complaint is that the Army did not comply with the FFA by having "approved" Record of Decisions (RODs) for four sites (LHAAP-16, LHAAP 17, LHAAP-001-R-01, and LHAAP-003-R-01) on or before September 30, 2011. This implies that the due date for the RODs could have only been met if Army submitted the RODs in a form acceptable to EPA for finalization. Army strongly rejects EPA's interpretation of the FFA. Both the spirit and the letter of the FFA provide that Army is responsible for preparing RODs that are *jointly* finalized (i.e., "signed") with EPA. The FFA includes a required consultation process for doing so. If that process is not successful, the RODs are subject to EPA initiating dispute resolution and not to EPA approval.

1. Army is in compliance with the FFA.

Army complied with the FFA by submitting the three *draft* RODs within the deadline established pursuant to Section XVI. Subsection XIX.A requires that the remedy selection documents (e.g., RODs) be prepared in accordance with the consultation procedures contained in Section VIII. Paragraph VIII.G.1 requires that Army complete and transmit the *draft* RODs to EPA and TCEQ on or before the deadline established under Subsection XVI.A. Subsection XVI.A similarly requires the submittal of *draft* primary documents by the established deadline. EPA admits in the NOV letter that the deadline was September 30, 2011. Army submitted the *draft* RODs on the following dates, all of which are prior to the Section XVI deadline for

Printed on Recycled Paper

submitting the *draft* RODs:

LHAAP-17	1/26/2011
LHAAP-16	7/21/2011
LHAAP-001-R-01/ LHAAP-003-R-01	8/19/2001

During the Subsection VIII.G consultation process EPA submitted comments on the draft RODs well beyond the allowable time for commenting and in repeated iterations not conforming to the FFA Consultation process over periods of months. (See attached chart.) The Army provided responses to multiple sets of comments, modified the RODs as appropriate, and submitted these as the draft final RODs required by the FFA, as well as signed final RODs for receipt by September 30, 2011 in order to meet EPA Region 6's internal performance goals.

The NOV letter also indicates that the RODs were not completed by the Section XVI deadline because these RODs were not acceptable to EPA. Under the FFA, there are four mechanisms by which the RODs could have been completed: (1) if no party invokes dispute resolution regarding the draft final RODs (Subsection VIII.I); (2) within twenty-one days following completion of the dispute resolution process initiated after the draft final RODs were submitted (Subsection VIII.I); (3) when finalized jointly by Army and EPA (Subsection XIX.C); or (4) when finalized by the EPA Administrator (Subsection XIX.C).

None of the above support EPA's asserted requirement that Army was required to submit RODs incorporating all EPA comments. This is made abundantly clear by inclusion of Subsection VIII.H of the FFA, appropriately titled "Availability of Dispute Resolution for Draft Final Primary Documents:." This provision, which immediately precedes the Subsection entitled "Finalization of Reports," requires that a party who decides to non-concur must dispute a draft final primary document. This dispute resolution step would be unnecessary if Army were required under Subsection VIII.G to submit draft final documents in which EPA concurs. Paragraph VIII.G.5 instead requires only that the draft final document be "the product of consensus *to the maximum extent possible*" (emphasis added).

There is consensus between Region 6 and Army because Region 6 has informed Army that it concurs in the remedy described in the RODs as well as Army's responses to Region 6's comments. There is a lack of consensus only with respect to as yet unspecified Army responses to comments that EPA HQ submitted beyond the time allowed by Subsection VIII.G. The submission of a draft final ROD signed by the Army with responses to comments has always been the parties' interpretation of this requirement at LHAAP. Region 6 was in possession of three timely submitted, FFA-compliant RODs addressing remedy selection at all four sites. Region 6 also had Army's responses to EPA HQ and Region 6 comments. By September 30, 2011, Region 6 was therefore in a position to finalize the RODs in accordance with Section VIII and XIX of the FFA. If Region 6 was not able to do so, then invoking Section XV dispute resolution was the correct course under the FFA.

2. The assessment of the stipulated penalties is contrary to the FFA.

On September 27, 2011, EPA's Remedial Project Manager (RPM) verbally requested that Army designate the three ROD's "Draft Final" to facilitate Region 6 invoking informal dispute resolution under Subsections VIII.H and XV.C of the FFA. Army submitted the Draft Final RODs as required by Section VIII.G.5 of the FFA and also submitted the signed RODs in order to ensure that EPA could meet its performance goal of signing the RODs in Fiscal Year 2011. However, Army received the NOV letter despite what it believed to be the parties' agreement that these documents met the FFA requirements for Draft Final RODs.

Subsection XIX.A requires that the ROD be prepared in accordance with the consultation procedures contained in Section VIII. Subsection VIII.G describes the required process that should have been followed for review and comment of the RODs. This process is simple and specific. Paragraph VIII.G.1 requires submittal of *draft* RODs on or before the Section XVI deadline. Paragraph VIII.G.2 allows EPA and TCEQ to submit specific written comments with citations to pertinent supporting authorities and references "so that the Army may respond to the comment and, *if appropriate*, make changes to the draft report[s]" (emphasis added). Paragraph VIII.G.5 then requires Army to issue the Draft Final RODs including responses to comments. Subsection VIII.H allows a non-concurring party to dispute a Draft Final ROD, and Subsection VIII.I requires that Army finalize the Draft Final RODs in accordance with the results of the dispute resolution. A non-concurring party must therefore invoke Section XV dispute resolution if it wishes to challenge the draft final version of a primary document. There is no FFA provision allowing EPA to assess stipulated penalties because Army has not satisfactorily incorporated each and every one of EPA's comments.

Conversely, the process described above neither required nor allowed Army to invoke dispute resolution during the consultation process. It is clear from the above-enumerated steps that the appropriate Army response to an EPA or TCEQ comment to which it disagreed was the preparation of a reasoned response to that comment and the submission of a draft final ROD. This is what Army did. Subsection VIII.H does not require invoking dispute resolution prior to submission of the Draft Final ROD.

Finally, the FFA does not provide for the assessment of stipulated penalties for the violations alleged. As previously stated, the NOV Letter alleges that Army did not submit RODs in a form acceptable to EPA by the date contained in the enforceable schedule. Subsection XXIV.A states that EPA may assess stipulated penalties if "Army fails to submit a ... ROD ... pursuant to the appropriate timetable or deadline in accordance with the requirements of this Agreement." Even if the schedule deadline contained in Enclosure 1 of the NOV letter were for the submittal of final RODs, those deadlines would not be "in accordance with the requirements of this Agreement" because Section XVI provides deadlines only for the submittal of *draft* primary documents prior to the review and comment provisions of Section VIII.G. The assessment of stipulated penalties for allegedly missing any other schedule date or failure to submit a draft final ROD acceptable to EPA would therefore not be allowed. The stipulated penalties that may be assessed by EPA under the FFA are only available in conformance with the terms and conditions of the FFA. Army satisfied the draft primary document submission

deadlines for all three of these RODs, and therefore no stipulated penalties may be assessed on Army under the terms of the FFA.

For the above described reasons, Army disputes the Region 6 letter of October 13, 2011, and its attempted assessment of stipulated penalties that are contrary to the Longhorn AAP FFA provisions governing the completion of primary documents. Army requests that the Project Managers and/or their immediate supervisors meet and attempt to informally resolve this dispute as provided in Subsection XV.A of the FFA. Please contact Dr. Rose Zeiler at 479-635-0110 or at rose.zeiler@us.army.mil to schedule a meeting as soon as possible.

Sincerely,

Thomas E. Lederle

THOMAS E. LEDERLE
Industrial Branch Chief
ACSIM BRAC Division

Encl
CF:
Ms. Fay Duke, TCEQ

ENCLOSURE 4:

EPA's Unresolved Disputed Issues Matrix

EPA UNRESOLVED DISPUTED ISSUES MATRIX
LONGHORN ARMY AMMUNITION PLANT

DISPUTE ISSUE	ARMY LANGUAGE	EPA & TCEQ LANGUAGE
Issue 1: When there is no Federal Maximum Contaminant Level (MCL) for a specific contaminant (e.g., perchlorate), the Texas MSC GW-Res may be an applicable or relevant and appropriate requirement (ARAR); in appropriate circumstances, it may be possible to use a protective Texas regulatory standard to establish a cleanup level for ground water determined to be a current or potential source of drinking water. Groundwater at the sites in question is designated as potential drinking water sources by the State of Texas in accordance with Texas regulation. Consistent with the expectations in the National Contingency Plan (NCP), it is appropriate to return contaminated ground waters to their beneficial uses wherever practicable.	"The U.S. Army intends to return the contaminated groundwater at LHAAP-16 to its potential beneficial uses, which for the purposes of this ROD is considered to be attainment of the Safe Drinking Water Act (SDWA) MCLs to the extent practicable, and consistent with 40 CFR § 300.430(e)(2)(i)(B&C). If an MCL is not available for a chemical, the promulgated TCEQ groundwater medium-specific concentration (MSC) for industrial use (GW-Ind) will be used in place of the MCL, in accordance with 30 TAC 335.559(d)(2). " "For purposes of this ROD, surface water standards include the Texas Surface Water Quality Standards found at 30 TAC 307, or if those standards are not available, the SDWA MCLs, or if MCLs are not available, the Texas MSCs for GW-Res as authorized under 30 TAC 335.559(b)." "Because no SDWA MCL exist for some COCs including perchlorate, manganese, and nickel, the MSCs (GW-Ind) as authorized under 30 TAC 335.559(d) constitutes the groundwater cleanup standard to be attained." "Because contaminated groundwater has seeped into	*TCEQ letter 2/23/2012 states: "The TCEQ will concur with the resolution to adopt a more stringent standard, such as the EPA's Health Advisory Level, upon agreement by both EPA and the U.S. Army." "Per RODs 16 and 17 RAOs, and consistent with the NCP, groundwater will be returned to its beneficial use as drinking water. The groundwater cleanup level for perchlorate at LHAAP-16 and 17 is the EPA Health Advisory level, 15 ug/L, and is protective of human health." For LHAAP Site 16 only – "The Texas MSC GW-Res cleanup levels based on residential exposure of 730 ug/L for nickel and 1,715 ug/L for manganese, are potential ARARs at LHAAP Site 16. However, more stringent EPA Health Advisories for nickel (EPA Health Advisory - 100ug/L) and manganese (EPA Health Advisory – 320 ug/L) are "to be

	Harrison Bayou, chemical-specific ARARs for surface water consumption are applicable, relevant and appropriate. Specifically, Texas surface water quality standards are set forth in 30 TAC 307.6(d)(1) for TCE (5 µg/L), 1,2-DCA (5 µg/L), 1,1-DCE (7 µg/L), 1,1,2-TCA (5 µg/L), vinyl chloride (2 µg/L), arsenic (10 µg/L), and thallium (2 µg/L) will be met for surface water at LHAAP-16. The SDWA MCL constitute the cleanup standards/levels to be met per 30 TAC 335.559(b). The MCL for cis-1,2-DCE (70 µg/L), methylene chloride (5 µg/L), chromium (100 µg/L), will be met at the site. The MSC (GW-Res) for nickel (730 µg/L), and perchlorate (26 µg/L), and the 95%UTL for manganese (7,820 µg/L) will be met at the site."	considered" (TBCs) for purposes of selecting a protective remedial action for LHAAP Site 16, and as such, the EPA Health Advisories will be used (not the Texas standards) ."
Issue 2: Adequate LUC objectives are missing from the RODs. The RODs should include objectives designed to protect the integrity of the groundwater monitoring system and landfill caps. This is because the groundwater monitoring system and the landfill caps are integral engineering components of the final remedies. The remedial systems must be protected from intrusive or other activities which could damage the engineered portion of the remedy. Additionally, to ensure protectiveness, the relevant RODs should also include a LUC objective to prohibit development and/or other intrusive activities such as digging which could result in detonation of explosive hazards or exposure to other contaminants.	"The LUC performance objective is to prevent human exposure to the landfill waste. The LUCs will remain in place as long as the landfill waste materials remain at the site. In addition, a LUC performance objective to restrict the use of groundwater to environmental monitoring and testing only will remain in place until the contaminated groundwater attains groundwater cleanup levels in order to prevent human exposure to the contaminated groundwater. The LUC restricting land use to nonresidential will remain in place until it is demonstrated that surface soil and subsurface soil are at levels that allow for unlimited use and unrestricted exposure." "Land use controls would be implemented to protect the existing remedy (landfill cap)."	"The LUC performance objectives include the prevention of human exposure to the landfill waste, and to preserve the integrity of the landfill cap. The LUCs will remain in place as long as the landfill waste materials remain at the site. In addition, a LUC performance objective to restrict the use of groundwater to environmental monitoring and testing only, and to preserve and protect the integrity of the groundwater monitoring system will remain in place until the contaminated groundwater attains groundwater cleanup levels to allow unlimited use and unrestricted exposure and in order to prevent human exposure to the contaminated groundwater. The LUC restricting land use and groundwater use to nonresidential will remain in place until it is demonstrated that surface soil, subsurface soil, and groundwater are at levels that allow for unlimited use and unrestricted exposure." "Land use controls would be implemented to protect the existing remedy (landfill cap), prevent ingestion of contaminated groundwater, restrict installation of groundwater extraction wells, and protect the

		infrastructure of the cap and groundwater remedies, including the Operations and Maintenance (O&M) components to ensure that the groundwater monitoring system is protected from damage and will operate as designed for the duration of the remedy." *"LUCs* – The LUCs would be implemented to support the RAOs. The U.S. Army would be responsible for long-term implementation, maintenance, inspection, reporting, and enforcement of the LUCs. The U.S. Army will provide details of the LUCs long-term implementation and long-term maintenance actions in the RD for the site. The LUCs would prevent human exposure to landfill contents and residual groundwater contamination that may present an unacceptable risk to human health, and would preclude the withdrawal or use of groundwater beneath the site for anything other than environmental monitoring and testing. Institutional controls would also be developed to protect the infrastructure of both the landfill and ground water components of the remedy, including the O&M components to ensure that the groundwater monitoring system is protected from damage and will operate as designed for the duration of the remedy. The groundwater use prohibition LUCs (except for monitoring and testing) would be maintained until the groundwater can be used without restrictions. The nonresidential land use LUC restriction would remain in place until it is demonstrated that surface soil and subsurface soil, and groundwater are at levels that allow for unlimited use and unrestricted exposure." "To transfer LHAAP Sites, an Environmental Condition of Property (ECP) document would be prepared and the Environmental Protection Provision from the ECP would be attached to the letter of transfer. The ECP will include land use and groundwater use restrictions as part of the
	"LUCs – The LUCs would be implemented to support the RAOs. The U.S. Army would be responsible for long-term implementation, maintenance, inspection, reporting, and enforcement of the LUCs. The U.S. Army will provide details of the LUCs long-term implementation and long-term maintenance actions in the RD for the site. The LUCs would prevent human exposure to landfill contents and residual groundwater contamination that may present an unacceptable risk to human health, and would preclude the withdrawal or use of groundwater beneath the site for anything other than environmental monitoring and testing. The groundwater use prohibition LUCs (except for monitoring and testing) would be maintained until the groundwater can be used without restrictions. The nonresidential land use LUC restriction would remain in place until it is demonstrated that surface soil and subsurface soil are at levels that allow for unlimited use and unrestricted exposure." "To transfer LHAAP-16, an Environmental Condition of Property (ECP) document would be prepared and the Environmental Protection Provision from the ECP would be attached to the letter of transfer. The ECP will include land use and groundwater use restrictions as part of the	

	Environmental Protection Provisions. The property would be transferred subject to the LUCs identified in the ECP. These restrictions would prohibit or restrict property uses that may result in damage to the existing remedy (landfill cap) or exposure to the contaminated groundwater (e.g., drilling restrictions). The U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of a LUCs objective at the site after it has been transferred."	Environmental Protection Provisions. The property would be transferred subject to the LUCs identified in the ECP. These restrictions would prohibit or restrict property uses that may result in damage to the existing remedy (landfill cap) or exposure to the contaminated groundwater (e.g., drilling restrictions). The U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of a LUCs objective at the site after it has been transferred. Specific Land Use Controls/Institutional Controls will be put in place to meet the following objectives: Prevent ingestion of, exposure to, or dermal contact with, contaminated ground water; Restrict the installation of ground water extraction wells, except for wells related to the remedy for the site; Protect the infrastructure of the monitoring wells, including the O&M components to ensure that the groundwater monitoring system is protected from damage and will operate as designed for the duration of the remedy; All land use and institutional controls will be maintained by the US Army until the ground water is approved for unrestricted use and unlimited exposure."
Issue 3: The RODs must ensure that LUCs (individually or together) are to remain in place until unlimited use and unrestricted exposure is reached for each engineering component of the remedy.		The language provided for issue 2 is sufficient to resolve the LUC duration issue provided in issue 3.

Issue 4: The Army does not have independent authority to modify a remedy. The LUC is part of the remedy which, under CERCLA, is both selected by Army and EPA. In the event of dispute, the EPA Administrator selects the remedy. Thus, the Army cannot unilaterally make modify or terminate a LUC remedy.	"Although the U.S. Army may transfer these responsibilities to another party through property transfer agreement or other means, the U.S. Army will remain ultimately responsible for: (1) CERCLA §121(c) five-year reviews; (2) notification of the appropriate regulators of any known LUC deficiencies or violations; (3) access to the property to conduct any necessary response; (4) reservation of CERCLA and FFA authority to change, modify, or terminate the LUC and any related transfer or lease provisions ; and (5) ensuring the protectiveness of the selected remedy. U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of a LUC objective at these sites after they have been transferred." ~~"The U.S. Army shall consult with TCEQ and obtain USEPA concurrence prior to termination or significant modification of a LUC, or in the highly unlikely event of a land use change inconsistent with the LUC objectives and industrial use assumptions of the remedy."~~	"The U.S. Army will be responsible for implementation, maintenance, inspection, reporting on, and enforcement of the LUCs. Although the U.S. Army may later pass these procedural responsibilities to the transferee by property transfer agreement, the U.S. Army shall retain ultimate responsibility for: (1) CERCLA §121(c) Five Year Reviews; (2) notification of the appropriate regulators of any known LUCs deficiencies or violations; (3) access to the property to conduct any necessary response; (4) reservation of the CERCLA and FFA authority to change, modify or terminate LUCs and any related transfer or lease provisions with the approval of EPA and in consultation with TCEQ**;** and (5) ensuring the protectiveness of the selected remedy. The U.S. Army shall retain the ultimate responsibility for remedy integrity as provided in the 1991 FFA." ~~"The U.S. Army shall consult with TCEQ and obtain USEPA concurrence prior to termination or significant modification of a LUC, or in the highly unlikely event of a land use change inconsistent with the LUC objectives and industrial use assumptions of the remedy."~~
Issue 5: The identification of ARARs and rationale for exclusion. The presence of the LHAAP-16 landfill requires attainment of landfill post closure requirements as ARARs.	"Post-closure Care: Closure and post- closure ARARs were identified for LHAAP-16 in the IRA ROD and included 30 TAC 335.112, 335.118, 335.119 and 335.174 and 40 CFR Sections 264.228 and264.310 addressing landfills and surface impoundments storing hazardous waste. Closure requirements were met during implementation of the (cap) presumptive remedy of the IRA. Post-closure requirements are appropriate and relevant and include 40 CFR 264.228 (b)(1), (3), and (4), 264.310 (b)(1), (4) and (5) and 30 TAC 335.174. Although there is no permanent benchmark inside the Site 16 area, one is located adjacent to the site. Therefore 40 CFR 264.310(b)(6) is considered appropriate and	"Post-closure Care: Closure and post-closure ARARs were identified for LHAAP-16 in the IRA ROD and included 30 TAC 335.112, 335.118, 335.119 and 335.174 and 40 CFR Sections 264.228 and 264.310 addressing landfills and surface impoundments storing hazardous waste. Closure requirements were met during implementation of the (cap) presumptive remedy of the IRA. Post-closure requirements are relevant and appropriate, and include 40 CFR 264.228(b)(1), (3) and (4); 264.310(b)(1), (4), (5), and (6); and 30 TAC 335.174. Although there is no permanent benchmark inside the LHAAP-16 area, one is located adjacent to the Site. Therefore, 40 CFR 264.310(b)(6) is relevant and

	relevant for a benchmark located near the landfill. In addition those substantive requirements of 40 CFR 264.117 though 120 related to post-closure for the remedy-in-place are considered appropriate and relevant."	appropriate for a benchmark located near a landfill. In addition, those substantive requirements of 40 CFR 264.117 through 120 related to post-closure for the remedy in place are relevant and appropriate."
Issue 6: The selection of LUCs ("LUC" means the legal or administrative mechanism by which the LUC objective is implemented) in the RODs. The RODs must identify the legal or administrative mechanism by which the LUC objective is implemented. Thus, the RODs must specifically identify and select LUCs as remedial action components.	"The Army will implement, maintain, monitor, report on and enforce land use controls on property owned by the United States and under the accountability of the Army using the then current annual Comprehensive Land Use Plan. Upon transfer of the Site or portions of the Site to USFWS or any other transferee, the Army will provide notice of the land use controls to the USFWS or any other transferee, the EPA, TCEQ, and to adjacent local governments. Such notice shall include notice of the groundwater contamination and land use restrictions referenced in the ROD. The Army shall retain responsibility for implementation and enforcement of all or any part of the land use controls for which the USFWS does not accept responsibility. Within 15-days of transfer, the Army shall provide EPA and TCEQ with notice of the division of implementation and enforcement responsibilities unless such information has been provided in the LUC RD. In the event the property is transferred out of federal control, the land use controls shall be recorded in the deed and shall be enforceable by the United States and the State of Texas. Following transfer, Army will monitor and report on the implementation, maintenance, and enforcement of land use controls. The Army will provide a copy	"The Army will implement, maintain, monitor, report on and enforce land use controls on property owned by the United States and under the accountability of the Army using the then current annual Comprehensive Land Use Plan. Upon transfer of the Site or portions of the Site to USFWS or any other transferee, the Army will provide written notice of the land use controls to the USFWS or any other transferee, the EPA, TCEQ, and to local governments. Such notice shall include notice of the groundwater contamination and land use restrictions referenced in the ROD. The written notice shall be placed in the Administrative Record for this ROD. The Army shall retain responsibility for implementation, maintenance, and enforcement of all or any part of the land use controls for which the USFWS does not accept responsibility. Within 15-days of transfer, the Army shall provide EPA and TCEQ with written notice of the division of implementation, maintenance, and enforcement responsibilities unless such information has been provided in the LUC RD. In the event the property is transferred out of federal control, the land use controls shall be recorded in the deed and shall be enforceable by the United States and the State of Texas. Following transfer, Army will monitor and report on the implementation, maintenance, and enforcement of land use controls. The Army will provide a copy of

	of the final ROD and notice of the specific restrictions to the USFWS. The LUC RD will address the procedures to be used by the Army and the USFWS to document the agencies' compliance with the LUCs described in this ROD."	the final ROD and notice of the specific restrictions to the USFWS. The LUC RD will address the procedures to be used by the Army and the USFWS to document the agencies' compliance with the LUCs described in this ROD."
Issue 7: Currently, references to the MEC removal work plan for LUC implementation details are not appropriate as the removal work plan is not enforceable under the FFA. The below language applies to all RODs for the four (4) operable units in question.	"A LUC Remedial Design will be finalized as the land use component of the Remedial Design. Within 21 days of the issuance of the Record of Decision, the Army will propose deadlines for completion of the Remedial Design Work Plan, Remedial Design, and Remedial Action Work Plan. The documents will be prepared and submitted to EPA and TCEQ for Consultation pursuant to the FFA and the LUC remedial design that will contain implementation and maintenance actions including periodic inspections."	"A LUC Remedial Design will be finalized as the land use component of the Remedial Design. Within 21 days of the issuance of the Record of Decision, the Army will propose deadlines for completion of the Remedial Design Work Plan, Remedial Design, and Remedial Action Work Plan. The documents will be prepared and submitted to EPA and TCEQ pursuant to the FFA. The LUC remedial design will contain implementation and maintenance actions, including periodic inspections."
Issue 8: The identification of principal threat wastes at the Site. It should be clear that any munitions and explosives of concern (MEC) found at the MMRP ROD sites in the future will be evaluated to determine if they constitute principal threat wastes.	"There are no known principal threat wastes at these two MRS sites (LHAAP-001-R-01 MMRP and LHAAP-003-R-01 MMRP)".	"There are currently no known principal threat wastes at these two MRS sites (LHAAP-001-R-01 MMRP and LHAAP-003-R-01 MMRP)."

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

JUN 01 2012

CERTIFIED MAIL-RETURN RECEIPT REQUESTED – 7004 1160 0003 0353 6827

Mr. Hershell E. Wolfe
Deputy Assistant Secretary of the Army for
Environment, Safety, and Occupational Health
110 Army Pentagon
ATTN: SAIE-ESOH; Room 3D453
Washington, DC 20310-0110

Mr. Zak Covar
Executive Director
Texas Commission on Environmental Quality
P.O. Box 13087, MC-109
Austin, TX 78711-3087

RE: Dispute Resolution Extension of Time
Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas
Federal Facility Agreement (FFA) Under CERCLA Section 120

Dear Senior Executive Committee Members:

This letter memorializes the extension of the time agreed to by the parties as part of the effort to resolve this outstanding dispute resolution proceeding. EPA Region 6 elevated this dispute to the Senior Executive Committee (SEC) by letter dated April 5, 2012. All parties are making good faith efforts to resolve the disputed issues, and this extension will provide an opportunity to ensure the successful completion of this process.

If the SEC is unable to unanimously resolve the dispute, then LHAAP FFA requires me to issue the EPA Region 6 written position regarding any unresolved dispute issues. Issues addressed in the Region 6 written position may be elevated to the EPA Administrator within fourteen (14) days of issuance of the EPA Region 6 written position. The EPA remains committed to resolving this dispute in accordance with the LHAAP FFA process afforded. EPA Region 6 is encouraged by the progress made during the May 17, 2012, SEC conference, and believes that several of the disputed issues may be resolved. Resolution of some, if not all of the issues, will help to focus and narrow the scope of this proceeding.

Due to my absence from the office, I authorized Pam Phillips to grant the extension of time up to June 29, 2012.

Recycled/Recyclable • Printed with Vegetable Oil Based Inks on 100% Recycled Paper (40% Postconsumer)

I look forward to continued SEC efforts to bring this matter to conclusion. As such, please contact me at your earliest convenience if you have any questions, or would like to arrange a date and time for the SEC to further discuss this matter. You may contact me at 214.665.2100.

Sincerely,

Samuel Coleman, P.E.
Acting Regional Administrator

cc: Reggie Cheatham
EPA Federal Facilities Restoration and Reuse Office

David Kling
EPA Federal Facilities Enforcement Office

Maureen Sullivan
Office of the Secretary of Defense Installations and Environment

John Tesner
Office of the Deputy Assistant Secretary of the Army for Environment, Safety, and Occupational Health

Lynne Anderson
Office of Assistant Chief of Staff for Installation Management Base Realignment & Closure Division

Brent Wade
TCEQ Office of Waste

Beth Seaton
TCEQ Remediation Division

Pam Phillips
Acting Director, Superfund Division

TABLE 1
Longhorn Army Ammunition Plant
Monitoring Wells Plugging and Abandonment Information

Contractor: ETTL Engineers and Consultants
Operator: Thomas Cook
Weather: 60 Overcast

Well ID	Surface Completion	Well Depth (feet)	Casing/Screen Diameter (inches)	Casing/Screen Removed (feet)	Method Casing Removed	Concrete Pad Removed	Date P&A	Plugging Method	Materials Used
MW-62	Stick-Up	25.7	4	0	Bobcat with chain hoist	Entire pad removed	2/22/2012	Tremmie pipe bentonite and cement	3 x (100lb) bags Quikrite cement, 1 x (50lb) bag of CETCO bentonite
MW-63	Stick-Up	18.5	4	0	Bobcat with chain hoist	Entire pad removed	2/22/2012	Tremmie pipe bentonite and cement	3 x (100lb) bags Quikrite cement, 1 x (50lb) bag of CETCO bentonite
MW-64	Stick-Up	24.1	4	0	Bobcat with chain hoist	Entire pad removed	2/22/2012	Tremmie pipe bentonite and cement	3 x (100lb) bags Quikrite cement, 1 x (50lb) bag of CETCO bentonite
MW-65	Stick-Up	16.8	4	10	Bobcat with chain hoist	Entire pad removed	2/22/2012	Tremmie pipe bentonite and cement	2 x (100lb) bags Quikrite cement, 1 x (50lb) bag of CETCO bentonite
MW-66	Stick-Up	16.9	4	16.9	Bobcat with chain hoist	Entire pad removed	2/22/2012	Tremmie pipe bentonite and cement	2 x (100lb) bags Quikrite cement, 1 x (50lb) bag of CETCO bentonite
48WW-01	Stick-Up	52.5	4	0	Bobcat with chain hoist	Entire pad removed	2/22/2012	Tremmie pipe bentonite and cement	13 x (100lb) bags Quikrite cement, 1 x (50lb) bag of CETCO bentonite
MW-106	Stick-Up	25	2	5	Bobcat with chain hoist	Entire pad removed	2/22/2012	Tremmie pipe bentonite and cement	3 x (100lb) bags Quikrite cement, 1 x (50lb) bag of CETCO bentonite
MW-107	Stick-Up	20	2	20	Bobcat with chain hoist	Entire pad removed	2/22/2012	Tremmie pipe bentonite and cement	2 x (100lb) bags Quikrite cement, 1 x (50lb) bag of CETCO bentonite
MW-67	Stick-Up	19.4	4	2	Bobcat with chain hoist	Entire pad removed	2/22/2012	Tremmie pipe bentonite and cement	2 x (100lb) bags Quikrite cement, 1 x (50lb) bag of CETCO bentonite

MW-68	Stick-Up	21	4	2	Bobcat with chain hoist	Entire pad removed	2/22/2012	Tremmie pipe bentonite and cement	4 x (100lb) bags Quikrite cement, 1 x (50lb) bag of CETCO bentonite
MW-69	Stick-Up	47.9	4	0	Bobcat with chain hoist	Entire pad removed	2/22/2012	Tremmie pipe bentonite and cement	12 x (100lb) bags Quikrite cement, 1 x (50lb) bag of CETCO bentonite
MW-70	Stick-Up	21	4	15	Bobcat with chain hoist	Entire pad removed	2/22/2012	Tremmie pipe bentonite and cement	3 x (100lb) bags Quikrite cement, 1 x (50lb) bag of CETCO bentonite
MW-71	Stick-Up	15.9	4	15.9	Bobcat with chain hoist	Entire pad removed	2/22/2012	Tremmie pipe bentonite and cement	3 x (100lb) bags Quikrite cement, 1 x (50lb) bag of CETCO bentonite

00113918

STATE OF TEXAS PLUGGING REPORT for Tracking #80118

Owner:	**Longhorn Army Amunition Plant**	Owner Well #:	**48WW01**
Address:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Grid #:	**35-24-4**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 55" N**
Well County:	**Harrison**	Longitude:	**094° 07' 25" W**
		GPS Brand Used:	**Garmin**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**No Data**
Driller's License Number of Original Well Driller:	**No Data**
Date Well Drilled:	**No Data**
Well Report Tracking Number:	**No Data**
Diameter of Borehole:	**No Data**
Total Depth of Borehole:	**No Data**

Date Well Plugged:	**2/23/2012**
Person Actually Performing Plugging Operation:	**Thomas Cook**
License Number of Plugging Operator:	**2853**
Plugging Method:	**Tremmie pipe cement from bottom to top.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **4 inches diameter, From 0 ft to 52.5 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 0 ft to 52.5 ft; Sack(s)/type of cement used: 13 Cement** 2nd Interval: **No Data** 3rd Interval: **No Data** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**ETTL Engineers and Consultants Inc. 1717 East Erwin Street Tyler , TX 75702**

00113919

Plug Installer License Number:	**2853**
Licensed Plug Installer Signature:	**Thomas Daniel Cook**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**No Data**

Please include the plugging report's tracking number (Tracking **#80118**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

00113920

STATE OF TEXAS PLUGGING REPORT for Tracking #80086

Owner:	**Longhorn Army Amunition Plant**	Owner Well #:	**MW106**
Address:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Grid #:	**35-24-4**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 55" N**
Well County:	**Harrison**	Longitude:	**094° 07' 02" W**
		GPS Brand Used:	**Garmin**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**No Data**
Driller's License Number of Original Well Driller:	**No Data**
Date Well Drilled:	**No Data**
Well Report Tracking Number:	**No Data**
Diameter of Borehole:	**No Data**
Total Depth of Borehole:	**No Data**

Date Well Plugged:	**2/23/2012**
Person Actually Performing Plugging Operation:	**Thomas Cook**
License Number of Plugging Operator:	**2853**
Plugging Method:	**Tremmie pipe cement from bottom to top.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **2 inches diameter, From 5 ft to 25 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 0 ft to 25 ft; Sack(s)/type of cement used: 3 Cement** 2nd Interval: **No Data** 3rd Interval: **No Data** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**ETTL Engineers and Consultants Inc. 1717 East Erwin Street Tyler , TX 75702**

00113921

Plug Installer License Number:	**2853**
Licensed Plug Installer Signature:	**Thomas Daniel Cook**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**No Data**

Please include the plugging report's tracking number (Tracking **#80086**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

00113922

STATE OF TEXAS PLUGGING REPORT for Tracking #80085

Owner:	**Longhorn Army Amunition Plant**	Owner Well #:	**MW71**
Address:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Grid #:	**35-24-4**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 45" N**
Well County:	**Harrison**	Longitude:	**094° 07' 00" W**
		GPS Brand Used:	**Garmin**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**Ray Voils**
Driller's License Number of Original Well Driller:	**No Data**
Date Well Drilled:	**9/1/1994**
Well Report Tracking Number:	**No Data**
Diameter of Borehole:	**8 inches**
Total Depth of Borehole:	**15.9 feet**

Date Well Plugged:	**2/23/2012**
Person Actually Performing Plugging Operation:	**Thomas Cook**
License Number of Plugging Operator:	**2853**
Plugging Method:	**Tremmie pipe cement from bottom to top.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **4 inches diameter, From 0 ft to 0 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 0 ft to 15.9 ft; Sack(s)/type of cement used: 3 Cement** 2nd Interval: **No Data** 3rd Interval: **No Data** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**ETTL Engineers and Consultants Inc. 1717 East Erwin Street Tyler , TX 75702**

00113923

Plug Installer License Number:	**2853**
Licensed Plug Installer Signature:	**Thomas Daniel Cook**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**No Data**

Please include the plugging report's tracking number (Tracking **#80085**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

00113924

STATE OF TEXAS PLUGGING REPORT for Tracking #80084

Owner:	**Longhorn Army Amunition Plant**	Owner Well #:	**MW70**
Address:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Grid #:	**35-24-4**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 44" N**
Well County:	**Harrison**	Longitude:	**094° 07' 03" W**
		GPS Brand Used:	**Garmin**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**Ray Voils**
Driller's License Number of Original Well Driller:	**No Data**
Date Well Drilled:	**9/1/1994**
Well Report Tracking Number:	**No Data**
Diameter of Borehole:	**8 inches**
Total Depth of Borehole:	**21 feet**

Date Well Plugged:	**2/23/2012**
Person Actually Performing Plugging Operation:	**Thomas Cook**
License Number of Plugging Operator:	**2853**
Plugging Method:	**Tremmie pipe cement from bottom to top.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **4 inches diameter, From 15 ft to 21 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 0 ft to 21 ft; Sack(s)/type of cement used: 3 Cement** 2nd Interval: **No Data** 3rd Interval: **No Data** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**ETTL Engineers and Consultants Inc. 1717 East Erwin Street Tyler , TX 75702**

00113925

Plug Installer License Number:	**2853**
Licensed Plug Installer Signature:	**Thomas Daniel Cook**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**No Data**

Please include the plugging report's tracking number (Tracking **#80084**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

00113926

STATE OF TEXAS PLUGGING REPORT for Tracking #80083

Owner:	**Longhorn Army Amunition Plant**	Owner Well #:	**MW69**
Address:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Grid #:	**35-24-4**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 38" N**
Well County:	**Harrison**	Longitude:	**094° 07' 18" W**
		GPS Brand Used:	**Garmin**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**Tom Beavers**
Driller's License Number of Original Well Driller:	**No Data**
Date Well Drilled:	**9/27/1994**
Well Report Tracking Number:	**No Data**
Diameter of Borehole:	**8 inches**
Total Depth of Borehole:	**47.9 feet**

Date Well Plugged:	**2/23/2012**
Person Actually Performing Plugging Operation:	**Thomas Cook**
License Number of Plugging Operator:	**2853**
Plugging Method:	**Tremmie pipe cement from bottom to top.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **4 inches diameter, From 0 ft to 47.9 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 0 ft to 47.9 ft; Sack(s)/type of cement used: 12 Cement** 2nd Interval: **No Data** 3rd Interval: **No Data** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**ETTL Engineers and Consultants Inc. 1717 East Erwin Street Tyler , TX 75702**

00113927

Plug Installer License Number:	**2853**
Licensed Plug Installer Signature:	**Thomas Daniel Cook**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**No Data**

Please include the plugging report's tracking number (Tracking **#80083**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

00113928

STATE OF TEXAS PLUGGING REPORT for Tracking #80082

Owner:	**Longhorn Army Amunition Plant**	Owner Well #:	**MW68**
Address:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Grid #:	**35-24-4**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 35" N**
Well County:	**Harrison**	Longitude:	**094° 07' 15" W**
		GPS Brand Used:	**Garmin**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**Ray Voils**
Driller's License Number of Original Well Driller:	**No Data**
Date Well Drilled:	**9/1/1994**
Well Report Tracking Number:	**No Data**
Diameter of Borehole:	**8 inches**
Total Depth of Borehole:	**21 feet**

Date Well Plugged:	**2/23/2012**
Person Actually Performing Plugging Operation:	**Thomas Cook**
License Number of Plugging Operator:	**2853**
Plugging Method:	**Tremmie pipe cement from bottom to top.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **4 inches diameter, From 2 ft to 21 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 0 ft to 21 ft; Sack(s)/type of cement used: 4 Cement** 2nd Interval: **No Data** 3rd Interval: **No Data** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**ETTL Engineers and Consultants Inc. 1717 East Erwin Street Tyler , TX 75702**

00113929

Plug Installer License Number:	**2853**
Licensed Plug Installer Signature:	**Thomas Daniel Cook**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**No Data**

Please include the plugging report's tracking number (Tracking **#80082**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

00113930

STATE OF TEXAS PLUGGING REPORT for Tracking #80081

Owner:	**Longhorn Army Amunition Plant**	Owner Well #:	**MW67**
Address:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Grid #:	**35-24-4**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 38" N**
Well County:	**Harrison**	Longitude:	**094° 07' 19" W**
		GPS Brand Used:	**Garmin**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**Tom Beavers**
Driller's License Number of Original Well Driller:	**No Data**
Date Well Drilled:	**9/23/1994**
Well Report Tracking Number:	**No Data**
Diameter of Borehole:	**8 inches**
Total Depth of Borehole:	**19.4 feet**

Date Well Plugged:	**2/23/2012**
Person Actually Performing Plugging Operation:	**Thomas Cook**
License Number of Plugging Operator:	**2853**
Plugging Method:	**Tremmie pipe cement from bottom to top.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **4 inches diameter, From 2 ft to 19.4 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 0 ft to 19.4 ft; Sack(s)/type of cement used: 2 Cement** 2nd Interval: **No Data** 3rd Interval: **No Data** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**ETTL Engineers and Consultants Inc. 1717 East Erwin Street Tyler , TX 75702**

00113931

Plug Installer License Number:	**2853**
Licensed Plug Installer Signature:	**Thomas Daniel Cook**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**No Data**

Please include the plugging report's tracking number (Tracking **#80081**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

00113932

STATE OF TEXAS PLUGGING REPORT for Tracking #80080

Owner:	**Longhorn Army Amunition Plant**	Owner Well #:	**MW66**
Address:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Grid #:	**35-24-4**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 59" N**
Well County:	**Harrison**	Longitude:	**094° 07' 22" W**
		GPS Brand Used:	**Garmin**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**Ray Voils**
Driller's License Number of Original Well Driller:	**No Data**
Date Well Drilled:	**9/1/1994**
Well Report Tracking Number:	**No Data**
Diameter of Borehole:	**8 inches**
Total Depth of Borehole:	**16.9 feet**

Date Well Plugged:	**2/23/2012**
Person Actually Performing Plugging Operation:	**Thomas Cook**
License Number of Plugging Operator:	**2853**
Plugging Method:	**Tremmie pipe cement from bottom to top.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **4 inches diameter, From 0 ft to 0 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 0 ft to 16.9 ft; Sack(s)/type of cement used: 2 Cement** 2nd Interval: **No Data** 3rd Interval: **No Data** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**ETTL Engineers and Consultants Inc. 1717 East Erwin Street Tyler , TX 75702**

00113933

Plug Installer License Number:	**2853**
Licensed Plug Installer Signature:	**Thomas Daniel Cook**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**No Data**

Please include the plugging report's tracking number (Tracking **#80080**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

00113934

STATE OF TEXAS PLUGGING REPORT for Tracking #80079

Owner:	**Longhorn Army Amunition Plant**	Owner Well #:	**MW65**
Address:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Grid #:	**35-24-4**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 57" N**
Well County:	**Harrison**	Longitude:	**094° 07' 21" W**
		GPS Brand Used:	**Garmin**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**Ray Voils**
Driller's License Number of Original Well Driller:	**No Data**
Date Well Drilled:	**9/1/1994**
Well Report Tracking Number:	**No Data**
Diameter of Borehole:	**8 inches**
Total Depth of Borehole:	**16.8 feet**

Date Well Plugged:	**2/23/2012**
Person Actually Performing Plugging Operation:	**Thomas Cook**
License Number of Plugging Operator:	**2853**
Plugging Method:	**Tremmie pipe cement from bottom to top.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **4 inches diameter, From 10 ft to 16.8 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 0 ft to 16.8 ft; Sack(s)/type of cement used: 2 Cement** 2nd Interval: **No Data** 3rd Interval: **No Data** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**ETTL Engineers and Consultants Inc. 1717 East Erwin Street Tyler , TX 75702**

00113935

Plug Installer License Number:	**2853**
Licensed Plug Installer Signature:	**Thomas Daniel Cook**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**No Data**

Please include the plugging report's tracking number (Tracking **#80079**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

00113936

STATE OF TEXAS PLUGGING REPORT for Tracking #80078

Owner:	**Longhorn Army Amunition Plant**	Owner Well #:	**MW64**
Address:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Grid #:	**35-24-4**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 54" N**
Well County:	**Harrison**	Longitude:	**094° 07' 21" W**
		GPS Brand Used:	**Garmin**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**Ray Voils**
Driller's License Number of Original Well Driller:	**No Data**
Date Well Drilled:	**9/1/1994**
Well Report Tracking Number:	**No Data**
Diameter of Borehole:	**8 inches**
Total Depth of Borehole:	**24.1 feet**

Date Well Plugged:	**2/23/2012**
Person Actually Performing Plugging Operation:	**Thomas Cook**
License Number of Plugging Operator:	**2853**
Plugging Method:	**Tremmie pipe cement from bottom to top.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **4 inches diameter, From 0 ft to 24.1 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 0 ft to 24.1 ft; Sack(s)/type of cement used: 3 Cement** 2nd Interval: **No Data** 3rd Interval: **No Data** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**ETTL Engineers and Consultants Inc. 1717 East Erwin Street Tyler , TX 75702**

00113937

Plug Installer License Number:	**2853**
Licensed Plug Installer Signature:	**Thomas Daniel Cook**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**No Data**

Please include the plugging report's tracking number (Tracking **#80078**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

00113938

STATE OF TEXAS PLUGGING REPORT for Tracking #80077

Owner:	**Longhorn Army Amunition Plant**	Owner Well #:	**MW63**
Address:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Grid #:	**35-24-4**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 56" N**
Well County:	**Harrison**	Longitude:	**094° 07' 28" W**
		GPS Brand Used:	**Garmin**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**Ray Voils**
Driller's License Number of Original Well Driller:	**No Data**
Date Well Drilled:	**9/1/1994**
Well Report Tracking Number:	**No Data**
Diameter of Borehole:	**8 inches**
Total Depth of Borehole:	**18.5 feet**

Date Well Plugged:	**2/23/2012**
Person Actually Performing Plugging Operation:	**Thomas Cook**
License Number of Plugging Operator:	**2853**
Plugging Method:	**Tremmie pipe cement from bottom to top.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **4 inches diameter, From 0 ft to 18.5 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 0 ft to 18.5 ft; Sack(s)/type of cement used: 3 Cement** 2nd Interval: **No Data** 3rd Interval: **No Data** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**ETTL Engineers and Consultants Inc. 1717 East Erwin Street Tyler , TX 75702**

00113939

Plug Installer License Number:	**2853**
Licensed Plug Installer Signature:	**Thomas Daniel Cook**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**No Data**

Please include the plugging report's tracking number (Tracking **#80077**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

00113940

STATE OF TEXAS PLUGGING REPORT for Tracking #80076

Owner:	**Longhorn Army Amunition Plant**	Owner Well #:	**MW62**
Address:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Grid #:	**35-24-4**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 55" N**
Well County:	**Harrison**	Longitude:	**094° 07' 26" W**
		GPS Brand Used:	**Garmin**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**Ray Voils**
Driller's License Number of Original Well Driller:	**No Data**
Date Well Drilled:	**9/1/1994**
Well Report Tracking Number:	**No Data**
Diameter of Borehole:	**8 inches**
Total Depth of Borehole:	**25.7 feet**

Date Well Plugged:	**2/23/2012**
Person Actually Performing Plugging Operation:	**Thomas Cook**
License Number of Plugging Operator:	**2853**
Plugging Method:	**Tremmie pipe cement from bottom to top.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **4 inches diameter, From 0 ft to 25.7 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 0 ft to 25.7 ft; Sack(s)/type of cement used: 3 Cement** 2nd Interval: **No Data** 3rd Interval: **No Data** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**ETTL Engineers and Consultants Inc. 1717 East Erwin Street Tyler , TX 75702**

00113941

Plug Installer License Number:	**2853**
Licensed Plug Installer Signature:	**Thomas Daniel Cook**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**No Data**

Please include the plugging report's tracking number (Tracking **#80076**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

00113942

STATE OF TEXAS PLUGGING REPORT for Tracking #80086

Owner:	**Longhorn Army Amunition Plant**	Owner Well #:	**MW107**
Address:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Grid #:	**35-24-4**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 41" N**
Well County:	**Harrison**	Longitude:	**094° 07' 01" W**
		GPS Brand Used:	**Garmin**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**No Data**
Driller's License Number of Original Well Driller:	**No Data**
Date Well Drilled:	**No Data**
Well Report Tracking Number:	**No Data**
Diameter of Borehole:	**No Data**
Total Depth of Borehole:	**No Data**

Date Well Plugged:	**2/23/2012**
Person Actually Performing Plugging Operation:	**Thomas Cook**
License Number of Plugging Operator:	**2853**
Plugging Method:	**Tremmie pipe cement from bottom to top.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **2 inches diameter, From 0 ft to 0 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 0 ft to 20 ft; Sack(s)/type of cement used: 2 Cement** 2nd Interval: **No Data** 3rd Interval: **No Data** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**ETTL Engineers and Consultants Inc. 1717 East Erwin Street Tyler , TX 75702**

00113943

Plug Installer License Number:	**2853**
Licensed Plug Installer Signature:	**Thomas Daniel Cook**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**No Data**

Please include the plugging report's tracking number (Tracking **#80086**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

14

Location Karnak, TX Date 2/21/12

Project / Client LHAAP

P&A 13 monitor wells

730 Arrived @ site
- Met driller: Tommy Cook of ETTL drilling
- Performed tailgate & JSA
- Reviewed HASP

900 Searched for monitor wells to be plugged

1000 Back @ front gate waiting for Bobcat delivery

Began breaking apart monitory well pads

1015 Set-up @ MW-64 & removed pad and bollards with sledge hammer
Set-up @ MW-66 & removed pad and bollards with sledge hammer

1120 Took concrete debris to Concrete & Metal Recycling Area on the base

1230 Bobcat arrived

15

Location Karnak, TX Date 2/21/12

Project / Client LHAAP

P&A 13 monitor wells

- Set-up @ MW-63 & removed pad and bollards with sledge hammer
- Set-up @ MW-62 & removed pad and bollards with sledge hammer
- Set-up @ 48MW-01 & removed pad and bollards with sledge hammer
- Set-up @ MW-65 & removed pad and bollards with sledge hammer

Bobcat got stuck and had to pull out of mud with drill rig

- Set-up @ MW-106 & removed pad and bollards with sledge hammer
- Set-up on MW-71 & removed pad and bollards with sledge hammer
- Set-up on MW-70 & removed pad and bollards with sledge hammer

16

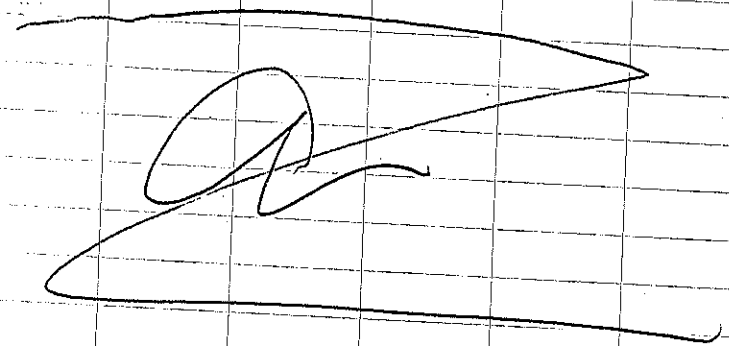
Location Karnak Tx Date 2/21/12

Project / Client LHAAP

P&A 13 monitor wells

- Set-up on MW-107 & removed pad and bollards with sledge hammer
- Set-up on MW-67 & removed pad and bollards with sledge hammer
- Set-up on MW-68 & removed pad and bollards with sledge hammer
- Set-up on MW-69 & removed pad and bollards with sledge hammer
- Placed all concrete debris at the Concrete & Metal Recycling Area at the base

1730 Left site



17

Location Karnak, Tx Date 2/22/12

Project / Client LHAAP

P&A 13 monitor wells

730 Arrived @ site
- Performed tailgate & JSA
- Reviewed HASP

800 Set-up on MW-63
Removed stick-up and approx 2.5 ft of casing. Attempted to pull but casing would not move. Broke off @ ground level. (4 inch PVC)

Set-up on MW-62
Removed stick-up and 2.5 ft of casing. Attempted to pull casing but would not move. Broke off @ ground level. (4 inch PVC)

Set-up on 48 MW-01
Double casing stick-up is cemented in place. Attempted to pull but would not move. Use blow torch to cut to ground level. (4 inch PVC)

Location Karnak, Tx Date 2/22/12

Project / Client LHAAP

P&A 13 monitor wells

- Set-up on MW-64. Removed stick-up. Attempted to pull casing but would not move. Broke off @ ground level. (4 inch PVC)

- Set-up on MW-66. Removed stick-up and pulled all casing & screen of approx. 17 ft. (4 inch PVC)

- Set-up on MW-65. Removed stick-up and approx. 10 ft of casing before screen broke. (4 inch PVC)

- Set-up on MW-106. Removed stick-up and approx. 5 ft of casing before casing broke. (2 inch PVC)

- Set-up on MW-71. Removed stick-up and all casing & screen of approx. 16 ft. (4 inch PVC) (steel screen)

Location Karnak, Tx Date 2/22/12

Project / Client LHAAP

P&A 13 monitor wells

- Set-up on MW-70. Removed stick-up and approx. 5 ft of casing. Broke below ground level. (4 inch PVC)

- Set-up on MW-107. Removed stick-up and all casing & screen. (2 inch PVC)

- Set-up on MW-67. Removed stick-up. Casing broke below ground level. (4 inch PVC)

- Set-up on MW-68. Removed stick-up and approx. 2 ft of casing. Broke below ground level. (4 inch PVC)

- Set-up on MW-69. Removed stick-up. Well is double cased and could not pull. Used torch to cut casing away to ground level. (4 inch PVC)

20

Location Karnak, TX Date 2/22/12

Project / Client LHAAP

P&A 13 monitor wells

- Large metal tub was used to mix bentonite + concrete slurry mix. A trash pump was used to pump the mixture in to each well until it reached the surface.

Well ID	Quikrite cement bags (100lb)	Bentonite bags (50lb)
MW-62	3	1
MW-63	3	1
MW-64	3	1
MW-65	2	1
MW-66	2	1
48MW-01	13	1
MW-106	3	1
MW-107	2	1
MW-67	2	1
MW-68	4	1
MW-69	12	1
MW-70	3	1
MW-71	3	1

1800 Left site

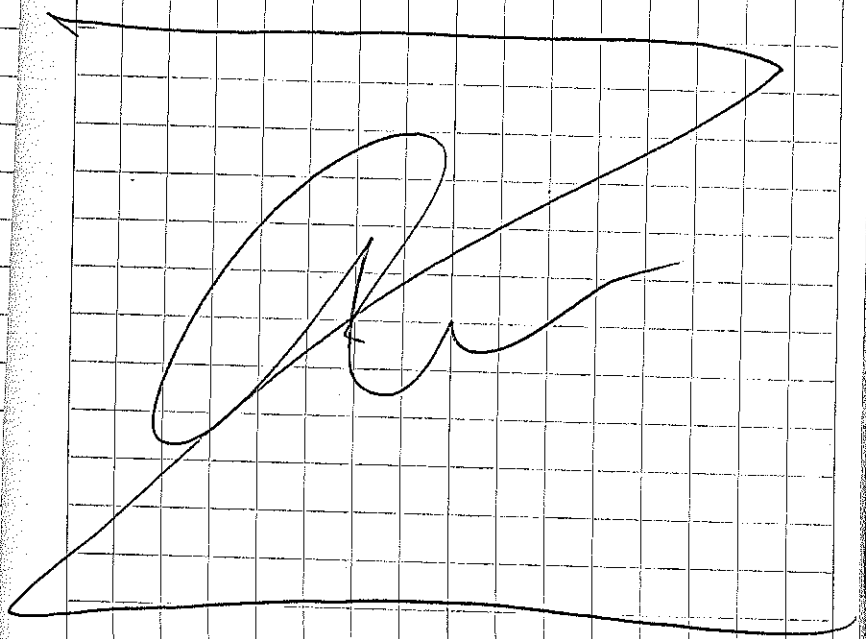
21

Location Karnak, TX Date 2/23/12

Project / Client LHAAP

P&A 13 monitor wells

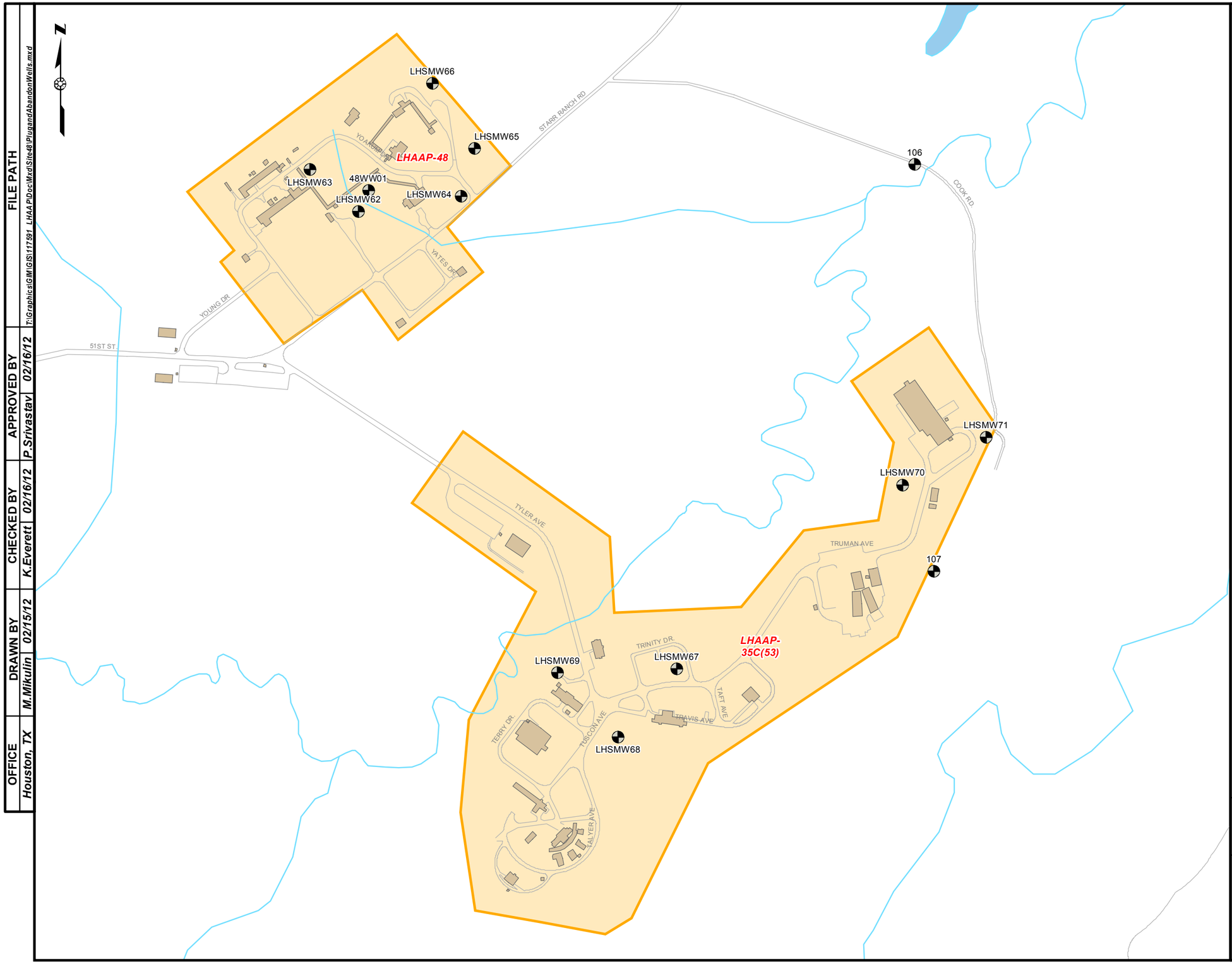
730 Arrived @ site
Checked wells for drappage in bentonite concrete slurry level
- Topped off all wells
- Bobcat was picked up
1200 left site
500 Arrived @ Austin office



00113948

FILE PATH	
APPROVED BY	P.Srivastav 02/16/12
CHECKED BY	K.Everett 02/16/12
DRAWN BY	M.Mikulin 02/15/12
OFFICE	Houston, TX

T:\Graphics\GIM\GIS\117391_LHAAP\Doc\Mxd\Site48\PlugandAbandonWells.mxd



LEGEND

- Monitoring Well
- Stream
- Road
- Former Building or Tank
- Site

0 175 350 700 Feet

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1

MONITORING WELLS
TO PLUG AND ABANDON
LHAAP-48 AND LHAAP-53

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

LONGHORN ARMY AMMUNITION PLANT
Karnack, Texas

DRAFT MONTHLY MANAGERS' MEETING

AGENDA

DATE:	March 27, 2012
TIME:	After Bioplug Kickoff – approximately 11:00 a.m.
PLACE:	Call-in: 877-336-1829, Access-8674792, Security-1201 (Courtesy Tulsa District)

Welcome **RMZ**

Action Items

Army
- Review LHAAP-18/24 logs from recent soil sampling (including PID readings).
- Provide response regarding Methylene Chloride Degradation *Completed*

TCEQ
- Review LHAAP-18/24 soil sampling results

EPA
- Review LHAAP-18/24 soil sampling results

Shaw
- Review LHAAP-18/24 logs from recent soil sampling to determine if logs show interface between native soil to the fill material.

Defense Environmental Restoration Program (DERP) PBC Update **PS**
- Document Status/Environmental Sites (Table)
- Groundwater Treatment Plant
- Path forward for ECO

DERP Total Environmental Restoration Contract Update **Army**
- LHAAP-37 Well Installation and results
- Pilot Demonstration Kickoff at LHAAP-37 Status

MMRP Update **Army**
- Update IRP Metals Issue

Programmatic Issues **RMZ/TZ/FD**
- Status of Dispute

USFWS Update **RMZ/PB**
- Environmental Restoration Issues with Transfer Schedule Impact
- USFWS Comments on Documents

EPA – Non-CERCLA
- Update on Phytoforensics Study **TS**

Adjourn

ACRONYM LIST

DERP-	**Defense Environmental Restoration Program**
EPA-	**Environmental Protection Agency**
FS-	**Feasibility Study**
IRP-	**Installation Restoration Program**
ITS-	**Intertek Testing Services**
LHAAP-	**Longhorn Army Ammunition Plant**
MMRP-	**Military Munitions Response Program**
MNA-	**Monitored Natural Attenuation**
PB-	**Paul Bruckwicki**
PBC-	**Performance Based Contract**
PS-	**Praveen Srivastav**
QA-	**Quality Assurance**
QC-	**Quality Control**
RMZ-	**Rose M. Zeiler**
RD-	**Remedial Design**
ROD-	**Record of Decision**
SAP-	**Sampling and Analysis Plan**
TCEQ-	**Texas Commission on Environmental Quality**
USFWS-	**United States Fish and Wildlife Service**

Shaw® Shaw Environmental, Inc.

Status of Sites and Technical Documents
Longhorn Army Ammunition Plant – PBC Contract
March 27, 2012

No.	Document in Progress	Submittal Date	Army	Regulator	Next Submittal	Expected Date	Army	Regulator	Comment Resolution	Status	**Remarks**
1	Preliminary Draft EE/CA, LHAAP-03	9/29/11	x		Final	4/15/12	x	x	In progress	Resolving regulatory comments.	
2	Draft Feasibility Study, LHAAP-04	11/03/11	x	x	Final	4/15/12	x	x	In progress	Responses to comments submitted to regulators	
3	Draft LHAAP-12 RAO Report – Year 1 & 2	2/10/11	x	x	Final	4/15/12	x	x	continuing	Responses to comments submitted to regulators	
4	Draft LHAAP-12 RAO Report – Year 3 & 4	12/8/11	x	x	Final	4/15/12	x	x	continuing	Responses to comments submitted to regulators	

Prepared by
Tulsa District Corps of Engineers

Subject: **Draft Minutes, Monthly Managers Meeting, Longhorn Army Ammunition Plant (LHAAP)**

Location of Meeting: **Army Site Trailer Teleconference**
Date of Meeting: **March 27, 2012; 11:00 AM – 12:00 PM**

Meeting Participants:

BRAC:	Rose M. Zeiler
USACE-Tulsa:	John Lambert (Teleconference), Aaron Williams (Teleconference), Wendy Lanier (at LHAAP)
USAEC	Marilyn Plitnik (Teleconference)
Shaw:	Kay Everett
USEPA Region 6:	Steve Tzhone
USGS:	Kent Becher
TCEQ:	Fay Duke
USFWS:	Paul Bruckwicki

Welcome **Rose M. Zeiler**

Action Item Status

Army

- Review LHAAP-18/24 logs from recent soil sampling (including PID readings).-Pending
- Provide response regarding Methylene Chloride Degradation *Completed*
- Provide opinion from Certified Industrial Hygienist pertaining to training requirements of crew performing phytoforensics (tree coring), whether 24 hour training adequate -Pending
- Preparing notice to the RAB and public notice/press releases for the upcoming meeting, (send out the letter, agenda and the emails)- Shaw has completed these tasks
- Updated Schedule for ongoing LHAAP projects. (Last schedule regulators received has significantly changed)- Pending
- USACE has been requested to provide construction details of the Groundwater Collection System for IRA at LHAAP 18/24 - Pending

TCEQ

- Review LHAAP-18/24 soil sampling results -Pending

EPA

- Review LHAAP-18/24 soil sampling results- Pending

Shaw

- Review LHAAP-18/24 logs from recent soil sampling to determine if logs show interface between native soil and the fill material. -Pending
- Provide "interested parties mailing list" to Army -Done

Defense Environmental Restoration Program (DERP) PBC Update

- Due to a protest, award of the new PBC has been delayed 60 to 90 days. Interim requirements will be accomplished through an extension of existing contract. Steve requested that Army provide a letter to the regulators explaining the delay.

- Document Status/Environmental Sites (Table) – LHAAP-03 EE/CA : Responses to regulator comments are drafted and RTCs will be provided to regulators within a week. LHAAP-04 FS : RTCs have been submitted to regulators for review. LHAAP-12 RAO Reports : RTCs have been submitted to regulators for review. UIC Report : Report has been drafted and will be sent to regulators for review prior to submitting to Bryant Smith. Fay Duke recommended that future UIC reports be incorporated into the quarterly GWTP Report.
- Groundwater Treatment Plant
  - The GWTP is functioning normally. Nine new extraction pumps were installed and other typical maintenance activities conducted. The treated effluent water is being discharged to the burning ground (via sprinkler system) and injected in ICTs. Regulators requested that future GWTP quarterly reports include discussion of pump tests/problems/replacement, system/well maintenance.
- Path forward for ECO- USACE has asked biologist from Environmental Planning section to review drafted RTCs and provide input- expected by end of week.

DERP Total Environmental Restoration Contract Update

- *LHAAP-37 Well Installation*
  - Wells have been installed, developed, and sampled, results showed unexpected contamination in new west and east well.
- *Pilot Demonstration at LHAAP-37 Status*
  - No change in status. The work plan has been approved and project is on schedule.
- Pilot Demonstration Kickoff at LHAAP-37 -Completed prior to managers meeting

MMRP Update **Army**

- Update co-located IRP sites (LHAAP-27 and -54) Metals Issue: Draft updated metals summary results were provided to regulators for informal review and discussion prior to formal resolution. Steve and Fay will get together to discuss.

Programmatic Issues

- Status of Dispute
  - Dispute is going to the next level and the public will be notified in accordance with the FFA.
  - A letter will be sent from the RAB Army co-chair highlighting the issues in paragraph form to the RAB members explaining the issues
  - EPA is preparing an attachment to the RAB letter regarding outstanding issues (programmatic & language) between the Army and EPA concerning transfer of LHAAP property. Letter will contain a decision matrix in chart form to explain issues to the public.

USFWS Update

- Environmental Restoration Issues with Transfer Schedule Impact
  - USFWS requires information regarding nature of dispute between the ARMY and regulators to move forward (Issues will be explained in the RAB letter). Fay Duke of TCEQ assured Paul Bruckwicki of USFWS that the remedies in the RODs for the sites under dispute were protective of human health and the environment.
- USFWS Comments on Documents - None

EPA – Non-CERCLA

- Update on Phytoforensics Study **TS**

  - Work plan is not completed
  - Outstanding issue is a decision on OSHA requirement for tree coring crew
- Methylene Chloride Degradation. Completed.

Shaw

- Provide monitoring well coordinates from LHAAP-16 and LHAAP-17 to EPA. Completed

Path Forward for ECO.
EPA will be sending comments on ITS data. Army clarified that Shaw would be responding to those comments, but under a separate contract vehicle and not with the current contract.

The next meeting date is scheduled for April 19, 2012 at 2:00 P.M.

Meeting Adjourned

Longhorn Army Ammunition Plant
Well Installation and Sampling

Completion Report

Chemical Laboratory (LHAAP-37)
Karnack, Texas

Contract No.: W912BV-09-D-2022
Task Order No.: 0007

Prepared By:

CHEROKEE NATION™
Cherokee CRC

Tulsa, Oklahoma

Prepared For:

United States Army Corps of Engineers
Tulsa, Oklahoma

April 11, 2012

Table of Contents

Cover Page…… 1

Table of Contents…… 2

Acronyms and Abbreviations……3

Introduction……..…4

Summary……..... 4

References……..8

APPENDICES

APPENDIX A **Daily Safety Meeting Log**

APPENDIX B **Well & Boring Logs**

APPENDIX C **Field Notebook Entries**

APPENDIX D **Well Development Forms**

APPENDIX E **Chain of Custody and Field Forms**

APPENDIX F **Sampling and Results Summary**

APPENDIX G **Waste Profile & Manifest**

APPENDIX H **Site Location Map**

APPENDIX I **Photographs**

APPENDIX J **Laboratory Report (CD-ROM)**

Acronyms and Abbreviations

CCRC	Cherokee CRC, LLC
ID	Identification
ID/IQ	Indefinite Deliverable/Indefinite Quantity
IDW	Investigation Derived Waste
MW	Monitoring Well
HASP	Health and Safety Plan
USACE	United States Army Corps of Engineers
USCS	Unified Soil Classification System
ug/L	Micrograms per Liter
SESOPP	Shaw Environmental Standard Operating Project Procedure
LHAAP	Longhorn Army Ammunition Plant

INTRODUCTION

Cherokee CRC, LLC (CCRC) is a contractor to the United States Army Corps of Engineers (USACE) Tulsa District under an Indefinite Deliverable/Indefinite Quantity (ID/IQ) Contract (W912BV-09-R-2022) and is assigned task orders to provide environmental services. CCRC was tasked under Task Order #7 to provide environmental services at the Longhorn Army Ammunition Plant (LHAAP), chemical laboratory, located in Karnack, Texas a site location map can be found in (**Appendix H**). Task Order #7 requires CCRC to install 3 monitoring wells (MW) 35BWW14, 35BWW11, and 35BWW09, and collect groundwater samples from five monitoring wells (MW) 35BWW14, 35BWW11, 35BWW09, 35BWW08, and 35BWW04.

SUMMARY

The CCRC team conducted a clearing operation to remove trees and vegetation around the well sites on 01/23/2012. Jones Tree Service was onsite at 0830 hours to clear an area around the well sites large enough for the drill rig to operate. All well sites were cleared by 1200 hours. Prior to commencement of work, the CCRC team performed a tailgate safety meeting (**Appendix A**) as stated in the Shaw Environmental project Health and Safety Plan (HASP) contained in the Shaw Environmental Final Installation-Wide Work Plan (Shaw2006).

Drilling operations began on 01/24/2012. Mohawk Drilling personnel Ryan Thompson and Alan Brantley were the drillers installing the MWs. Drilling began on MW 35BWW14 on 01/24/2012 at approximately 0905 hours and the well was completed on 01/26/2012 at approximately 0945 hours. Installation of MW 35BWW11 began on 01/24/2012 and was completed on 01/26/2012 at approximately 1110 hours. Installation of MW 35BWW09 began on 01/25/2012 and was completed on 01/26/2012 at approximately 1240 hours. During well installation John Freise of Cherokee CRC logged the borings and classified the cuttings according to the Unified Soil Classification System (USCS). CCRC followed the Shaw Environmental Standard Operating Project Procedure (SESOPP) for LHAAP for Well Installation. One exception from the Shaw procedure was implemented. The cure time for the bentonite pellets was changed to 1-hour in lieu of the 8-hour cure time called for in the SESOPP. This change was agreed upon by the USACE. The justification for this change was to accelerate the well installation process and the 1-hour cure time is standard operating procedure for Mohawk Drilling. The boring logs, well completion forms, and the Texas well reports are located in (**Appendix B)**. The field logbook entries are located in (**Appendix C**). The geographic positions of the new wells are as follows:

Well ID	Latitude: Decimal Degrees	Longitude: Decimal Degrees
35BWW09	32.67981810° N	94.14565970° W
35BWW11	32.67943120° N	94.14482640° W
35BWW14	32.68028130° N	94.14443340° W

Development of MW 35BWW09 began on 01/27/2012 by John Freise at approximately 0750 hours and the well was sufficiently developed by 1215 hours. Development of MW 35BWW14 began on 02/08/2012 by John Freise and Dwayne Beavers of Cherokee CRC at approximately 1305 hours and the well was sufficiently developed by 1444 hours. Development of MW 35BWW11 began on 02/08/2012 by John Freise and Dwayne Beavers

at approximately 1535 hours and the well was sufficiently developed by 1758 hours. The wells were developed following the SESOPP for LHAAP for Well Development. The well development field forms are located in (**Appendix D**). The field logbook entries are located in (**Appendix C**).

Sampling activities began on 02/09/2012 by John Freise and Dwayne Beavers. Prior to sampling, CCRC measured static water levels and purged each monitoring well utilizing a peristaltic pump and low flow sampling protocols until stabilization parameters were met according to SESOPP for LHAAP for groundwater sampling. Low flow purging began on MW 35BWW14 on 02/09/2012 at approximately 0822 hours. Stabilization criteria were met at 0851 hours and samples were collected at 0900 hours. Low flow purging began on MW 35BWW11 on 02/09/2012 at approximately 0930 hours. Stabilization criteria were met at approximately 1024 hours and samples were collected at 1027 hours. Low flow purging began on MW 35BWW09 on 02/09/2012 at approximately 1044 hours. Stabilization criteria were met at approximately 1120 hours and samples were collected at 1123 hours. A duplicate sample DUP-1 was collected at MW 35BWW09 at 1128 hours immediately following the collection of sample 35BWW09. Low flow purging began on MW35BWW04 on 02/09/2012 at approximately 1144 hours. Stabilization criteria were met at approximately 1221 hours and samples were collected at 1221 hours. Low flow purging began on MW 35BWW08 on 02/09/2012 at approximately 1229 hours. Stabilization criteria were met at approximately 1305 hours and samples were collected at 1308 hours.

All samples were labeled and placed into an ice chest containing wet ice. The Chain of Custody (COC) was filled out for all samples including the duplicate DUP-1, field blank FB1, and the trip blank TB1. Samples were shipped via Fed Ex next day air to the Test America laboratory in Denver, CO on 02/09/2012. The samples were received at the laboratory on 02/10/2012 at a temperature of 2.4° C. The chain of custody and field sampling forms can be found in (**Appendix E**).

The sample results were received by Cherokee CRC from Test America Laboratories on 02/22/2012. The following is a list of all detections from all samples analyzed by the laboratory:

LHAAP SITE 37 Summary of Detections

Sample ID	Analyte	Results	Units
TB1	Methylene Chloride	0.90	ug/L
FB1	Methylene Chloride	0.62	ug/L
35BWW14	1,1-Dichloroethane	2.8	ug/L
	1,1-Dichloroethene	29	ug/L
	Cis-1, 2-Dichloroethene	7.6	ug/L
	Methylene Chloride	1.5	ug/L
	Trans-1, 2-Dichloroethene	0.36	ug/L
	Tetrachloroethene	10	ug/L
	1,2-Dichloroethene, Total	7.9	ug/L
	Trichloroethene	63	ug/L
	Vinyl Chloride	2.6	ug/L

Sample ID	Analyte	Results	Units
35BWW11	Methylene Chloride	0.60	ug/L
	Tetrachloroethene	0.26	ug/L
35BWW09	1,1-Dichloroethene	0.30	ug/L
	Cis-1, 2-Dichloroethene	0.43	ug/L
	Methylene Chloride	1.2	ug/L
	1, 2-Dichloroethene, Total	0.43	ug/L
	Trichloroethene	68	ug/L
Dup-1 (35BWW09)	1,1-Dichloroethene	0.29	ug/L
	Cis-1, 2-Dichloroethene	0.38	ug/L
	Methylene Chloride	1.3	ug/L
	1, 2-Dichloroethene, Total	0.38	ug/L
	Trichloroethene	68	ug/L
35BWW04	1, 1 Dichloroethane	0.57	ug/L
	1, 1 Dichloroethene	1.7	ug/L
	Cis-1, 2-Dichloroethene	0.51	ug/L
	Methylene Chloride	0.62	ug/L
	Tetrachloroethene	17	ug/L
	1, 2-Dichloroethene, Total	0.51	ug/L
	Trichloroethene	5.9	ug/L
IDW-1	1, 1 Dichloroethane	0.90	ug/L
	1, 1 Dichloroethene	7.0	ug/L
	1,2,4-Trimethylbenzene	8.9	ug/L
	1,3,5-Trimethylbenzene	3.7	ug/L
	4-Isopropyltoluene	0.37	ug/L
	Chloroform	0.21	ug/L
	Cis-1, 2-Dichloroethene	2.6	ug/L
	Ethylebenzene	1.6	ug/L
	Isopropylbenzene	0.20	ug/L
	Methylene Chloride	0.56	ug/L
	m-Xylene & p-Xylene	7.2	ug/L
	Napthalene	3.7	ug/L
	n-Butylbenzene	0.32	ug/L
	N-Propylbenzene	0.46	ug/L
	o-Xylene	7.7	ug/L
	Tetrachloroethene	2.6	ug/L
	1, 2-Dichloroethene, Total	2.6	ug/L
	Trichloroethene	33	ug/L
	Vinyl Chloride	0.61	ug/L
	Flashpoint	>160	Degrees F
	pH	7.3	Standard Units
IDW-2	Methylene Chloride	0.95	ug/L
	Tetrachloroethene	2.1	ug/L
	Trichloroethene	0.63	ug/L
	Ignitability	NO	No Unit
	Percent Moisture	21	%

Sample ID	Analyte	Results	Units
IDW-2	pH-soluble	6.7	Standard Units
35BWW08	1, 1 Dichloroethene	0.22	ug/L
	Cis-1, 2-Dichloroethene		ug/L
	Methylene Chloride	0.58	ug/L
	1, 2-Dichloroethene, Total	0.30	ug/L
	Trichloroethene	37	ug/L

A copy of the detected results executive summary from Test America Laboratory can be found in (**Appendix F**).

Investigative Derived Wastes (IDW) which consisted of all soil removed from the borings during well installation, all groundwater removed during well development and sampling, and all water used for decontamination of the drilling augers and sampling and development equipment were placed into 55 gallon drums. The drums were sealed and labeled “Analysis Pending”. There were 17 drums of IDW generated during well installation, development, and sampling. A composite sample was taken from all the drums containing soil and another composite sample was taken from all the drums containing water. IDW-1 was the composite sample of the IDW water and sample IDW-2 was the composite sample of the IDW soil.

The IDW waste profile was completed and the waste was determined to be non-hazardous. The drums were removed from the site by Stericycle on 03/07/2012. A copy of the waste profiles and manifest can be found in (**Appendix G**).

References

Shaw Environmental, 2006, Final Installation-Wide Work Plan, Karnack Texas, Houston, Texas

APPENDIX A

Daily Safety Meeting Log

00113964

DAILY SAFETY TRAINING MEETINGS

Date of Training: 01-~~23~~-12

Crew: Jones Tree Service, CCRC Mohawk Drilling	**Craft(s):** Clearing, Drilling, Env. Sci.

BRIEFLY DESCRIBE SPECIFIC TRAINING TOPICS COVERED

1. Safety Gear, Procedures
2. Health & Safety Plan, Emergency Preparedness,
3.

REMARKS

Total Employees on Crew(s):	**Total in Attendance:**

SIGNATURE OF EMPLOYEES ATTENDING

Complete all sections fully and submit to the Project Supervisor or Safety Representative

Supervisor: John Freise	**Job Title:** Env. Scientist

DAILY SAFETY TRAINING MEETINGS

Date of Training: 1-24-12

Crew: CCRC, Mohawk Drilling	**Craft(s):** Drilling

BRIEFLY DESCRIBE SPECIFIC TRAINING TOPICS COVERED

1. PPE
2. Safety Plan
3. Emergency Procedures

REMARKS

Total Employees on Crew(s):	**Total in Attendance:** 6

SIGNATURE OF EMPLOYEES ATTENDING

Allen Freise
Ryan Thompson
Ryan Long USACE

Complete all sections fully and submit to the Project Supervisor or Safety Representative

Supervisor: John Freise	**Job Title:** Env. Sc.

00113966

DAILY SAFETY TRAINING MEETINGS

Date of Training: 1/25/12	
Crew: Mohawk Drilling, CCRC	Craft(s): Drilling

BRIEFLY DESCRIBE SPECIFIC TRAINING TOPICS COVERED

1. PPE
2. Safety Plan
3. Emergency Procedures

REMARKS

Total Employees on Crew(s):	**Total in Attendance:**

SIGNATURE OF EMPLOYEES ATTENDING

Roy Long USACE

Complete all sections fully and submit to the Project Supervisor or Safety Representative

Supervisor: John Freize CCRC	Job Title: Env Sc.

DAILY SAFETY TRAINING MEETINGS

Date of Training: 11/26/12	
Crew: Mohawk / CCRC	Craft(s): Well Drilling

BRIEFLY DESCRIBE SPECIFIC TRAINING TOPICS COVERED

1. PPE
2. Safety Plan
3. Emergency Procedures

REMARKS

Total Employees on Crew(s): 3	Total in Attendance: 3

SIGNATURE OF EMPLOYEES ATTENDING

Complete all sections fully and submit to the Project Supervisor or Safety Representative

Supervisor: John Freise	Job Title: Env. Sci

APPENDIX B

Well and Boring Logs

00113969

Hole No. 35BMW14

DRILLING LOG	DIVISION	INSTALLATION	SHEET OF SHEETS
1. PROJECT CHAAP Site 37		10. SIZE AND TYPE OF BIT 6 5/8 HSA	
2. LOCATION (Coordinates or Station)		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY Mohawk Drilling		12. MANUFACTURERS DESIGNATION OF DRILL CME 45C	
4. HOLE NO. (As shown on drawing title and title number)	35BMW14	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED / UNDISTURBED
5. NAME OF DRILLER Alex Bentley, Ryan Thom, Jesse		14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER	
		16. DATE HOLE STARTED 1/24/12	COMPLETED 1/26/12
7. THICKNESS OF OVERBURDEN		17. ELEVATION TOP OF HOLE	
8. DEPTH DRILLED INTO ROCK		18. TOTAL CORE RECOVERY FOR BORING	
9. TOTAL DEPTH OF HOLE 35'		19. SIGNATURE OF INSPECTOR	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	5		SM, lt Br, WS, Slightly Plastic, Moist			
	10		SM, lt Br, WS not plastic, dry			
	15		SM, lt Br, w/trace Wet sand, WS not Plastic, moist			
	20					* Encountered ground water at 19' bgs
	25		SM, lt Br, WS not plastic, moist			
	30		SM, lt Br, WS not plastic, Wet			
	35		Bottom of Bore hole 35' bgs complete @ 1007			

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) — PROJECT — HOLE NO.

Shaw

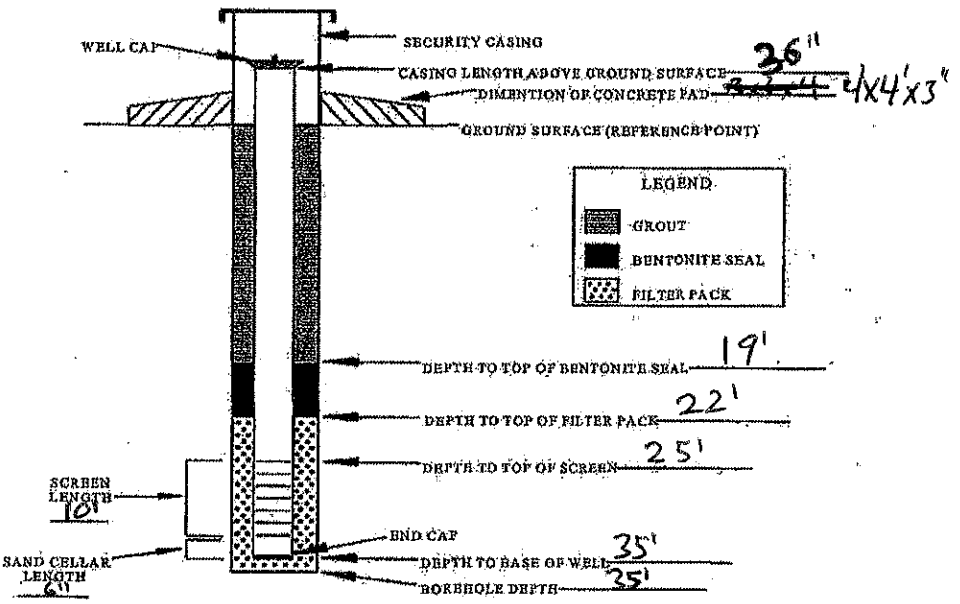
ATTACHMENT B

WELL COMPLETION FORM (Stickup or Above Grade Completion Well)

FIELD REPRESENTATIVE: John Freise
DRILLING CONTRACTOR: Mohawk Drilling
DRILLING TECHNIQUE: HSA
AUGER SIZE AND TYPE:
BOREHOLE IDENTIFICATION: 35BWW14
BOREHOLE DIAMETER: 11"
WELL IDENTIFICATION: 35BWW14
WELL CONSTRUCTION START DATE: 1/24/02
WELL CONSTRUCTION COMPLETE DATE:
SCREEN MATERIAL: Sch 40 PVC
SCREEN DIAMETER: 4"
STRATUM-SCREENED INTERVAL (FT): ~~0-40~~ 10'
CASING MATERIAL: Sch 40 PVC
CASING DIAMETER: 4"

TYPE OF FILTER PACK: 20-40 FilterSil Sand
GRADIATION:
AMOUNT OF FILTER PACK USED: 10 bags
TYPE OF BENTONITE: PDS Wellplug
AMOUNT BENTONITE USED: 3 bags
TYPE OF CEMENT: Portland Cement/BenSeal
AMOUNT CEMENT USED:
GROUT MATERIALS USED: Portland Cement Ben Seal Powdered Bentonite
DIMENSIONS OF SECURITY CASING: 8" diameter
TYPE OF WELL CAP: 4" J-Plug
TYPE OF END CAP: PVC cone
COMMENTS:

SPECIAL CONDITIONS (describe and draw)



INSTALLED BY: Alan Brantley
INSTALLATION OBSERVED BY: John Freise, CRC
DISCREPANCIES:

00113971

Hole No. 35BWW11

DRILLING LOG	DIVISION	INSTALLATION	SHEET OF SHEETS
1. PROJECT LHAAP Site 37		10. SIZE AND TYPE OF BIT 11" OD 6 5/8" ID HSA	
2. LOCATION (Coordinates or Station)		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY Mohawk Drilling		12. MANUFACTURERS DESIGNATION OF DRILL CME 45C	
4. HOLE NO. (As shown on drawing title and title number) 35BWW11		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED / UNDISTURBED
5. NAME OF DRILLER Alan Bentley, Ryan Thompson		14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER	
		16. DATE HOLE STARTED 1/24/12 COMPLETED 1/26/12	
7. THICKNESS OF OVERBURDEN		17. ELEVATION TOP OF HOLE	
8. DEPTH DRILLED INTO ROCK		18. TOTAL CORE RECOVERY FOR BORING	
9. TOTAL DEPTH OF HOLE 35'		19. SIGNATURE OF INSPECTOR	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			ML, lt Br, WS, slightly plastic, moist			
	5		ML, Gr, Clay w/ lt Br fine Sand, WS, slightly plastic, moist			
	10		SC, lt Br, WS, Sandy Clay slightly plastic, moist			
	15		SC, lt Br, fine Sand, WS not-plastic, moist			
	20		SC, lt Br, Clayey Sand WS, slightly plastic moist			* Encountered Ground water @ 23' bgs
	25		SC, lt Br, Clay Sand w/ Gr Clay mottled, WS moist			
	30		Bottom of borehole 35' bgs complete @ 1533			
	35					

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) — PROJECT — HOLE NO.

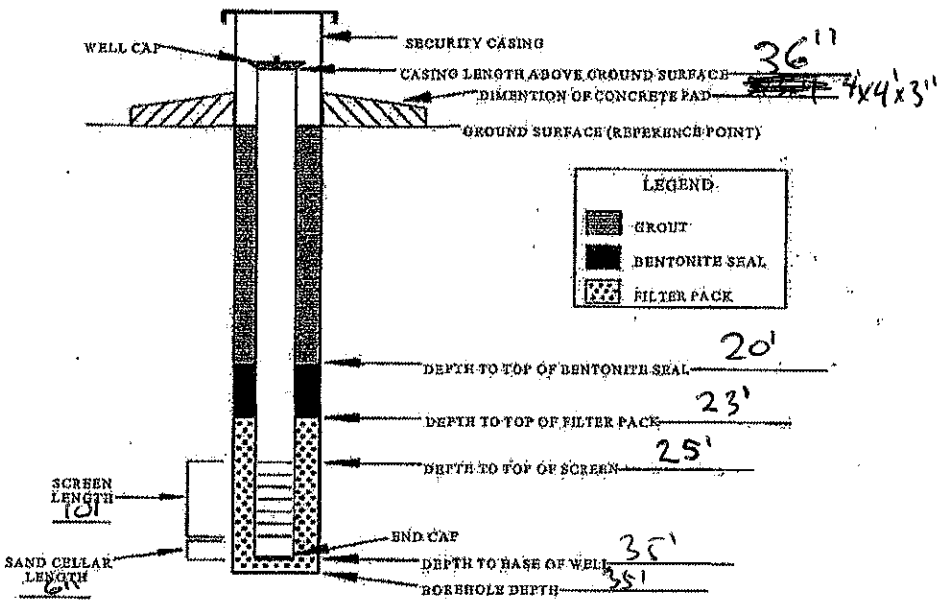
ATTACHMENT B

WELL COMPLETION FORM (Stickup or Above Grade Completion Well)

FIELD REPRESENTATIVE: John Freise CCRC
DRILLING CONTRACTOR: Mohawk Drilling
DRILLING TECHNIQUE: HSA
AUGER SIZE AND TYPE: 11" H SA Hollow Stem Auger
BOREHOLE IDENTIFICATION: 35 BMW 11
BOREHOLE DIAMETER: 11"
WELL IDENTIFICATION: 35 BMW 11
WELL CONSTRUCTION START DATE: 1/24/12
WELL CONSTRUCTION COMPLETE DATE: 1/26/12
SCREEN MATERIAL: Sch 40 PVC
SCREEN DIAMETER: 4"
STRATUM-SCREENED INTERVAL (FT): 10'
CASING MATERIAL: Sch 40 PVC
CASING DIAMETER: 4"

TYPE OF FILTER PACK: 20-40 Filter Sil Sand
GRADIATION:
AMOUNT OF FILTER PACK USED: 15 bags
TYPE OF BENTONITE: PDS Wellplug
AMOUNT BENTONITE USED: 3 bags
TYPE OF CEMENT: Portland Cement / BenSeal
AMOUNT CEMENT USED:
GROUT MATERIALS USED: Portland Cement BenSeal Powdered Bentonite
DIMENSIONS OF SECURITY CASING: 8"
TYPE OF WELL CAP: 4" J-Plug
TYPE OF END CAP: PVC cone
COMMENTS:

SPECIAL CONDITIONS (describe and draw)



INSTALLED BY: Alan Brantley
INSTALLATION OBSERVED BY: John Freise, CCRC
DISCREPANCIES:

00113973

Hole No. 35BWW09

DRILLING LOG	DIVISION	INSTALLATION	SHEET OF SHEETS
1. PROJECT LHAAP- Site 37		10. SIZE AND TYPE OF BIT 11"OD, 6⅝" ID HSA	
2. LOCATION (Coordinates or Station)		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY Mohawk Drilling		12. MANUFACTURERS DESIGNATION OF DRILL CME 95C	
4. HOLE NO. (As shown on drawing title and title number) 35BWW09		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED / UNDISTURBED
5. NAME OF DRILLER Alan Brantley, Ryan Thompson		14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN		16. DATE HOLE STARTED 1/25/12 COMPLETED 1/26/12	
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE	
9. TOTAL DEPTH OF HOLE 35'		18. TOTAL CORE RECOVERY FOR BORING	
		19. SIGNATURE OF INSPECTOR	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			SC, lt Br, Sandy Clay, slightly plastic, WS, moist, some silt			
	5		SC, lt Br, Hard Sandy Clay, not plastic, WS, dry, becoming less sandy			
	10		CL, dk Br, hard, PS, silty clay, low plastic, dry			
	15		CL, lt Br, hard, WS low plastic, moist			
	20		becomes slightly plastic			
	25		SC, lt Br, Sandy Clay WS, low plastic, moist			* Groundwater encountered @ 25' bgs
	30					
	35		bottom of boring @ 35' complete @ 0932			

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) — PROJECT — HOLE NO.

Shaw®

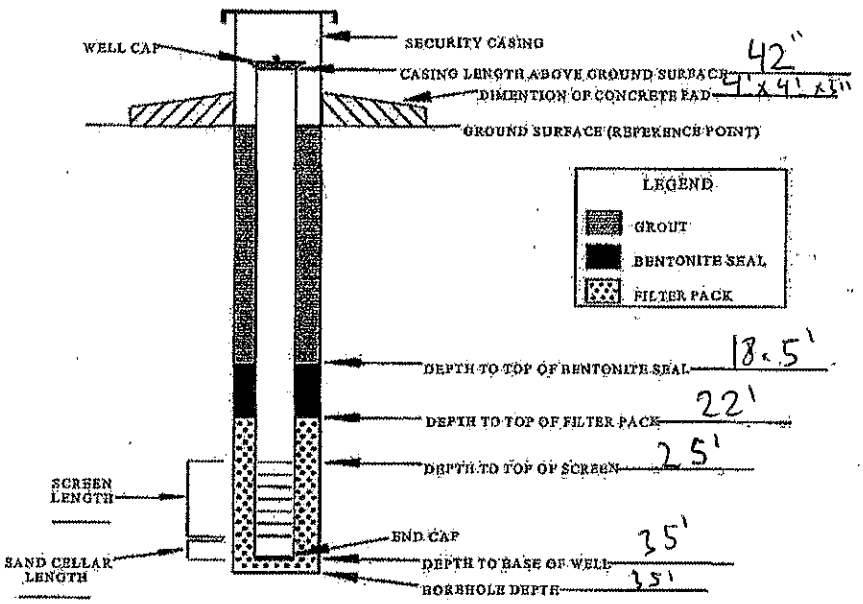
ATTACHMENT B

WELL COMPLETION FORM (Stickup or Above Grade Completion Well)

FIELD REPRESENTATIVE: John Freize
DRILLING CONTRACTOR: Mohawk Drilling
DRILLING TECHNIQUE: HSA
AUGER SIZE AND TYPE: 11" HSA
BOREHOLE IDENTIFICATION:
BOREHOLE DIAMETER: 11"
WELL IDENTIFICATION: 35 MW 09
WELL CONSTRUCTION START DATE: 1/25/12
WELL CONSTRUCTION COMPLETE DATE: 1/26/12
SCREEN MATERIAL: Sch 40 PVC
SCREEN DIAMETER: 4"
STRATUM-SCREENED INTERVAL (FT): 10
CASING MATERIAL: Sch 40 PVC
CASING DIAMETER: 4"

TYPE OF FILTER PACK: Filter Sil Sand
GRADATION: 20-40
AMOUNT OF FILTER PACK USED: 15 bags
TYPE OF BENTONITE: CPS well plug
AMOUNT BENTONITE USED: 3 bags
TYPE OF CEMENT: Portland / Ben Seal
AMOUNT CEMENT USED:
GROUT MATERIALS USED: Portland Cement, Ben Seal powdered bentonite
DIMENSIONS OF SECURITY CASING: 8"
TYPE OF WELL CAP: 4" J-Plug
TYPE OF END CAP: PVC Cone
COMMENTS:

SPECIAL CONDITIONS (describe and draw)



NOT TO SCALE

INSTALLED BY: Alan Brantley INSTALLATION OBSERVED BY: John Freize, CCRC

DISCREPANCIES:

00113975

Attention Owner: Confidentiality Privilege Notice on reverse side of owner's copy.

Texas Department of Licensing and Regulation

Water Well Driller/Pump Installer Section
P.O. Box 12157 Austin, Texas 78711 (512)463-7880 FAX (512)463-8616
Toll free (800)803-9202
Email address: water.well@license.state.tx.us Web address: www.license.state.tx.us

This form must be completed and filed with the department and owner within 60 days upon completion of the well.

WELL REPORT

A. WELL IDENTIFICATION AND LOCATION DATA

1) OWNER

Name:	Address:	City:	State:	Zip:
Corps of Engineers	1645 S. 101st E. Ave.	TULSA	OK	74128

2) WELL LOCATION

Well # or # of wells drilled	County:	Physical Address:	City:
35BWW09	Harrison	Former Army Ammo Plant	Karnack, TX.

Lat. 32.6798181 Long. 94.1456597 Grid #

3) Type of Work
☑ New Well ☐ Reconditioning ☐ Replacement ☐ Deepening

4) Proposed Use (check) ☑ Monitor ☐ Environmental Soil Boring ☐ Domestic ☐ Extraction ☐ Frac ☐ Industrial ☐ Irrigation ☐ Injection ☐ Closed-Loop Geothermal ☐ De-watering ☐ Test well ☐ Rig Supply ☐ Stock ☐ Public Supply – If Public Supply, were plans approved? ☐ Yes ☐ No

5) N↑

6) Drilling Date
Started 01/25/12
Completed 01/26/12

Diameter of Hole

Dia.(in)	From (ft)	To (ft)
11"	Surface	35

7) Drilling Method (check)
☐ Driven ☐ Air Rotary ☐ Mud Rotary ☐ Bored ☐ Air Hammer ☐ Cable Tool ☐ Jetted ☒ Hollow Stem Auger ☐ Reverse Circulation ☐ Other

From (ft)	To (ft)	Description and color of formation material
0	5	SC, light brown, sandy clay
5	10	SC, light brown, Hard Sandy clay
10	15	CL, dark brown, Hard tight Clay
15	20	CL, light brown, Hard
20	25	CL, light brown, clay
25	30	SC, light brown, Sandy Clay
30	35	SC, light brown, Sandy Clay

(Use reverse side of Well Owner's copy, if necessary)

8) Borehole Completion ☐ Open Hole ☐ Straight Wall ☐ Under-reamed ☒ Gravel Packed ☐ Other
Gravel packed interval from: 22 ft. to: 35 ft. Size: 20/40

Casing, Blank Pipe, and Well Screen Data

Dia. (in.)	New Or Used	Steel, Plastic, etc. Perf., Slotted, etc Screen Mfg., if commercial	Setting (ft) From	Setting (ft) To	Gage Casing	Gage Screen
4	new	PVC Riser	0	25	sch 40	
4	new	PVC 10/0 Screen	25	35		sch 40

9) Annular Seal Data: i.e. (from 0 ft to 100 ft #sacks & material 13 cement)
from 19 ft. to 22 ft. #sacks & material 3 - Bentonite
from 2 ft. to 19 ft. #sacks & material 6 - Portland
from ____ ft. to ____ ft. #sacks & material ____
Method Used Thru Augers Performed By Driller
Distance to septic field or other concentrated contamination ____ ft.
Distance to Property Line ____ ft
Method Verified: ____ Approved by Variance # ____

10) Surface Completion (If steel cased, leave blank)
☒ Surface Slab Installed ☐ Surface Sleeve Installed ☐ Pitless Adapter Used ☐ Alternative Procedure Used

11) Water Level
Static level ____ ft.below surface Date: / /
Artesian Flow ____ gpm

12) Packers:

Type	Depth	Type	Depth

13) Plugged ☐ Well plugged within 48 hour
Casing left in well: Cement/Bentonite placed in well:

From (ft)	To (ft)	From (ft)	To (ft)	# Sacks & Material Used

14) Type Pump
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other ____
Depth to pump bowls, cylinder, jet, etc., ____ ft.

15) Water Test
Type test ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: ____ gpm with ____ ft. drawdown after ____ hrs.

16) Water Quality
Type of water ____ Depth of Strata: ____ Was a chemical analysis made? ☐ Yes ☐ No
Did you knowingly penetrate a strata which contains undesirable constituents? ☐ Yes ☐ No If yes, Continue:
Check One: ☐ Naturally poor-quality groundwater – type ____ ☐ Hydrocarbons (i.e. gas, oil, etc.)
☐ Hazardous material/waste contamination encountered ☐ Other (describe) ____

☐ *I certify that while drilling, deepening, or otherwise altering the above described well, undesirable water or constituents was encountered and the landowner was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.*

By signing this well report, I certify that I drilled or supervised the drilling of this well and that each and all of the statements herein are true and correct.

Company & Individual's Name: (type or print)		Lic. No.:
Mohawk Drilling, INC.		54689
Address: 10010 E. 16th Street	**City:** TULSA	**State:** OK **Zip** 74128
Signature:	2/16/12	**Signature:**
Licensed Driller/Pump Installer	Date	Apprentice Reg. Number

TDLR FORM 001WWD / 11-10 TDLR (Original) Landowner (copy) Driller/Pump Installer (copy)

00113976

Attention Owner: Confidentiality Privilege Notice on reverse side of owner's copy.

Texas Department of Licensing and Regulation

Water Well Driller/Pump Installer Section
P.O. Box 12157 Austin, Texas 78711 (512)463-7880 FAX (512)463-8616
Toll free (800)803-9202
Email address: water.well@license.state.tx.us Web address: www.license.state.tx.us

This form must be completed and filed with the department and owner within 60 days upon completion of the well.

WELL REPORT

A. WELL IDENTIFICATION AND LOCATION DATA

1) OWNER

Name:	Address:	City:	State:	Zip:
Corps of Engineers	1645 S. 101st E. Ave.	TULSA	OK	74128

2) WELL LOCATION

Well # or # of wells drilled	County:	Physical Address:	City:
358WW11	Harrison	Former Longhorn Army Ammo Plt	Karnack TX.
	Lat. 32.6794312	Long. 94.1448264	Grid #

3) Type of Work
[X] New Well [ ] Reconditioning [ ] Replacement [ ] Deepening

4) Proposed Use (check) [X] Monitor [ ] Environmental Soil Boring [ ] Domestic [ ] Extraction [ ] Frac [ ] Industrial [ ] Irrigation [ ] Injection [ ] Closed-Loop Geothermal [ ] De-watering [ ] Test well [ ] Rig Supply [ ] Stock [ ] Public Supply – If Public Supply, were plans approved? [ ] Yes [ ] No

5) NT

6) Drilling Date
Started 01/24/12
Completed 01/26/12

Diameter of Hole

Dia.(in)	From (ft)	To (ft)
11"	Surface	35'

7) Drilling Method (check)
[ ] Driven [ ] Air Rotary [ ] Mud Rotary [ ] Bored [ ] Air Hammer [ ] Cable Tool [ ] Jetted [X] Hollow Stem Auger [ ] Reverse Circulation [ ] Other

From (ft)	To (ft)	Description and color of formation material
0	5	ML, light brown, clayey silt
5	10	ML, Gray Clay, w/ light brown sand
10	15	SC, light brown, Sandy Clay
15	20	SC, light brown, fine sand
20	25	SC, light brown, Clayey Sand
25	30	SC, light brown, Clayey Sand
30	35	SC, light brown, Clayey Sand w/ gray clay, mottled

(Use reverse side of Well Owner's copy, if necessary)

8) Borehole Completion [ ] Open Hole [ ] Straight Wall [ ] Under-reamed [X] Gravel Packed [ ] Other
Gravel packed interval from: 22 ft. to: 35 ft. Size: 20/40

Casing, Blank Pipe, and Well Screen Data

Dia. (in.)	New Or Used	Steel, Plastic, etc. Perf., Slotted, etc Screen Mfg., if commercial	Setting (ft) From	Setting (ft) To	Gage Casing Screen
4	new	PVC Riser	0	25	sch 40
4	new	PVC .010 Screen	25	35	sch 40

9) Annular Seal Data: i.e. (from 0 ft to 100 ft. #sacks & material 13 cement)
from 19 ft. to 22 ft. #sacks & material 3-Bentonite
from 2 ft. to 19 ft. #sacks & material 6-Portland
from ____ ft. to ____ ft. #sacks & material ____
Method Used Thru Augers Performed By Driller
Distance to septic field or other concentrated contamination ____ ft.
Distance to Property Line ____ ft
Method Verified: ____ Approved by Variance # ____

13) Plugged [ ] Well plugged within 48 hour
Casing left in well: ____ Cement/Bentonite placed in well:

From (ft)	To (ft)	From (ft)	To (ft)	# Sacks & Material used

10) Surface Completion (If steel cased, leave blank)
[X] Surface Slab Installed [ ] Surface Sleeve Installed [ ] Pitless Adapter Used [ ] Alternative Procedure Used

14) Type Pump
[ ] Turbine [ ] Jet [ ] Submersible [ ] Cylinder [ ] Other ____
Depth to pump bowls, cylinder, jet, etc., ____ ft.

11) Water Level
Static level ____ ft. below surface Date: ___/___/___
Artesian Flow ____ gpm

12) Packers:

Type	Depth	Type	Depth

15) Water Test
Type test [ ] Pump [ ] Bailer [ ] Jetted [ ] Estimated
Yield: ____ gpm with ____ ft. drawdown after ____ hrs.

16) Water Quality
Type of water ____ Depth of Strata: ____ Was a chemical analysis made? [ ] Yes [ ] No
Did you knowingly penetrate a strata which contains undesirable constituents? [ ] Yes [ ] No If yes, Continue:
Check One: [ ] Naturally poor-quality groundwater – type ____ [ ] Hydrocarbons (i.e. gas, oil, etc.)
[ ] Hazardous material/waste contamination encountered [ ] Other (describe) ____

[ ] *I certify that while drilling, deepening, or otherwise altering the above described well, undesirable water or constituents was encountered and the landowner was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.*

By signing this well report, I certify that I drilled or supervised the drilling of this well and that each and all of the statements herein are true and correct.

Company & Individual's Name: (type or print)	Mohawk Drilling, INC.	Lic. No.:	54689M
Address:	10010 E. 16th Street	City: TULSA	State: OK Zip 74128
Signature: Licensed Driller/Pump Installer	Date: 2/16/12	Signature: Apprentice	Apprentice Reg. Number:

TDLR FORM 001WWD / 11-10 TDLR (Original) Landowner (copy) Driller/Pump Installer (copy)

00113977

Attention Owner: Confidentiality Privilege Notice on reverse side of owner's copy.

Texas Department of Licensing and Regulation

Water Well Driller/Pump Installer Section
P.O. Box 12157 Austin, Texas 78711 (512)463-7880 FAX (512)463-8616
Toll free (800)803-9202
Email address: water.well@license.state.tx.us Web address: www.license.state.tx.us

This form must be completed and filed with the department and owner within 60 days upon completion of the well.

WELL REPORT

A. WELL IDENTIFICATION AND LOCATION DATA

1) OWNER

Name:	Address:	City:	State:	Zip:
Corps of Engineers	1645 S. 101st E. Ave.	Tulsa	OK	74128

2) WELL LOCATION

Well # or # of wells drilled	County:	Physical Address:	City:
35 BWW 14	Harrison	Former Longhorn Army Ammo Plant	Karnack, TX.

Lat. 32.6802813 Long. 94.1444334 Grid #

3) Type of Work
☒ New Well ☐ Reconditioning ☐ Replacement ☐ Deepening

4) Proposed Use (check) ☒ Monitor ☐ Environmental Soil Boring ☐ Domestic ☐ Extraction ☐ Frac ☐ Industrial ☐ Irrigation ☐ Injection ☐ Closed-Loop Geothermal ☐ De-watering ☐ Test well ☐ Rig Supply ☐ Stock ☐ Public Supply – If Public Supply, were plans approved? ☐ Yes ☐ No

5) N↑

6) Drilling Date
Started 01 / 24 / 12
Completed 01 / 26 / 12

Diameter of Hole

Dia.(in)	From (ft)	To (ft)
11"	Surface	35'

7) Drilling Method (check)
☐ Driven ☐ Air Rotary ☐ Mud Rotary ☐ Bored ☐ Air Hammer ☐ Cable Tool ☐ Jetted ☒ Hollow Stem Auger ☐ Reverse Circulation ☐ Other

From (ft)	To (ft)	Description and color of formation material
0	5	SM, light brown
5	10	SM, light brown
10	15	SM, light brown
15	20	SM, light brown w/ trace white sand
20	25	SM, light brown w/ trace fine white sand
25	30	SM, light brown
30	35	SM, light brown

(Use reverse side of Well Owner's copy, if necessary)

8) Borehole Completion ☐ Open Hole ☐ Straight Wall ☐ Under-reamed ☒ Gravel Packed ☐ Other
Gravel packed interval from: 22 ft. to: 35 ft. Size: 20/40

Casing, Blank Pipe, and Well Screen Data

Dia. (in.)	New Or Used	Steel, Plastic, etc. Perf., Slotted, etc Screen Mfg., if commercial	Setting (ft) From	Setting (ft) To	Gage Casing Screen
4	new	Plastic Riser	0	25	sch.40
4	new	PVC .010 screen	25	35	sch.40

9) Annular Seal Data: i.e. (from 0 ft to 100 ft #sacks & material 13 gement)
from 19 ft. to 22 ft. #sacks & material 3 - Bentonite
from 2 ft. to 19 ft. #sacks & material 6 - Portland
from ____ ft. to ____ ft. #sacks & material ____
Method Used Thru Augers Performed By Driller
Distance to septic field or other concentrated contamination ____ ft.
Distance to Property Line ____ ft
Method Verified: ____ Approved by Variance # ____

13) Plugged ☐ Well plugged within 48 hour

Casing left in well: From (ft)	To (ft)	Cement/Bentonite placed in well: From (ft)	To (ft)	# Sacks & Material used

10) Surface Completion (If steel cased, leave blank)
☒ Surface Slab Installed ☐ Surface Sleeve Installed ☐ Pitless Adapter Used ☐ Alternative Procedure Used

14) Type Pump
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other ____
Depth to pump bowls, cylinder, jet, etc., ____ ft.

11) Water Level
Static level ____ ft. below surface Date: / /
Artesian Flow ____ gpm

12) Packers:

Type	Depth	Type	Depth

15) Water Test
Type test ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: ____ gpm with ____ ft. drawdown after ____ hrs.

16) Water Quality
Type of water ____ Depth of Strata: ____ Was a chemical analysis made? ☐ Yes ☐ No
Did you knowingly penetrate a strata which contains undesirable constituents? ☐ Yes ☐ No If yes, Continue:
Check One: ☐ Naturally poor-quality groundwater – type ____ ☐ Hydrocarbons (i.e. gas, oil, etc.)
☐ Hazardous material/waste contamination encountered ☐ Other (describe) ____

☐ *I certify that while drilling, deepening, or otherwise altering the above described well, undesirable water or constituents was encountered and the landowner was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.*

By signing this well report, I certify that I drilled or supervised the drilling of this well and that each and all of the statements herein are true and correct.

Company & Individual's Name: (type or print)	Mohawk Drilling, Inc.	Lic. No.:	54689M
Address: 10010 E. 16th Street	City: Tulsa	State: OK	Zip 74128
Signature: Lee A. Brunt	2 / 16 / 12	Signature:	
Licensed Driller/Pump Installer	Date	Apprentice	Apprentice Reg. Number

TDLR FORM 001WWD / 11-10 TDLR (Original) Landowner (copy) Driller/Pump Installer (copy)

APPENDIX C

Field Notebook Entries

Wx Sunny, Clear

01/23/2013

00113979

LHAAP-37 Well Installation, Karnack, TX

* Dozer service Lytt Jones w/ Jone Tree service on site @ 0830 to clear well sites.
* CCRC personnel, John Freie, Env. Sci. went over safety guidelines and procedures.
* All well sites clear @ 1200 hrs. by Jones Tree Service

00113980

1/24/12 WX: Clear cool 48°F

0830 CCRC, ~~[illegible]~~ Mohawk Drilling

Mobilizing to well site 35 MW 14

Materials for Well Construction

- x PDS Wellplug bentonite plug (50lb)
- x Filter sil Quartz Filter Sand 20-40 (50lb)
- x CME 45C track rig
- x 6 5/8 ID HS Augers 11" OD

* Portland Cement } grout
* Ben Seal Bentonite Powder

Drillers Ryan Thompson (Mohawk)
Alan Brantley

* Verified augers were decontaminated

Over hole @ 0905, Classify Cuttings

* Ground water @ 8'

0-5 SM, lt Br, WS, slightly plastic, moist

5-10 SM, lt Br, WS, not plastic, dry

10-15 SM, lt Br, WS, not plastic, moist

15-20 SM, lt Br w trace white fine sands, WS, not plastic moist

20-25, SM, lt Br w/trace W fine sand, R mottled, WS, not plastic, moist

25-30 SM, lt Br, WS, not plastic, moist

30-35 SM, lt Br, WS, not plastic, wet

35 MW 14 Bottom of Boring 35' bgs @ 1007, Installation of 10' 0.010 4" PVC screen and 4" PVC riser @ 1050, Installation of filter pack 10 bags to a depth of 22' bgs, @ 1150

* Other boring intended to be drilled in through Augers

Installation of bentonite hole plug 3 bags to a depth of 19' bgs, @ 1204

00113981

1/24/12
35BWW14 installation Cont:
Grout installation, 95% Portland Cement, 5% Bentonite powder, grouting began @1625, grout up to 3' bgs @1646

1/26/12 Surface completion of 35BWW14 started pouring pad ~~3G 3'x3'x4'~~ 4x4x3 and setting well protector 8" Steel Pipe and bollards @0745 completed @0945
3" steel

00113982

1/24/12 LHAAP 37

Installation of well 35BWW11 over well @ 1430

drilling @ 1434, * Drillers hit object @ 4' bgs may be abandoned sewer line, Moving well location 4' NE of GPS coordinates over new location @ 1442, Drilling @ 1445

Classify Cuttings

0-5 ML lt Br, WS, ~~Medium~~ slightly plastic, moist

5-10 ML Gr Clay, w lt Br fine Sand, WS, slightly plastic, moist

10-15 SC lt Br, WS, Sandy Clay, Slightly plastic moist

15-20 SC lt Br, fine Sand, WS, Not-Plastic, moist

20-25 SC lt Br Clayey Sand, WS, ~~Medium~~ slightly x Plastic, moist

*23' GW

25-30 SC lt Br, Clayey Sand, WS, Slight plasticity, moist

30-35 SC lt Br, Clay Sand, w Gray Clay mottled, WS, moist+

Bottom of boring is ~~35~~ 35', @ 1533

Well String 6" End Cap, 10' 4" PVC .010 screen, 30' 4" riser installed @ 1538, Filter pack ~~20~~ 15 bags, top of filter 23' bgs installed @ 1613, Bentonite Seal 3 bags, top of seal 20' bgs installed @ 1620, Grouting began @ 0845 on 1/25/12, 95% portland cement, 5% Ben Seal powdered bentonite, grout to 2' bgs @ 0915, Installation of surface completion, 4x4x3 concrete pad, 8" steel well protector, 4, 3" steel bollards began @ 1000 completed @ 1110 on 1/26/12

* Vertical Augers were decommed

00113983

1/25/12 Wx Cloudy and warm 58°F

Installation of 35BWW09 overwell @ 0720
began drilling @ 0746
Classify Cuttings @ 0747
0-5 SC, ltBr, Sandy Clay, slightly plastic, WS, moist, some silt dk Br
5-10 SC, ltBr, Hard Sandy Clay, not plastic, WS, dry, becoming less Sandy
10-15 CL, dk Br, Hard, PS, silty clay, low plastic dry
15-20 CL, ltBr, Hard, WS, low plastic, moist
20-25 CL, ltBr, WS, slightly plastic, moist
25-30 ~~CL~~ SC, ltBr, WS, low plastic, moist
30-35 SC, ltBr Sandy Clay, WS, low plastic, moist
bottom of boring 35' bgs @ 0932
Installation of filter pack began @ 0954, Filter pack up to 22' bgs, 8 bags of sand. Completed @ 1040, Installation of Bentonite Seal started @ 1041, 3 bags to 18.5' bgs, completed @ 1046, Grout installation began @ 1430 w/ 75% portland cement - 5% kenseal powdered bentonite, grout to 2' bgs, completed @ 1500, Surface completion of 4'x4'x3" concrete pad, 8" steel well protector, and 3" steel bollards x4 started on 1/26/12 @ 1115, completed @ 1240

* verified Auger was decon'd

GW @ 25' bgs

00113984

1/27/12 Partly cloudy Cool 34°F

Well Development 35BMW09 began @ 0750
TD 38.5 DTW 25.7, well volume = 2.32 gal @ 0802
removed 3 bailers of water for initial evaluation
Pumping from bottom of well to remove heavy sediment
@ 0810, pumped 3.5 gal from bottom of well
then surged the well with a Quater 4' surging
disc entire length of screen proceeding to remove
more sediment by pumping removed @ 0915
5 gallons, measured water Quality parameters
see Well Development record, Surged the
well, and pumped out 8.5 gal., proceeded
to evaluate parameters @ 1005, surging the
well another cycle @ 1015, starting to pump to
evacuate sediment @ 1030, pumped 8.5 gal,
surged another cycle complete @ 1100, evacuating
sediment by pumping @ 1105, Evaluating
water quality @ 1115, surging @ 1120, pumping
@ 1145 to evacuate and remove sediment. Field
parameters stabilized @ 1145, Pumping 3
well volumes to confirm and finish developing
well. Well Developed @ 1215 total volume
pumped 68 gal.

00113985

2/8/12 1300

Well Development 35BMW14 @1305
TD 38.7 ft DTW ~~22.15~~ 22.15 ft Well Volume 10.75 gal
Removed 3 bailers of water for initial evaluation
Surged & Pumped 1 cycle pumped out 15 gal
@ 1330 and evaluated. Starting 2nd Surge
& Pump cycle @ 1335 removed 16 gals *removed under quality
3rd Surge & pump begin 1355 removed 15 gals
evaluating water for stabilization @ 1410,
pumped a total of 63.5 gal.
stabilized @ 1444 on 2/8/12

00113986

2/8/12

Well Development

On well 35BWW11 @ 1535 for development TD 89.1 DTW 23.4 Well Volume 19.2 gal

*Pumped 15 gals to evacuate sediment from bottom @ 1545

removed 3 bailers full for initial evaluation @ 1544 proceeding to surge & pump started 1st cycle @ 1547 pumped 10 gals, evaluated water pumped 2.5 gals, started 2nd Surge & pump cycle @ 1618, pumped 10 gal. evaluated water @ 1640, Started 3rd Surge & pump cycle @ 1648, pumped 10 gal., *Readings stabilized @ 1640, Pumped 3.5 gals @ 1715 Turbidity began clearing @ 1735 and proceeded to stabilize @ 1758

Well Developed @ 1758

00113987

2/9/12

Sampling B5BMW14
Overwell @ 0820, began low flow sampling @ 0822,
DTW 22.25' TD 38.3, Flow rate 150mL/min

Temp	Time	DTW	PH	SPCond	ORP	DO	Turb
10.23	0829	22.25	6.79	0.541	168	3.06	131
11.08	0831	22.25	7.03	0.528	151	3.04	127
11.34	0834	22.23	6.80	0.502	167	2.96	121
11.75	0837	22.25	7.12	0.569	157	2.92	107
11.77	0840	22.25	7.29	0.524	175	2.76	102
12.03	0843	22.25	7.40	0.573	157	2.71	96
12.11	0846	22.21	7.45	0.594	159	2.63	91
12.23	0849	22.24	7.40	0.584	163	2.71	89
12.28	0851	22.24	7.43	0.579	173	2.52	87
	0854						
	0857						

Sampled @ 0900
Total purged 1.8 gal.
Final DTW 22.25'

00113988

2/9/12

Final Depth 23.75

Sampling Well 35BMW11, overwell @ 0920, low flow pumping started @ 0930

DTW 23.50 TD 39.1 Initial Flow Rate 130 mL/min

*decreased Flow Rate to 80 mL/min

Sampled @ 1027 purged 0.6 gal

°F °C Temp	Time	DTW	pH	mS/cm Cond	ORP	DO	Turb
13.38	0934	23.64	6.28	1.13	35	3.25	283
12.73	0937	23.68	6.32	1.21	33	2.11	>1000
11.64	0940	23.70	6.31	1.29	24	1.24	>1000
12.54	0943	23.72	6.31	1.27	22	1.52	231
11.82	0946	23.75	6.37	1.20	21	2.36	275
12.00	0949	23.80*	6.55	0.971	21	2.92	290
12.23	0951	23.78	6.53	0.875	22	3.46	262
12.13	0954	23.78	6.56	0.752	22	3.33	260
12.17	0957	23.78	6.59	0.674	22	3.67	245
12.05	1000	23.78	6.59	0.641	24	3.58	243
12.22	1003	23.78	6.59	0.625	26	3.62	239
12.36	1006	23.78	6.54	0.600	35	3.87	270
12.25	1009	23.78	6.61	0.584	39	4.47	>1000
11.54	1012	23.78	6.91	0.381	25	7.57	>1000
11.41	1015	23.78	6.77	0.579	39	5.77	>1000
11.23	1018	23.75	6.70	0.573	41	5.63	>1000
11.16	1021	23.75	6.72	0.570	43	5.45	>1000
11.15	1024	23.75	6.70	0.569	43	5.65	>1000

2/9/12

Sampling 35BMW09, Cromwell @ 1040
Low Flow pumping @ 1044,
DTW 25.5 TD 38.5 Flow Rate 120 ml/min
Sampled @ [redacted] 1123 Volume purged 1.0 gal
Dup-1 collected @ 1128 from 35BMW09

time	DTW	Temp	pH	SCond	ORP	DO	Turb
1050	25.70	10.33	6.89	1.48	104	1.60	66.0
1053	25.68	10.82	6.94	1.47	93	1.54	56.4
1056	25.65	11.55	6.96	1.47	84	1.34	47.4
1059	25.65	12.02	6.97	1.47	79	1.15	34.1
1102	25.65	12.41	6.98	1.46	76	1.12	27.0
1105	25.65	12.49	6.99	1.46	73	1.08	19.3
1108	25.65	12.66	6.99	1.45	70	1.04	17.5
1111	25.65	12.97	6.99	1.46	65	0.93	7.1
1114	25.65	13.01	6.99	1.45	62	0.91	6.0
1117	25.65	13.07	6.99	1.44	60	0.90	5.7
1120	25.65	13.05	6.99	1.42	60	0.89	5.9

00113990

2/9/12

Sampling 35BWW04, overwell @ 1140 ;
low-flow pumping @ 1144, Flow Rate 130 mL/min
DTW 22.85 TD 35.8
Sample time 1220 Volume Purged .5 gal

* slowed rate to 80 mL/min @ 1157

Time	DTW	Temp °C	pH	SCond	ORP	DO	Turb
1151	23.04	15.18	6.87	0.349	133	5.13	77.3
1154	23.09	15.57	6.81	0.349	130	7.14	70.0
1157	23.10*	15.48	6.82	0.351	130	7.46	62.2
1200	23.10	15.57	6.82	0.350	130	6.99	52.2
1203	23.10	15.50	6.81	0.349	129	6.98	55.6
1206	23.10	15.48	6.82	0.351	129	6.97	45.9
1209	23.10	15.43	6.81	0.349	130	6.90	45.8
1212	23.10	15.41	6.81	0.348	131	6.93	42.4
1215	23.10	15.40	6.81	0.349	131	6.92	41.2
1218	23.10	15.39	6.81	0.348	130	6.99	41.5
1221	23.10	15.39	6.81	0.350	130	6.97	41.4

00113991

2/9/12

Sampling 35 Burrow, over well @ 1225
low flow pumping @ 1229, Flow Rate 160 mL/min
DTW 24.50 TD 34.6
Sampled @ 1308

Total Volume pursed 0.75 gal

time	DTW	Temp C	pH	Scond	ORP	DO	Turb
1238	24.50	14.86	7.58	0.819	168	2.94	0.0
1241	24.55	15.08	6.71	0.818	215	2.38	0.0
1244	24.50	15.18	6.75	0.808	229	2.29	0.0
1247	24.50	15.30	6.73	0.811	232	2.08	0.0
1250	24.50	15.45	6.75	0.810	247	1.77	0.0
1253	24.50	15.52	6.73	0.838	234	1.61	0.0
1256	24.50	15.55	6.79	0.811	246	1.35	0.0
1259	24.50	15.74	6.70	0.838	253	1.35	0.0
1302	24.50	15.81	6.70	0.829	253	1.31	0.0
1305	24.50	16.10	6.70	0.837	251	1.30	0.0

Samples Shipped Fed EX
on 2/9/12 @
Tracking # 8757 0826 0722

APPENDIX D

Well Development Forms

Figure 1

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 35BWW09
SHEET 1 OF 1

PROJECT NAME: LHAAP PROJECT NO.: _____ DATE: 1/27/12

LOCATION: Karnack, TX DATE INSTALLED: 1/26/12

TOTAL DEPTH (FTOC) 38.5' CASING DIAMETER 4"

METHODS OF DEVELOPMENT

☐ Swabbing ☐ Bailing ☐ Pumping ☒ Surge & Pump

Describe _____

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe Alconox rinse then 2X De-Ionized H_2O rinse

EQUIPMENT NUMBERS Horiba U-52 multi-meter

pH Meter _____ EC Meter _____ Turbidity Meter _____ Thermometer _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION

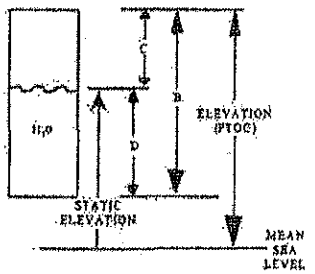
Measured Well Depth B 38.5 ft.

Measured Water Level Depth (C) 25.7 ft.

Length of Static Water Column (D) 38.5 (B) − 25.7 (C) = 12.8

Casing Water Volume (E) 0.65 (A) × 12.8 (D) = 8.32

Total Purge Volume = 8.32 gal



Date	Time	Water Level (FTOC)	Volume Removed (gal)	pH	EC	Temperature F or C	Turbidity/ Sand (ppm)	Comments
1/27	0802	25.7	1 bailer	6.69	1.37	16.61	Overrange	Very Dirty Sandy
1/27	0915	26.8	8.5	7.12	1.17	15.73	Overrange	>1000 NTU
1/27	1005	26.3	8.5	7.08	1.13	17.76	Overrange	>1000 NTU
1/27	1045	26.05	8.5	7.12	1.11	17.52	Overrange	>1000 NTU
1/27	1115	26.05	8.5	7.13	1.10	17.75	Overrange	>1000 NTU
1/27	1145	26.00	8.5	7.11	1.12	17.48	Overrange	>1000 NTU
1/27	1200	26.80	8.5	7.17	1.14	17.47	Overrange	>1000 NTU
1/27	1215	27.52	17	7.16	1.12	17.44	1000 NTU	

Stabilized

Shaw®

Figure 1

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 35Bmw11
SHEET _____ OF _____

PROJECT NAME: LHAAP PROJECT NO.: _____ DATE: 2/8/12

LOCATION: 35Bmw11 DATE INSTALLED: 01/26/12

TOTAL DEPTH (FTOC) 39.1 CASING DIAMETER 4"

METHODS OF DEVELOPMENT

Describe Pump & Surge ☐ Swabbing ☐ Bailing ☐ Pumping ☒

Equipment decontaminated prior to development ☒ Yes ☐ No

Describe Wash in Alconox then double rinse in DI water

EQUIPMENT NUMBERS U-52

pH Meter _____ EC Meter _____ Turbidity Meter _____ Thermometer _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION

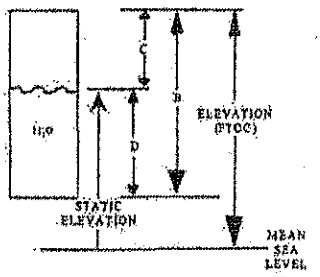
Measured Well Depth B 39.1 ft.

Measured Water Level Depth (C) 23.4 ft.

Length of Static Water Column (D) 39.1 (B) − 23.4 (C) = 15.7 (D)

Casing Water Volume (E) 0.65 (A) × 15.7 (D) = 10.2

Total Purge Volume = 5 × 10.2 gal



Date	Time	Water Level (FTOC)	Volume Removed (gal)	pH	EC	Temperature (F or C)	Turbidity/ Sand (ppm)	Comments
2/8	1544	23.4	3 Gallons	6.21	1.26	18.53	>1000	Cloudy, full of sediment
2/8	1602	29.33	10 gal	6.41	1.13	18.03	>1000	Cloudy full of sediment
2/8	1613	29.54	2.5	6.42	1.08	19.52	>1000	" " "
2/8	1630	30.10	5	6.40	1.11	18.54	>1000	" " "
2/8	1640	31.2	5	6.49	1.09	19.51	>1000	" " "
2/8	1653	29.0	2.5	6.47	1.10	19.00	>1000	" " "
2/8	1705	29.45	7.5	6.42	1.14	19.36	>1000	clearing a little
2/8	1718	29.80	8	6.43	1.11	19.30	>1000	" "
2/8	1735	30.3	1	6.49	1.09	19.65	586	clearing
2/8	1743	31.1	1	6.49	1.01	19.01	460	clearing
2/8	1748	31.4	1	6.48	1.16	19.16	428	clearing
2/8	1753	31.8	1	6.47	1.12	19.23	416	clearing
2/8	1758	32.3	1	6.48	1.17	19.17	420	clearing

Stabilized

Stabilized including turbidity

Figure 1

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID _____
SHEET _____ OF _____

PROJECT NAME: LHAAP PROJECT NO.: _____ DATE: 2/8/12

LOCATION: 35 BWW 14 DATE INSTALLED: 1/26/12

TOTAL DEPTH (FTOC) 38.7 CASING DIAMETER 4"

METHODS OF DEVELOPMENT

Describe Pump & Surge ☐ Swabbing ☐ Bailing ☐ Pumping ☑

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe Alcond + wash and double rinse in DI water

EQUIPMENT NUMBERS Horiba U52

pH Meter _____ EC Meter _____ Turbidity Meter _____ Thermometer _____

CASING VOLUME INFORMATION:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION

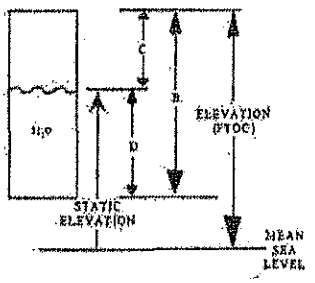
Measured Well Depth B 38.7 ft.

Measured Water Level Depth (C) 22.15 ft.

Length of Static Water Column (D) 38.7 - 22.15 = 16.55

Casing Water Volume (E) 0.65 (A) x 16.55 (D) = _____

Total Purge Volume = 10.75 gal



Date	Time	Water Level (FTOC)	Volume Removed (gal)	pH	EC	Temperature F or C	Turbidity/ Sand (ppm)	Comments
2/8	1305	22.15	5 bailers	7.75	0.944	16.79	>1000	full of sediment
2/8	1330	25.25	15 gal	7.44	0.796	17.38	>1000	full of sediment
2/8	1353	25.00	11 gal	7.10	0.729	18.09	>1000	full of sediment
2/8	1358	25.40	5 gal	7.05	0.646	18.30	>1000	full of sediment
2/8	1410	24.85	5 gal	6.86	0.748	18.03	>1000	starting to clear
2/8	1420	25.64	10 gal	6.86	0.530	18.14	>1000	cloudy
2/8	1427	25.88	5 gal	6.81	0.545	18.25	271	clearing
2/8	1433	26.08	5 gal	6.83	0.545	18.21	255	clearing
2/8	1438	25.14	5 gal	6.85	0.565	18.17	250	clearing
2/8	1444	~~26~~ 26.40	2.5 gal	6.83	0.545	18.01	245	clearing

5 feet lowered

APPENDIX E

Chain of Custody and Field Forms

00113997

Chain of Custody Record

TAL-4124-280 (0508)

Sampler ID _____

Temperature on Receipt 24 JAN mr 2/10

Drinking Water? Yes ☐ No ☒

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client	Project Manager	Date	Chain of Custody Number
CCRC	Dwayne Beavers	2/9/11	150041
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
10838 E Marshall St suite 220	(918) 431 2912 (918) 583 7948	Lisa Worrell	
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Tulsa / OK / 74116	Dwayne	303-736-0100	
Project Name and Location (State)	**Carrier/Waybill Number**		
Longhorn Ammunition Plant (LHAAP)	Federal Express		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H_2SO_4	HNO_3	HCl	NaOH	ZnAc/NaOH	Analysis: VOA	pH	Cyanide	Flash Pt.	Sulfide	TCLP Lead
TB1	2/9/12	—		X									X					
FB1	2/9/12	0745		X									X					
35BWW14	2/9/12	0900		X									X					
35BWW11	2/9/12	1027		X									X					
35BWW09	2/9/12	1123		X									X					
DUP-1	2/9/12	1128		X									X					
35BWW04	2/9/12	1221		X									X					
IDW-1	2/9/12	1320		X							X		X	X	X	X	X	
IDW-2	2/9/12	1100				X							X	X	X	X	X	X
35BWW08	2/9/12	1308		X									X					

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☒ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☒ Archive For 1 Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☒ 21 Days ☒ Other Standard

QC Requirements (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
D L Beaver	2/9/11	1420		2/10/12	0900
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Figure 1

Water Level Measurement/Groundwater Sampling Log Form

Well No. 35BWW 11 Date 2/9/12
Sample ID No. 35BWW 11
Project ID LHAAP Measured/Sampled By: John Freise
Time: Start 0920 End: 1027

Measuring Point Elevation: Ft. Well Construction Material: 4" PVC
Well Depth Ft: 1) 39.1' 2) 3) 4)
Avg. (of valid measurements*)

Water Depth Ft: 1) 23.50' 2) 3) 4)
Avg. (of valid measurements*)
(*Minimum of three measurements, last two within 0.01 feet.)

Well Internal Diameter: 4 in
Riser Above/Below Pad Elevation Marker: Ft.

Pad Elevation: Ft.
Sampling Equipment Used:
Horiba U52, Cole-Parmer Peristaltic Pump, Teflon tubing

Equipment Numbers: U52 # BJ2C3AVR
pH Meter EC Meter Turbidity Meter Thermometer

Casing Volume Information:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

Purging Information:
Measured Well Depth (B): 39.1 Ft.
Measured Water Level Depth (C): 23.5 Ft.
Length of Static Water Column (D) 39.1 : (B) − 23.5 (C) = 15.6 ft.
Casing Water Volume (E): 0.65 (A) x 15.6 (D) = 10.14 gal.
Total Purge Volume = 0.6 (gal) (minimum of three casing volumes)

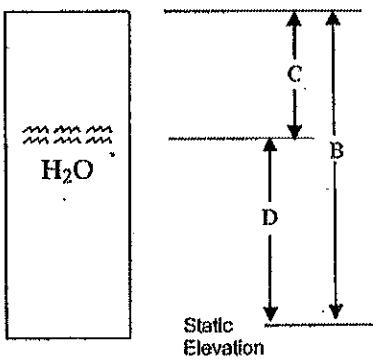


Figure 1 (*continued*)

Water Level Measurement/Groundwater Sampling Log Form (Continued)

Field Indicator Parameter Measurements During Purging:

pH	6.77	6.70	6.72	6.70	
Temp.°C	~~25~~ 11.41	11.23	11.16	11.15	
Specific Conductance: ~~µmhos~~ mS/cm		0.579	0.573	0.570	0.569
Turbidity: NTU		>1000	>1000	>1000	>1000
Visual Appearance of Water:		Cloudy	Cloudy	Cloudy	Cloudy

Comments:

Field Indicator Parameter Measurements After Sampling:

pH	6.71			
Temp.°C	11.28			
Specific Conductance: ~~µmhos~~ mS/cm	0.571			
Turbidity: NTU	>1000			
Visual Appearance of Water:	Cloudy			

Comments:

Laboratory Analysis Requested:

Sample ID No.	Parameter	Method	Preservation	Duplicate	No. of Containers
35BWW11	VOC	8260B	HCl	N	3

Figure 2

Shaw Environmental & Infrastructure, Inc.	WATER SAMPLE FIELD COLLECTION REPORT	Project Number: _____ Project Name: _____ Site Location: LHAAP

Sample ID Number	35BWW11	Date Collected	2/9/12
Sample Location[7]	35BWW11	Time Collected	1027
Diameter of Well	4 (in.)	Sampler	I.D. # SF
Depth to Bottom of Well	39.1 (ft.)	Casing Stick Up	4.1'
Static Water Level	23.50 (ft.)	Measured From[1]	TOC (ft.)
Well Volumes Purged		Purging Method[2]	Pumped
Type of Sample[3]	Well	Sampling Method[4]	Low-flow Pumping
Depth of Sample	34. (ft.)	Measured From[1]	TOC
Sample Collection Order			

FIELD SCREENING AND TEST RESULTS

Water Temperature 11.15 °C pH 6.70 Units

Specific Conductance 0.569 ~~umho~~ mS/cm at 11.15 °C

OVA ☐ HNU PID ☐ Reading _____ PPM

Photovac GC (P/GC) Probable Compound _____ Reading _____ PPM

METER CALIBRATION

pH STD	METER READING	SP. COND. STD	METER READING	_____/STD (8)	METER READING

SAMPLE TYPES COLLECTED

CONTAINER #	TYPE (5)	CONTAINER TYPE	VOLUME	FILTERED	
	VOA	P ☐ G ☒	40 mL	Y ☐ N ☒	Y ☐ N ☐
		P ☐ G ☐		Y ☐ N ☐	Y ☐ N ☐
		P ☐ G ☐		Y ☐ N ☐	Y ☐ N ☐
		P ☐ G ☐		Y ☐ N ☐	Y ☐ N ☐
		P ☐ G ☐		Y ☐ N ☐	Y ☐ N ☐

WEATHER CONDITIONS: TEMP. 50 °F CLEAR ☒ CLOUDY ☐ RAIN ☐ SNOW ☐ WINDY ☐

(1) T.O.C. = Top of Protective Casing; T.O.W. = Top of Well Casing; G.S. = Ground Surface
(2) Bailed, Pumped, Air Lift, Etc.
(3) Stream, Pond, Spring, Well, Seep, Supply, Etc.
(4) Bailer, Kemmerer, Grab, Pump, Etc.
(5) General Chem., Metal, VOA, Organics, Etc.
(6) HNO^3, NaOH, H^2SO^4, $Na^2O^3S^2$, Etc.
(7) If Well, give Well I.D. Number.
(8) OVA, PID, P/GC or Other.

Figure 1

Water Level Measurement/Groundwater Sampling Log Form

Well No. 35BWW09 Date 2/9/12
Sample ID No. 35BWW09
Project ID LHAAP Measured/Sampled By: John Freise
Time: Start 1040 End: 1128

Measuring Point Elevation: Ft. Well Construction Material: 4" PVC
Well Depth Ft: 1) 38.5 2) 3) 4)
Avg. (of valid measurements*)

Water Depth Ft: 1) 25.5 2) 3) 4)
Avg. (of valid measurements*)
(*Minimum of three measurements, last two within 0.01 feet.)

Well Internal Diameter: 4 ~~Ft~~ In.
Riser Above/Below Pad Elevation Marker: Ft.

Pad Elevation: Ft.
Sampling Equipment Used:
Horiba U-52, Cole-Parmer Peristaltic Pump, Teflon Tubing

Equipment Numbers: U-52 HBJ2C3AVR
pH Meter _____ EC Meter _____ Turbidity Meter _____ Thermometer _____

Casing Volume Information:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

Purging Information:
Measured Well Depth (B): 38.5 Ft.
Measured Water Level Depth (C): 25.5 Ft.
Length of Static Water Column (D) 38.5 − 25.5 = 13 ft.
: (B) - (C)
Casing Water Volume (E): 0.65 × 13 = 8.45 gal.
(A) x (D)
Total Purge Volume = 1.0 (gal) (minimum of three casing volumes)

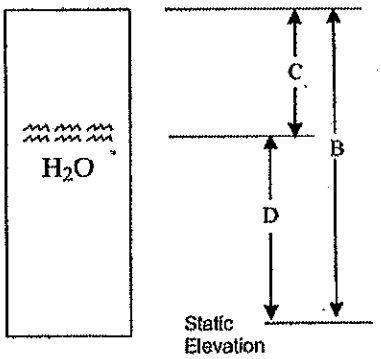


Figure 1 (*continued*)

Water Level Measurement/Groundwater Sampling Log Form (Continued)

Field Indicator Parameter Measurements During Purging:

pH	6.99	6.99	6.99	6.99	
Temp.°C	12.97	13.01	13.07	13.05	
Specific Conductance: ~~µmhos~~ mS/cm		1.46	1.45	1.44	1.42
Turbidity: NTU		7.1	6.0	5.7	5.9
Visual Appearance of Water:		Clear	Clear	Clear	Clear

Comments:

Field Indicator Parameter Measurements After Sampling:

pH	6.99			
Temp.°C	13.01			
Specific Conductance: ~~µmhos~~ mS/cm	1.44			
Turbidity: NTU	5.5			
Visual Appearance of Water:	Clear			

Comments:

Laboratory Analysis Requested:

Sample ID No.	Parameter	Method	Preservation	Duplicate	No. of Containers
35BWW09	VOC	8260B	HCl	Y	6*

*3 for Sample
3 for Dup

These standard project procedures are applicable to all members of Shaw Environmental, Inc.

Figure 2

Shaw Environmental & Infrastructure, Inc.	WATER SAMPLE FIELD COLLECTION REPORT	Project Number: _____ Project Name: _____ Site Location: LHAAP

Sample ID Number	35BWW09	Date Collected	2/9/12
Sample Location[7]	35BWW09	Time Collected	1123 | 1128
Diameter of Well	4 (in.)	Sampler	I.D. # JE
Depth to Bottom of Well	38.5 (ft.)	Casing Stick Up	3
Static Water Level	25.5 (ft.)	Measured From[1]	TOC (ft.)
Well Volumes Purged		Purging Method[2]	Pump
Type of Sample[3]		Sampling Method[4]	Low Flow Pumping
Depth of Sample	33 (ft.)	Measured From[1]	TOC
Sample Collection Order			

FIELD SCREENING AND TEST RESULTS

Water Temperature 13.05 °C pH 6.99 Units

Specific Conductance 1.42 ~~umho~~/cm at 13.05 °C

OVA ☐ HNU PID ☐ Reading _____ PPM

Photovac GC (P/GC) Probable Compound _____ Reading _____ PPM

METER CALIBRATION

pH STD	METER READING	SP. COND. STD	METER READING	/STD (8)	METER READING

SAMPLE TYPES COLLECTED

CONTAINER #	TYPE (5)	CONTAINER TYPE	VOLUME	FILTERED			
	VOA	P ☐ G ☒	40 mL	Y ☐ N ☒	Y		N ☐
Dup-1	VOA	P ☐ G ☐	40 mL	Y ☐ N ☐	Y		N ☐
		P ☐ G ☐		Y ☐ N ☐	Y		N ☐
		P ☐ G ☐		Y ☐ N ☐	Y		N ☐

WEATHER CONDITIONS: TEMP. 50 °F CLEAR ☒ CLOUDY ☐ RAIN ☐ SNOW ☐ WINDY ☐

(1) T.O.C. = Top of Protective Casing; T.O.W. = Top of Well Casing; G.S. = Ground Surface
(2) Bailed, Pumped, Air Lift, Etc.
(3) Stream, Pond, Spring, Well, Seep, Supply, Etc.
(4) Bailer, Kemmerer, Grab, Pump, Etc.
(5) General Chem., Metal, VOA, Organics, Etc.
(6) HNO^3, NaOH, H^2SO^4, $Na^2O^3S^2$, Etc.
(7) If Well, give Well I.D. Number.
(8) OVA, PID, P/GC or Other.

Figure 1

Water Level Measurement/Groundwater Sampling Log Form

Well No. 35BWW08 Date 2/9/12
Sample ID No. 35BWW08
Project ID LHAAP Measured/Sampled By: John Freise
Time: Start 1225 End: 1308

Measuring Point Elevation: Ft. Well Construction Material: 2" PVC
Well Depth Ft: 1) 34.6 2) 3) 4)
Avg. (of valid measurements*)

Water Depth Ft: 1) 24.5 2) 3) 4)
Avg. (of valid measurements*)
(*Minimum of three measurements, last two within 0.01 feet.)

Well Internal Diameter: 2 ~~Ft~~ In
Riser Above/Below Pad Elevation Marker: Ft.

Pad Elevation: Ft.
Sampling Equipment Used:
Horiba U-52 Multi-Meter, Cole-Parmer Peristaltic Pump, Teflon tubing

Equipment Numbers: U-52 #BJ2C3AVR
pH Meter EC Meter Turbidity Meter Thermometer

Casing Volume Information:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

Purging Information:
Measured Well Depth (B): 34.6 Ft.
Measured Water Level Depth (C): 24.5 Ft.
Length of Static Water Column (D) 34.6 : (B) 24.5 - (C) = 10.1 ft.
Casing Water Volume (E): 0.16 (A) x 10.1 (D) = 1.6 gal.
Total Purge Volume = 0.75 (gal) (minimum of three casing volumes)

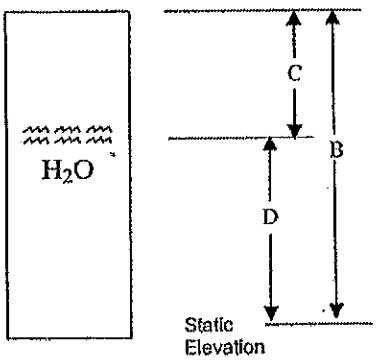


Figure 1 (*continued*)

Water Level Measurement/Groundwater Sampling Log Form (Continued)

Field Indicator Parameter Measurements During Purging:					
pH	6.79	6.70	6.70	6.70	
Temp.°C	15.55	15.74	15.81	16.10	
Specific Conductance: ~~µmhos~~ mS/cm		0.811	0.838	0.839	0.837
Turbidity: NTU		0	0	0	0
Visual Appearance of Water:		clear	clear	clear	clear

Comments:

Field Indicator Parameter Measurements After Sampling:				
pH	6.70			
Temp.°C	16.11			
Specific Conductance: µmhos/cm	0.830			
Turbidity: NTU	0			
Visual Appearance of Water:	Clear			

Comments:

Laboratory Analysis Requested:

Sample ID No.	Parameter	Method	Preservation	Duplicate	No. of Containers
35BWW08	VOC	8260B	HCl	N	3

Figure 2

Shaw Environmental & Infrastructure, Inc.	WATER SAMPLE FIELD COLLECTION REPORT	Project Number: _____ Project Name: _____ Site Location: LHAAP

Sample ID Number	35BWW08	Date Collected	2/9/12
Sample Location(7)	35BWW08	Time Collected	1308
Diameter of Well	2 (in.)	Sampler	I.D. # JF
Depth to Bottom of Well	34.6 (ft.)	Casing Stick Up	3
Static Water Level	24.5 (ft.)	Measured From(1)	TOC (ft.)
Well Volumes Purged		Purging Method(2)	Pump
Type of Sample(3)	Well	Sampling Method(4)	Low-Flow Pumping
Depth of Sample	29. (ft.)	Measured From(1)	TOC
Sample Collection Order			

FIELD SCREENING AND TEST RESULTS

Water Temperature 16.10 °C pH 6.70 Units

Specific Conductance 0.837 ~~umho~~ mS/cm at 16.10 °C

OVA ☐ HNU PID ☐ Reading _____ PPM

Photovac GC (P/GC) Probable Compound _____ Reading _____ PPM

METER CALIBRATION

pH STD	METER READING	SP. COND. STD	METER READING	_____/STD (8)	METER READING

SAMPLE TYPES COLLECTED

CONTAINER #	TYPE (5)	CONTAINER TYPE	VOLUME	FILTERED	
	VOA	P ☐ G ☒	40 mL	Y ☐ N ☐	Y ☐ N ☐
		P ☐ G ☐		Y ☐ N ☐	Y ☐ N ☐
		P ☐ G ☐		Y ☐ N ☐	Y ☐ N ☐
		P ☐ G ☐		Y ☐ N ☐	Y ☐ N ☐
		P ☐ G ☐		Y ☐ N ☐	Y ☐ N ☐

WEATHER CONDITIONS: TEMP. 50 °F CLEAR ☒ CLOUDY ☐ RAIN ☐ SNOW ☐ WINDY ☐

(1) T.O.C. = Top of Protective Casing; T.O.W. = Top of Well Casing; G.S. = Ground Surface
(2) Bailed, Pumped, Air Lift, Etc.
(3) Stream, Pond, Spring, Well, Seep, Supply, Etc.
(4) Bailer, Kemmerer, Grab, Pump, Etc.
(5) General Chem., Metal, VOA, Organics, Etc.
(6) HNO^3, NaOH, H^2SO^4, $Na^2O^3S^2$, Etc.
(7) If Well, give Well I.D. Number.
(8) OVA, PID, P/GC or Other.

Figure 1

Water Level Measurement/Groundwater Sampling Log Form

Well No. 35BWW04 Date 2/9/12
Sample ID No. 35BWW04
Project ID LHAAP Measured/Sampled By: John Freise
Time: Start 1140 End: 1221

Measuring Point Elevation: Ft. Well Construction Material: 4" PVC
Well Depth Ft: 1) 35.8 2) 3) 4)
Avg. (of valid measurements*)

Water Depth Ft: 1) 22.85 2) 3) 4)
Avg. (of valid measurements*)
(*Minimum of three measurements, last two within 0.01 feet.)

Well Internal Diameter: 4 ~~Ft.~~ In.
Riser Above/Below Pad Elevation Marker: Ft.

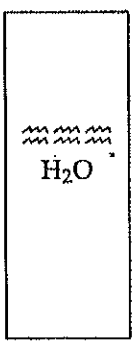
Pad Elevation: Ft.
Sampling Equipment Used:
Horiba U-52 multimeter, Cole-Parmer Peristaltic Pump, Teflon Tubing

Equipment Numbers: U-52 #BJ2C3AVR
pH Meter EC Meter Turbidity Meter Thermometer

Casing Volume Information:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

Purging Information:
Measured Well Depth (B): 35.8 Ft.
Measured Water Level Depth (C): 22.85 Ft.
Length of Static Water Column (D): 35.8 (B) - 22.85 (C) = 12.95 ft.
Casing Water Volume (E): 0.65 (A) x 12.95 (D) = 8.4 gal.
Total Purge Volume = 0.5 (gal) (minimum of three casing volumes)



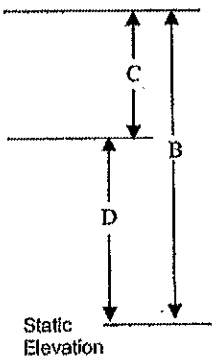


Figure 1 (*continued*)

Water Level Measurement/Groundwater Sampling Log Form (Continued)

Field Indicator Parameter Measurements During Purging:

pH	6.81	6.81	6.81	6.81	
Temp.°C	15.41	15.40	15.39	15.39	
Specific Conductance: ~~µmhos~~ mS/cm		0.348	0.349	0.348	0.350
Turbidity: NTU		42.4	41.2	41.5	41.4
Visual Appearance of Water:		Clear	Clear	Clear	Clear

Comments:

Field Indicator Parameter Measurements After Sampling:

pH	6.81			
Temp.°C	15.37			
Specific Conductance: ~~µmhos~~ mS/cm	0.351			
Turbidity: NTU	40.7			
Visual Appearance of Water:	Clear			

Comments:

Laboratory Analysis Requested:

Sample ID No.	Parameter	Method	Preservation	Duplicate	No. of Containers
35BWW04	VOC	8260B	HCl	N	3

Figure 2

Shaw Environmental & Infrastructure, Inc.	WATER SAMPLE FIELD COLLECTION REPORT	Project Number: _____ Project Name: _____ Site Location: LHAAP

Sample ID Number	35BWW04	Date Collected	2/9/12
Sample Location(7)	35BWW04	Time Collected	1221
Diameter of Well	4 (in.)	Sampler	I.D.# JF
Depth to Bottom of Well	35.8 (ft.)	Casing Stick Up	3
Static Water Level	22.85 (ft.)	Measured From(1)	TOC (ft.)
Well Volumes Purged		Purging Method(2)	Pump
Type of Sample(3)	Well	Sampling Method(4)	Low-Flow Pumping
Depth of Sample	30. (ft.)	Measured From(1)	TOC
Sample Collection Order			

FIELD SCREENING AND TEST RESULTS

Water Temperature 15.39 °C pH 6.81 Units

Specific Conductance 0.350 ~~umho~~ mS/cm at 15.39 °C

OVA ☐ HNU PID ☐ Reading _____ PPM

Photovac GC (P/GC) Probable Compound _____ Reading _____ PPM

METER CALIBRATION

pH STD	METER READING	SP. COND. STD	METER READING	_____/STD (8)	METER READING

SAMPLE TYPES COLLECTED

CONTAINER #	TYPE (5)	CONTAINER TYPE	VOLUME	FILTERED			
	VOA	P ☐ G ☒	40 mL	Y ☐ N ☒	Y		N ☐
		P ☐ G ☐		Y ☐ N ☐	Y		N ☐
		P ☐ G ☐		Y ☐ N ☐	Y		N ☐
		P ☐ G ☐		Y ☐ N ☐	Y		N ☐
		P ☐ G ☐		Y ☐ N ☐	Y		N ☐

WEATHER CONDITIONS: TEMP. 50 °F CLEAR ☒ CLOUDY ☐ RAIN ☐ SNOW ☐ WINDY ☐

(1) T.O.C. = Top of Protective Casing; T.O.W. = Top of Well Casing; G.S. = Ground Surface
(2) Bailed, Pumped, Air Lift, Etc.
(3) Stream, Pond, Spring, Well, Seep, Supply, Etc.
(4) Bailer, Kemmerer, Grab, Pump, Etc.
(5) General Chem., Metal, VOA, Organics, Etc.
(6) HNO^3, NaOH, H^2SO^4, $Na^2O^3S^2$, Etc.
(7) If Well, give Well I.D. Number.
(8) OVA, PID, P/GC or Other.

Figure 1

Water Level Measurement/Groundwater Sampling Log Form

Well No. 35BWW14 Date 2/9/12
Sample ID No. 35BWW14
Project ID LHAAP Measured/Sampled By: John Freise
Time: Start 0820 End: 0900

Measuring Point Elevation: Ft. Well Construction Material: 4" PVC
Well Depth Ft: 1) 38.3' 2) 3) 4)
Avg. (of valid measurements*)

Water Depth Ft: 1) 22.25' 2) 3) 4)
Avg. (of valid measurements*)
(*Minimum of three measurements, last two within 0.01 feet.)

Well Internal Diameter: 4 in
Riser Above/Below Pad Elevation Marker: Ft.

Pad Elevation: Ft.
Sampling Equipment Used:
Horiba U-52 Multimeter, Cole-Parmer Peristaltic Pump, teflon tubing

Equipment Numbers: U-52 #BJ2C3AVR
pH Meter EC Meter Turbidity Meter Thermometer

Casing Volume Information:

Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

Purging Information:
Measured Well Depth (B): 38.3 Ft.
Measured Water Level Depth (C): 22.25 Ft.
Length of Static Water Column (D): 38.3 : (B) 22.25 - (C) 16.05 = ft.
Casing Water Volume (E): 0.65 (A) x 16.05 (D) = 10.4 gal.
Total Purge Volume = 1.8 (gal) (minimum of three casing volumes)

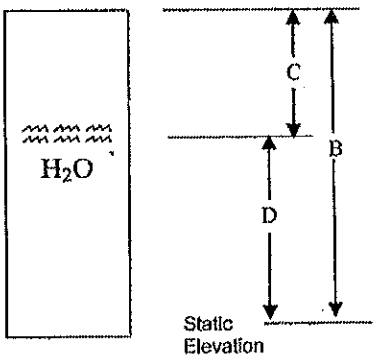


Figure 1 (*continued*)

Water Level Measurement/Groundwater Sampling Log Form (Continued)

Field Indicator Parameter Measurements During Purging:

pH	7.40	7.45	7.40	7.43	
Temp.°C	~~23.8~~ 12.03	12.11	12.23	12.28	
Specific Conductance: ~~µmhos~~ mS/cm		0.573	0.594	0.584	0.579
Turbidity: NTU		96	91	89	87
Visual Appearance of Water:					

Comments:

Field Indicator Parameter Measurements After Sampling:

pH	7.43			
Temp.°C	12.30			
Specific Conductance: ~~µmhos~~ mS/cm	0.581			
Turbidity: NTU	80			
Visual Appearance of Water:				

Comments:

Laboratory Analysis Requested:

Sample ID No.	Parameter	Method	Preservation	Duplicate	No. of Containers
35BWW14	VOC	8260B	HCl	N	3

Figure 2

Shaw Environmental & Infrastructure, Inc.	WATER SAMPLE FIELD COLLECTION REPORT	Project Number: _____ Project Name: _____ Site Location: LHAAP

Sample ID Number	35BWW14	Date Collected	2/9/12
Sample Location[7]	35BWW14	Time Collected	0900
Diameter of Well	4 (in.)	Sampler	I.D. # SP
Depth to Bottom of Well	38.3 (ft.)	Casing Stick Up	3'
Static Water Level	22.25 (ft.)	Measured From[1]	(ft.)
Well Volumes Purged		Purging Method[2]	Pumped
Type of Sample[3]	Well	Sampling Method[4]	Low Flow Pump
Depth of Sample	33 (ft.)	Measured From[1]	TOC
Sample Collection Order			

FIELD SCREENING AND TEST RESULTS

Water Temperature 12.28 °C pH 7.43 Units

Specific Conductance 0.579 ~~umho~~ mS/cm at 12.28 °C

OVA ☐ HNU PID ☐ Reading _____ PPM

Photovac GC (P/GC) Probable Compound _____ Reading _____ PPM

METER CALIBRATION

pH STD	METER READING	SP. COND. STD	METER READING	_____/STD (8)	METER READING

SAMPLE TYPES COLLECTED

CONTAINER #	TYPE (5)	CONTAINER TYPE	VOLUME	FILTERED			
	VOA	P ☐ G ☒	40 mL	Y ☐ N ☒	Y		N ☐
		P ☐ G ☐		Y ☐ N ☐	Y		N ☐
		P ☐ G ☐		Y ☐ N ☐	Y		N ☐
		P ☐ G ☐		Y ☐ N ☐	Y		N ☐
		P ☐ G ☐		Y ☐ N ☐	Y		N ☐

WEATHER CONDITIONS: TEMP. 40 °F CLEAR ☒ CLOUDY ☐ RAIN ☐ SNOW ☐ WINDY ☐

(1) T.O.C. = Top of Protective Casing; T.O.W. = Top of Well Casing; G.S. = Ground Surface
(2) Bailed, Pumped, Air Lift, Etc.
(3) Stream, Pond, Spring, Well, Seep, Supply, Etc.
(4) Bailer, Kemmerer, Grab, Pump, Etc.
(5) General Chem., Metal, VOA, Organics, Etc.
(6) HNO^3, NaOH, H^2SO^4, $Na^2O^3S^2$, Etc.
(7) If Well, give Well I.D. Number.
(8) OVA, PID, P/GC or Other.

APPENDIX F

Sampling Results Summary

SAMPLE SUMMARY

Client: Cherokee CRC LLC

Job Number: 280-25498-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
280-25498-1TB	TB1	Water	02/09/2012 0745	02/10/2012 0900
280-25498-2FB	FB1	Water	02/09/2012 0745	02/10/2012 0900
280-25498-3	35BWW14	Water	02/09/2012 0900	02/10/2012 0900
280-25498-4	35BWW11	Water	02/09/2012 1027	02/10/2012 0900
280-25498-5	35BWW09	Water	02/09/2012 1123	02/10/2012 0900
280-25498-6FD	DUP-1	Water	02/09/2012 1128	02/10/2012 0900
280-25498-7	35BWW04	Water	02/09/2012 1221	02/10/2012 0900
280-25498-8	IDW-1	Water	02/09/2012 1320	02/10/2012 0900
280-25498-9	IDW-2	Solid	02/09/2012 1100	02/10/2012 0900
280-25498-10	35BWW08	Water	02/09/2012 1308	02/10/2012 0900

EXECUTIVE SUMMARY - Detections

Client: Cherokee CRC LLC

Job Number: 280-25498-1

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
280-25498-1TB	**TB1**					
Methylene Chloride		0.90	J	5.0	ug/L	8260B/DoD
280-25498-2FB	**FB1**					
Methylene Chloride		0.62	J	5.0	ug/L	8260B/DoD
280-25498-3	**35BWW14**					
1,1-Dichloroethane		2.8		2.0	ug/L	8260B/DoD
1,1-Dichloroethene		29		2.0	ug/L	8260B/DoD
cis-1,2-Dichloroethene		7.6		2.0	ug/L	8260B/DoD
Methylene Chloride		1.5	J	10	ug/L	8260B/DoD
trans-1,2-Dichloroethene		0.36	J	2.0	ug/L	8260B/DoD
Tetrachloroethene		10		2.0	ug/L	8260B/DoD
1,2-Dichloroethene, Total		7.9		2.0	ug/L	8260B/DoD
Trichloroethene		63		2.0	ug/L	8260B/DoD
Vinyl chloride		2.6	J	3.0	ug/L	8260B/DoD
280-25498-4	**35BWW11**					
Methylene Chloride		0.60	J	5.0	ug/L	8260B/DoD
Tetrachloroethene		0.26	J	1.0	ug/L	8260B/DoD
280-25498-5	**35BWW09**					
1,1-Dichloroethene		0.30	J	2.0	ug/L	8260B/DoD
cis-1,2-Dichloroethene		0.43	J	2.0	ug/L	8260B/DoD
Methylene Chloride		1.2	J	10	ug/L	8260B/DoD
1,2-Dichloroethene, Total		0.43	J	2.0	ug/L	8260B/DoD
Trichloroethene		68		2.0	ug/L	8260B/DoD
280-25498-6FD	**DUP-1**					
1,1-Dichloroethene		0.29	J	2.0	ug/L	8260B/DoD
cis-1,2-Dichloroethene		0.38	J	2.0	ug/L	8260B/DoD
Methylene Chloride		1.3	J	10	ug/L	8260B/DoD
1,2-Dichloroethene, Total		0.38	J	2.0	ug/L	8260B/DoD
Trichloroethene		68		2.0	ug/L	8260B/DoD

EXECUTIVE SUMMARY - Detections

Client: Cherokee CRC LLC

Job Number: 280-25498-1

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
280-25498-7	**35BWW04**					
1,1-Dichloroethane		0.57	J	1.0	ug/L	8260B/DoD
1,1-Dichloroethene		1.7		1.0	ug/L	8260B/DoD
cis-1,2-Dichloroethene		0.51	J	1.0	ug/L	8260B/DoD
Methylene Chloride		0.62	J	5.0	ug/L	8260B/DoD
Tetrachloroethene		17		1.0	ug/L	8260B/DoD
1,2-Dichloroethene, Total		0.51	J	1.0	ug/L	8260B/DoD
Trichloroethene		5.9		1.0	ug/L	8260B/DoD
280-25498-8	**IDW-1**					
1,1-Dichloroethane		0.90	J	1.0	ug/L	8260B/DoD
1,1-Dichloroethene		7.0		1.0	ug/L	8260B/DoD
1,2,4-Trimethylbenzene		8.9		1.0	ug/L	8260B/DoD
1,3,5-Trimethylbenzene		3.7		1.0	ug/L	8260B/DoD
4-Isopropyltoluene		0.37	J	1.0	ug/L	8260B/DoD
Chloroform		0.21	J	1.0	ug/L	8260B/DoD
cis-1,2-Dichloroethene		2.6		1.0	ug/L	8260B/DoD
Ethylbenzene		1.6		1.0	ug/L	8260B/DoD
Isopropylbenzene		0.20	J	1.0	ug/L	8260B/DoD
Methylene Chloride		0.56	J	5.0	ug/L	8260B/DoD
m-Xylene & p-Xylene		7.2		2.0	ug/L	8260B/DoD
Naphthalene		3.7		1.0	ug/L	8260B/DoD
n-Butylbenzene		0.32	J	1.0	ug/L	8260B/DoD
N-Propylbenzene		0.46	J	1.0	ug/L	8260B/DoD
o-Xylene		7.7		1.0	ug/L	8260B/DoD
Tetrachloroethene		2.6		1.0	ug/L	8260B/DoD
1,2-Dichloroethene, Total		2.6		1.0	ug/L	8260B/DoD
Trichloroethene		33		1.0	ug/L	8260B/DoD
Vinyl chloride		0.61	J	1.5	ug/L	8260B/DoD
Flashpoint		>160		1.00	Degrees F	1010A
pH		7.3	HF	0.10	SU	9040C
280-25498-9	**IDW-2**					
Methylene Chloride		0.95	J	5.6	ug/Kg	8260B/DoD
Tetrachloroethene		2.1	J	5.6	ug/Kg	8260B/DoD
Trichloroethene		0.63	J	5.6	ug/Kg	8260B/DoD
Ignitability		NO			No Unit	7.1.2
Percent Moisture		21		0.10	%	Moisture
Soluble						
pH-Soluble		6.7		0.010	SU	9045D

EXECUTIVE SUMMARY - Detections

Client: Cherokee CRC LLC

Job Number: 280-25498-1

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
280-25498-10	**35BWW08**					
1,1-Dichloroethene		0.22	J	1.0	ug/L	8260B/DoD
cis-1,2-Dichloroethene		0.30	J	1.0	ug/L	8260B/DoD
Methylene Chloride		0.58	J	5.0	ug/L	8260B/DoD
1,2-Dichloroethene, Total		0.30	J	1.0	ug/L	8260B/DoD
Trichloroethene		37		1.0	ug/L	8260B/DoD

APPENDIX G

Waste Profiles and Manifest

00114019

Stericycle
Specialty Waste Solutions

WASTE PROFILE FORM

PROFILE # _____

1. Generator Information

Name	United States Army Corps of Engineers Tulsa District 1645 S. 101st E. Ave. Tulsa, OK 74128
Contact	Aaron Williams
Site	Longhorn Army Ammunition Plant LHAAP-37
Phone	918-669-4915
EPA ID	

2. Billing Information

Name	Cherokee CRC 10838 E. Marshall Suite 220 Tulsa, OK 74116
Contact	John Freise
Phone/Fax	918-430-3456
Email	john.freise@cherokee-crc.com

Generator Status: CESQG ☐ SQG ☐ LQG ☐

3. Waste Description

Common Name of Waste: IDW waste soil
Process Generating Waste: Monitoring well installation

Color	Layers	Odor/Strength	State @ 70*
			solid

Free Liquid	% Liquid	% Solids	% Sludge	% Solubility
	21%	79%		

% Total Halogens:

4. DOT Shipping Name: (include PG, UN/NA & Haz Class)

Non-Hazardous Waste

None ☐ Lab Pack ☐
*NOS Descriptor:
Quantity: 10 55 gal | Frequency:
Shipment Method: | Price Units:
EPA Codes:
State Codes:

Specific Gravity		Viscosity	
Flash Point (*F)		pH	6.7
BTUs		PCBs	
Total Cyanides (ppm)	0.3	Total Sulfides (ppm)	0.63

Waste Composition: (List all haz and non-haz. constituents)

	%
	%
	%
	%
	%
	%
	%

5. Regulatory Status (check all that apply)

Hazardous Waste per 40 CFR 261	☐
CESQG per 40 CFR 261.5	☐
Universal Waste per 40 CFR 273	☐
Used Oil per 40 CFR 279	☐
State Regulated Waste	☐
HHW per 40 CFR 261.4(b)(1)	☐
TSCA per 40 CFR 761	☐
Non Hazardous Waste	☑
Other Exempt Waste per 40 CFR 261	☐

Describe:
Form Code | Source Code

6. Hazardous and Chemical Properties

None	☑	Oxidizer	☐
Water Reactive	☐	Ignitable	☐
Shock Sensitive	☐	Medical Waste	☐
Air Reactive	☐	Dioxins	☐
Explosive	☐	Benzene NESHAP	☐
Pyrophoric	☐	Pesticide/Herbicide	☐
Reactive Cyanides	☐	Polymerizable	☐
Reactive Sulfides	☐	Radioactive	☐
Phenols	☐	Asbestos	☐

Customer Disposal Preference (If any):

7. Metals (Inorganic) None ☑ TCLP ☐ SCLP ☐ Generator Knowledge ☐

D004 Arsenic (5mg/l)		D011 Silver (5mg/l)		Manganese	
D005 Barium (100mg/l)		Aluminum		Molybdenum	
D006 Cadmium (1mg/l)		Antimony		Nickel	
D007 Chromium (5mg/l)		Beryllium		Thallium	
D008 Lead (5mg/l)		Cobalt		Tin	
D009 Mercury (0.2mg/l)		Copper		Zinc	
D010 Selenium (1mg/l)		Chromium			

8. Other Compounds (Organic) None ☑ TCLP ☐ SCLP ☐ Totals ☐ Generator Knowledge ☐

D012 Endrin		D023 o-Cresol		D033 Hexachlorobutadiene	
D013 Lindane		D024 m-Cresol		D035 Methyl ethyl ketone	
D014 Methoxychlor		D025 p-Cresol		D036 Nitrobenzene	
D015 Toxaphene		D026 Cresol		D037 Pentachlorophenol	
D016 2,4-D		D027 1,4-Dichlorobenzene		D038 Pyridine	
D017 2,4 5 TP (Silvex)		D028 1,2-Dichloroethane		D039 Tetrachloroethylene	
D018 Benzene		D029 1,1-Dichloroethylene		D040 Trichloroethylene	
D019 Carbon Tetrachloride		D030 2,4-Dinitrotoluene		D041 2,4,5-Trichlorophenol	
D020 Chlordane		D031 Heptachlor (& epoxide)		D042 2,4,6-Trichlorophenol	
D021 Chlorobenzene		D032 Hexachlorobenzene		D043 Vinyl chloride	
D022 Chloroform					

Generator Certification: I hereby certify that I have personally examined and am familiar with the above and attached description. To the best of my knowledge it is complete and accurate. No deliberate or willful omissions of composition or properties exist and all known or suspected hazards have been disclosed.

Name	John Freise	Title	Environmental Scientist
Signature		Date	Friday, March 02, 2012

00114020

Stericycle
Specialty Waste Solutions

WASTE PROFILE FORM

PROFILE # _____

1. Generator Information		2. Billing Information	
Name	United States Army Corps of Engineers Tulsa District 1645 S. 101st E. Ave. Tulsa, OK 74128	Name	Cherokee CRC 10838 E. Marshall Suite 220 Tulsa, OK 74116
Contact	Aaron Williams	Contact	John Freise
Site	Longhorn Army Ammunition Plant LHAAP-37	Phone/Fax	918-430-3456
Phone	918-669-4915	Email	john.freise@cherokee-crc.com
EPA ID		Generator Status	CESQG ☐ SQG ☐ LQG ☐

3. Waste Description

Common Name of Waste	IDW waste Water								
Process Generating Waste	Monitoring well installation								
Color		Layers		Odor/Strength		State @ 70°	liquid		
Free Liquid	100%	% Liquid		% Solids		% Sludge		% Solubility	
% Total Halogens									

4. DOT Shipping Name: (include PG, UN/NA & Haz Class)

Non-Hazardous Waste

None ☐ Lab Pack ☐

*NOS Descriptor			
Quantity	5 55 gal	Frequency	
Shipment Method		Price Units	
EPA Codes			
State Codes			

Specific Gravity		Viscosity	
Flash Point (°F)	>160	pH	7.3
BTUs		PCBs	
Total Cyanides (ppm)	0.002	Total Sulfides (ppm)	1.3

Waste Composition: (List all haz and non-haz. constituents)

	%
	%
	%
	%
	%
	%
	%

5. Regulatory Status (check all that apply)

Hazardous Waste per 40 CFR 261	☐
CESQG per 40 CFR 261.5	☐
Universal Waste per 40 CFR 273	☐
Used Oil per 40 CFR 279	☐
State Regulated Waste	☐
HHW per 40 CFR 261.4(b)(1)	☐
TSCA per 40 CFR 761	☐
Non Hazardous Waste	☑
Other Exempt Waste per 40 CFR 261	☐

Describe:

Form Code | Source Code

6. Hazardous and Chemical Properties

None	☑	Oxidizer	☐
Water Reactive	☐	Ignitable	☐
Shock Sensitive	☐	Medical Waste	☐
Air Reactive	☐	Dioxins	☐
Explosive	☐	Benzene NESHAP	☐
Pyrophoric	☐	Pesticide/Herbicide	☐
Reactive Cyanides	☐	Polymerizable	☐
Reactive Sulfides	☐	Radioactive	☐
Phenols	☐	Asbestos	☐

Customer Disposal Preference (if any):

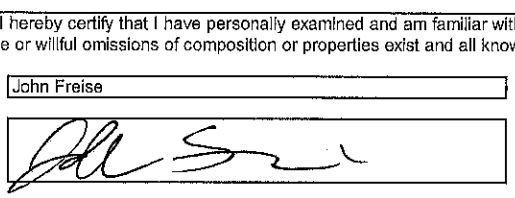
7. Metals (Inorganic) None ☑ TCLP ☐ SCLP ☐ Generator Knowledge ☐

D004 Arsenic (5mg/l)		D011 Silver (5mg/l)		Manganese	
D005 Barium (100mg/l)		Aluminum		Molybdenum	
D006 Cadmium (1mg/l)		Antimony		Nickel	
D007 Chromium (5mg/l)		Beryllium		Thallium	
D008 Lead (5mg/l)		Cobalt		Tin	
D009 Mercury (0.2mg/l)		Copper		Zinc	
D010 Selenium (1mg/l)		Chromium			

8. Other Compounds (Organic) None ☑ TCLP ☐ SCLP ☐ Totals ☐ Generator Knowledge ☐

D012 Endrin		D023 o-Cresol		D033 Hexachlorobutadiene	
D013 Lindane		D024 m-Cresol		D035 Methyl ethyl ketone	
D014 Methoxychlor		D025 p-Cresol		D036 Nitrobenzene	
D015 Toxaphene		D026 Cresol		D037 Pentachlorophenol	
D016 2,4-D		D027 1,4-Dichlorobenzene		D038 Pyridine	
D017 2,4 5 TP (Silvex)		D028 1,2-Dichloroethane		D039 Tetrachloroethylene	
D018 Benzene		D029 1,1-Dichloroethylene		D040 Trichloroethylene	
D019 Carbon Tetrachloride		D030 2,4-Dinitrotoluene		D041 2,4,5-Trichlorophenol	
D020 Chlordane		D031 Heptachlor (& epoxide)		D042 2,4,6-Trichlorophenol	
D021 Chlorobenzene		D032 Hexachlorobenzene		D043 Vinyl chloride	
D022 Chloroform					

Generator Certification: I hereby certify that I have personally examined and am familiar with the above and attached description. To the best of my knowledge it is complete and accurate. No deliberate or willful omissions of composition or properties exist and all known or suspected hazards have been disclosed.

Name	John Freise	Title	Environmental Scientist
Signature		Date	Friday, March 02, 2012

00114021

Please print or type.
(Form designed for use on elite (12-pitch) typewriter.)

FRTS Contract #HM81

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
N/A	1	800-924-4204	7417-1002985

GENERATOR

5. Generator's Name and Mailing Address

United States Army Corps of Engineers
1645 S 101st East Ave
Tulsa, OK 74128-4637
Generator's Phone: 918-669-4913

Generator's Site Address (if different than mailing address)
United States Army Corps of Engi
Longhorn Army Ammunition Plant
Karnack, TX 75661

6. Transporter 1 Company Name: Stericycle Specialty Waste Solutions, Inc
U.S. EPA ID Number: MNS000110924

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address: Stericycle Specialty Waste Solutions, Inc.
2120 Southwest Blvd
Tulsa, OK 74107
Facility's Phone: (918) 587-9664 Ext
U.S. EPA ID Number: OKD987084063

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Non-Hazardous Waste Soil	12	DM	Est 54151	P	
2.	Non Hazardous, Non-Regulated Liquids (DW Wastewater	4	DM	1230 Est	P	
3.						
4.						

13. Special Handling Instructions and Additional Information: Approval #913-01 Exp 8/97-01

14. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Nelson | Signature | Month: 2 | Day: 7 | Year: 12

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) | U.S. EPA ID Number
Facility's Phone:

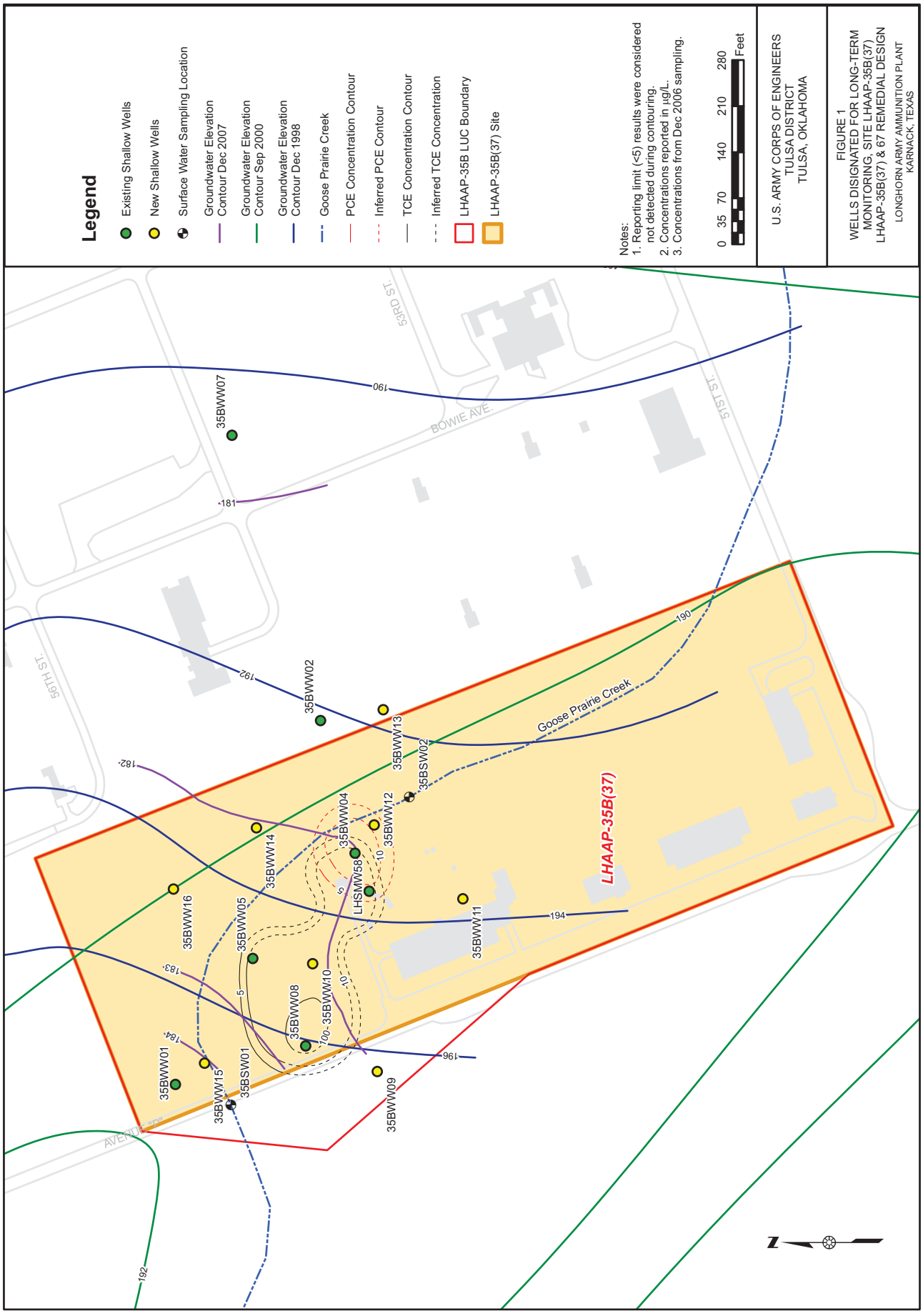
17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name | Signature | Month | Day | Year

APPENDIX H

Site Location Map


Legend
Existing Shallow Wells
New Shallow Wells
Surface Water Sampling Location
Groundwater Elevation Contour Dec 2007
Groundwater Elevation Contour Sep 2000
Groundwater Elevation Contour Dec 1998
Goose Prairie Creek
PCE Concentration Contour
Inferred PCE Contour
TCE Concentration Contour
Inferred TCE Concentration
LHAAP-35B LUC Boundary
LHAAP-35B(37) Site
Notes:
1. Reporting limit (<5) results were considered not detected during contouring.
2. Concentrations reported in µg/L.
3. Concentrations from Dec 2006 sampling.
0 35 70 140 210 280
Feet
U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA
FIGURE 1
WELLS DISIGNATED FOR LONG-TERM MONITORING, SITE LHAAP-35B(37)
LHAAP-35B(37) & 67 REMEDIAL DESIGN
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
53RD ST.
BOWIE AVE.
51ST ST.
56TH ST.
AVENUE F
Goose Prairie Creek
LHAAP-35B(37)
35BWW07
35BWW02
35BWW13
35BSW02
35BWW12
35BWW04
35BWW14
LHSMW58
35BWW16
35BWW05
35BWW11
35BWW08
35BWW10
35BWW01
35BSW01
35BWW15
35BWW09
190
192
181
182
194
183
184
196
100
10
5
N
LHAAP35BLTM.mxd 08/04/11

APPENDIX I

Photographs

Clearing for MW 35BWW14

Installation of MW 35BWW11

Installation of MW 35BWW09

Surface Completion of MW 35BWW11

Completed MW 35BWW11

IDW from 35BWW14 Pending Analysis

APPENDIX J

Laboratory Report (CD-ROM)

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

CHEMICAL DATA QUALITY ASSURANCE REPORT

LONGHORN ARMY AMMUNITION PLANT

LHAAP-35B(37)

March 2012

Table of Contents

1.0 INTRODUCTION.....1

2.0 DATA VALIDATION.....1

2.1 QUALITY CONTROL SAMPLES. 1

2.1.1 Travel Blanks: *.....1*

2.1.2 Equipment Blanks: *.....1*

2.1.3 Sample Duplicates: *.....2*

2.2 LABORATORY CONTROLS. 2

2.2.1 Surrogates/Internal Standards: *.....2*

2.2.2 Matrix Spikes: *.....2*

2.2.3 Matrix Spike Duplicates: *.....2*

2.2.4 Laboratory Control Spikes: *.....3*

2.2.5 Method Blanks: *.....3*

3.0 CHAIN OF CUSTODY SYNOPSIS. 3

4.0 DATA EVALUATION.....3

4.1 VOLATILE ORGANICS. 3

4.1.1 Accuracy. *.....3*

4.1.2 Precision. *.....4*

4.1.3 Representativeness. *.....4*

5.0 TECHNICAL SUMMARY. 4

6.0 CONCLUSION. 4

APPENDIX A – FIELD/QUALITY CONTROL COMPARISON TABLE

1.0 INTRODUCTION.

During February of 2012, a groundwater investigation was conducted at the Longhorn Army Ammunition Plant by the Tulsa District Corps of Engineers. During the investigation, five groundwater samples, one quality control duplicate sample, one field blank, and one trip blank were collected.

Chemical analyses for the field/quality control samples were performed by TestAmerica. Results are included in the analytical data package (Report #280-25498-1).

2.0 DATA VALIDATION.

The analytical data was validated based on EPA guidelines. Some of the quality control elements which were used in the data validation are described below.

2.1 Quality Control Samples.

Quality Control (QC) samples are used to verify that the sampling and analytical techniques are being performed properly. QC samples are collected in the field along with the samples and analyzed by the laboratories. QC samples include travel blanks, equipment blanks, and duplicate samples.

2.1.1 Travel Blanks:

Travel blanks consist of American Society for Testing and Materials (ASTM D 1193-91) Type II reagent water sealed into three sample vials and sent to the field to be shipped with the field samples. The travel blank is carried with the samples during sample collection and shipped with the samples to the laboratory. The travel blank is not opened until it has been received in the laboratory. One travel blank will be prepared for each shipment of water samples (or soil samples in vials with septa) to be analyzed for volatile organic compounds, all of which are shipped in the same ice chest on the same day. Travel blanks measure cross contamination of samples during shipment and contamination sources contacted during shipment. EPA does not require travel blanks to be collected for equipment blanks associated with soil/sediment samples.

2.1.2 Equipment Blanks:

Equipment blanks consist of ASTM Type II water which has been poured over or through decontaminated non-dedicated sampling equipment such as augers, bowls, spoons, or bailers. They are shipped to the laboratory along with the field samples and are analyzed for the same analytical parameters as the field samples. Equipment blanks are prepared and preserved in the same manner as a water sample. Equipment blanks measure the effectiveness of equipment decontamination and are collected at a rate of 5%.

2.1.3 Sample Duplicates:

Duplicate samples, also known as QC samples, are samples as identical as possible to the field sample. They may consist of a composite, or as a series of grab samples from the same source. They are shipped to the laboratory, along with the field samples, with a separate sample identification number and are analyzed for the same analytical parameters as the field samples. Sample duplicates measure the analytical precision of the laboratory. Sample duplicates are collected at a rate of 10%. Quality assurance (QA) samples are duplicates that are analyzed by a different laboratory from the primary field sample in order to evaluate the accuracy of the primary lab.

2.2 Laboratory Controls.

Laboratory controls are specific analyses run by the laboratories to ensure that the sample analyses are being run within proper parameters, as set forth in various EPA guidelines, and to check for matrix effects. Matrix effects are interferences caused by the sample matrix (soil or water). These interferences can increase or decrease the data values. Laboratory controls include surrogates/internal standards, matrix spikes (MS), matrix spike duplicates (MSD), laboratory control spikes (LCS), and method blanks.

2.2.1 Surrogates/Internal Standards:

Surrogates and internal standards are similar laboratory controls. Surrogates are check standards added to every sample in known amounts at the beginning of an extraction. They are not one of the target analytes, not expected to be found in the environment, and are chemically close to the analytes of concern. Surrogate recoveries are measured to determine if the extraction procedure was properly carried out. Surrogate recoveries may also help determine if matrix effects are present. Internal standards are reference materials added to a sample in a known quantity. The reference material is chosen to simulate the analyte of interest. Its instrument response and recovery are measured in order to accurately calculate analyte concentration.

2.2.2 Matrix Spikes:

Matrix spikes are used to measure the accuracy of the analytical procedures. A portion of a sample is spiked with known amounts of the analytes of interest and analyzed along with the samples. In the case of organic analytes, only a representative subclass of analytes is chosen to be added to the sample. The recovery of the spiked analytes is measured to determine if a sample matrix effect may be present. Based on an agreement with the ADPC&E, if the recovery exceeds the upper QC limit, the data is flagged and is considered estimated and biased high (JH). Conversely, if the recovery falls below the lower QC limit, the data is flagged and is considered estimated and biased low (JL). Matrix spikes are analyzed at a rate of 10%. However, since laboratories often analyze samples from different projects at the same time, the sample chosen for the matrix spike may not be representative of the samples of concern to the client.

2.2.3 Matrix Spike Duplicates:

Matrix spike duplicates are prepared from the same sample in an identical manner as the matrix spike. The spike recoveries of both MS/MSD samples are compared and the relative

percent difference (RPD) is calculated for each analyte. The RPD is a measure of the precision of the analytical procedures.

2.2.4 Laboratory Control Spikes:

The laboratory control spike is prepared by spiking a known volume of ASTM Type II water with all of the analytes of interest. The recoveries are measured to ensure that the analytical method is being run within proper analytical controls. Laboratory control spikes are analyzed at a rate of 10%.

2.2.5 Method Blanks:

A method blank is an aliquot of ASTM Type II water that is analyzed along with the samples. Method blanks check for contamination from laboratory sources such as the instruments, the glassware, or from ambient vapors. Method blanks are analyzed at a rate of 5%.

3.0 CHAIN OF CUSTODY SYNOPSIS.

Longhorn Army Ammunition Plant	Matrix	8260
Samples collected on 2/9/12		
TB1	TB	1
FB1	FB	1
35BWW14	groundwater	1
35BWW11	groundwater	1
35BWW09	groundwater	1
Dup1	QC	1
35BWW04	groundwater	1
35BWW08	groundwater	1

1 – TestAmerica
QC – quality control duplicate
TB – trip blank
FB – field blank

4.0 DATA EVALUATION.

Volatile Organics were analyzed by SW-846 method 8260.

4.1 *Volatile Organics.*

All samples were analyzed within holding time.

4.1.1 Accuracy.

All surrogate and laboratory control standard (LCS)/laboratory control standard duplicates (LCSD) recoveries were within laboratory quality control limits. A matrix spike/matrix

spike duplicate was analyzed but the sample used was from another project. As such, the results are immaterial to this project and an LCS/LCSD analysis was conducted instead.

4.1.2 Precision.

All LCS/LCSD RPD values were within laboratory quality control limits.

4.1.3 Representativeness.

All method blanks, field blanks, and trip blanks were free of contamination with the following exceptions:

- Methylene chloride (0.90 J µg/L) was detected in the trip blank (TB1) and was also detected (0.62 J µg/L) in the field blank (FB1). It also appeared in several samples at low concentrations. The appearance of methylene chloride is likely due to laboratory contamination since it was detected in both method blanks (0.506 J µg/L and 1.08 J µg/L).

5.0 TECHNICAL SUMMARY.

The chain-of-custody (COC) forms were complete and contained the required information. The date on the COCs were listed as 2/9/12 for the sample collection but as 2/9/11 for the signature. The latter date is inaccurate and the samples were collected on 2/9/12. Comparison of field samples with the quality control duplicate showed no discrepancies.

6.0 CONCLUSION.

An evaluation of the data generated indicates that the sampling procedures and laboratory analyses were conducted in an acceptable manner. The Tulsa District considers the data valid and acceptable for its intended purpose.

Frank Roepke
Senior Chemist, HTRW Design Center

APPENDIX A

FIELD/QUALITY CONTROL COMPARISON TABLE

Method	Analyte	Units	35BWW09	Dup1
8260	1,1,1,2-tetrachloroethane	µg/L	<2.0	<2.0
8260	1,1,1-trichloroethane	µg/L	<2.0	<2.0
8260	1,2,3-trichloropropane	µg/L	<6.0	<6.0
8260	1,2,3-trichlorobenzene	µg/L	<2.0	<2.0
8260	1,1-dichloroethane	µg/L	<2.0	<2.0
8260	1,2,4-trichlorobenzene	µg/L	<2.0	<2.0
8260	1,2-dibromo-3-chloropropane	µg/L	<10	<10
8260	1,1-dichloropropene	µg/L	<2.0	<2.0
8260	1,1-dichloroethene	µg/L	0.30 J	0.80 J
8260	1,1,2-trichloroethane	µg/L	<2.0	<2.0
8260	1,1,2,2-tetrachloroethane	µg/L	<2.0	<2.0
8260	1,2,4-trimethylbenzene	µg/L	<2.0	<2.0
8260	1,2-dichlorobenzene	µg/L	<2.0	<2.0
8260	1,2-dichloroethane	µg/L	<2.0	<2.0
8260	1,3-dichlorobenzene	µg/L	<2.0	<2.0
8260	1,3-dichloropropane	µg/L	<2.0	<2.0
8260	1,3,5-trimethylbenzene	µg/L	<2.0	<2.0
8260	2-butanone	µg/L	<12	<12
8260	1,4-dichlorobenzene	µg/L	<2.0	<2.0
8260	1,2-dichloropropane	µg/L	<2.0	<2.0
8260	2,2-dichloropropane	µg/L	<2.0	<2.0
8260	2-hexanone	µg/L	<10	<10
8260	4-methyl-2-pentanone	µg/L	<10	<10
8260	4-isopropyltoluene	µg/L	<2.0	<2.0
8260	Benzene	µg/L	<2.0	<2.0
8260	Acetone	µg/L	<20	<20
8260	Bromobenzene	µg/L	<2.0	<2.0
8260	Bromoform	µg/L	<2.0	<2.0
8260	Bromomethane	µg/L	<4.0	<4.0
8260	Carbon tetrachloride	µg/L	<4.0	<4.0
8260	Carbon disulfide	µg/L	<4.0	<4.0
8260	2-chlorotoluene	µg/L	<2.0	<2.0
8260	4-chlorotoluene	µg/L	<2.0	<2.0
8260	Chlorobenzene	µg/L	<2.0	<2.0
8260	Chlorobromomethane	µg/L	<2.0	<2.0
8260	Chlorodibromomethane	µg/L	<2.0	<2.0
8260	Chloroform	µg/L	<2.0	<2.0
8260	Chloroethane	µg/L	<4.0	<4.0
8260	Chloromethane	µg/L	<4.0	<4.0
8260	Cis-1,2-dichloroethene	µg/L	0.43 J	0.38 J
8260	Cis-1,3-dichloropropene	µg/L	<2.0	<2.0
8260	Dibromomethane	µg/L	<2.0	<2.0
8260	Dichlorobromomethane	µg/L	<2.0	<2.0
8260	Dichlorodifluoromethane	µg/L	<4.0	<4.0
8260	Ethylbenzene	µg/L	<2.0	<2.0
8260	Hexachlorobutadiene	µg/L	<2.0	<2.0
8260	Isopropylbenzene	µg/L	<2.0	<2.0
8260	Ethylene dibromide	µg/L	<2.0	<2.0
8260	Methylene chloride	µg/L	1.2 J	1.3 J
8260	Methyl tert-butyl ether	µg/L	<10	<10

Method	Analyte	Units	35BWW09	Dup1
8260	m&p xylene	µg/L	<4.0	<4.0
8260	Naphthalene	µg/L	<2.0	<2.0
8260	n-butylbenzene	µg/L	<2.0	<2.0
8260	n-propylbenzene	µg/L	<2.0	<2.0
8260	o-xylene	µg/L	<2.0	<2.0
8260	Styrene	µg/L	<2.0	<2.0
8260	sec-butylbenzene	µg/L	<2.0	<2.0
8260	tert-butylbenzene	µg/L	<2.0	<2.0
8260	Trans-1,2-dichloroethene	µg/L	<2.0	<2.0
8260	Trans-1,3-dichloropropene	µg/L	<2.0	<2.0
8260	Tetrachloroethene	µg/L	<2.0	<2.0
8260	1,2-dichloroethene	µg/L	0.43 J	0.38 J
8260	Toluene	µg/L	<2.0	<2.0
8260	Trichloroethene	µg/L	68	68
8260	Trichlorofluoromethane	µg/L	<4.0	<4.0
8260	Vinyl chloride	µg/L	<3.0	<3.0
8260	2-chloroethyl vinyl ether	µg/L	<6.0	<6.0
8260	2-nitropropane	µg/L	<10	<10
8260	Ethyl acetate	µg/L	<10	<10
8260	Ethyl ether	µg/L	<4.0	<4.0

LONGHORN ARMY AMMUNTION PLANT
RESTORATION ADVISORY BOARD

GUIDELINES AND OPERATING PROCEDURES

1. Mission Statement

The mission of the Longhorn Army Ammunition Plant (LHAAP) Restoration Advisory Board, hereafter referred to as the RAB or Board, is to promote community awareness and obtain constructive community review and comments on environmental restoration activities at the former LHAAP.

2. Purpose and Function

The purpose and function of the RAB is to:

- Act as a forum for the discussion and exchange of information between agencies and the community;
- Disseminate information to the community;
- Ensure opinions about environmental restoration reflect the diverse interests within the community; and
- Provide an opportunity for stakeholders to review the progress and participate in a dialogue with the decision makers.

The RAB is not a replacement for other types of community outreach and participation required by law, regulation, or policy. All recommendations provided by the RAB will be considered, including advice given that represents the minority view of members. Because the Department of Defense does not intend for Federal Advisory Committee Act (FACA) requirements to apply to RABs, consensus is not a prerequisite for RAB recommendations. Advice is provided by each individual rather than as a group.

3. Basis and Authority

The basis and authority for the RAB is the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), primarily Sections 120(a), 120(f), and 121(f) and 10 USC 2705 enacted by 211 of SARA. The activities of the RAB are to be conducted in accordance with Code of Federal Regulations, Title 32, Part 202, Restoration Advisory Board, dated May 12, 2006 (71FR27618)

4. Membership

4.1. Community Members

Community membership of the RAB is voluntary and shall adequately reflect the diverse community interests regarding the environmental restoration activities at the former LHAAP. Unless the RAB decides to change the balance and diversity of its initial membership

(requires Board consensus), the RAB will consist of members who reside or who work in Harrison County and surrounding areas, and individuals and groups directly impacted and having a vested interest in the environmental restoration activities at the former LHAAP. Community interests may include, but are not limited to:

- local residents
- business community
- homeowners associations
- local environmental group
- environmental justice groups (low income and minority groups)
- local officials
- health officials
- senior citizens associations
- civic groups

The RAB will maintain diversity and balance in regard to gender, age, race /ethnicity, type of employment, neighborhood, expertise, income, and education levels. Members are expected to attend and actively participate in regular meetings and be prepared to comment on documents and proposals.

4.2. Permanent Members
Permanent standing members of the RAB, not subject to rotation or term limits above, include representatives from the Army, U.S. EPA Region 6, and Texas Commission on Environmental Quality.

4.3 Nomination and Selection of RAB members. Candidates for new RAB members may be presented at any time by current RAB community members. Individuals interested in participating in the RAB must submit a completed RAB Application Form to the Co-chairs in order to be eligble for selection. The community RAB members may, by a two-thirds majority vote, nominate replacement and new RAB members. All RAB members must be approved by the Army's responsible official to ensure diversity and balance in regard to gender, age, race /ethnicity, type of employment, neighborhood, expertise, income, and education levels.

4.4 Appointment / Election of Board Officers
The RAB shall be co-chaired by the LHAAP Site Manager, appointed by the Army, and a RAB community member. The Community Co-Chair shall be elected by a majority vote of the RAB community members. The Community Co-Chair may serve one or more terms, including consecutive terms, if approved by the Board community members. The Community Co-Chair may choose to resign his or her chair without affecting his or her RAB membership. If the Community Co-Chair is unable to attend a RAB meeting, he or she will designate another community member of the RAB to carry out the Community Co-Chairs duties at that meeting. If the LHAAP Site Co-chair is unable to attend a RAB meeting, he or she will designate someone to carry out that Co-chair's duties at that meeting.

4.5 No Compensation
Members shall serve without compensation. All expenses incidental to travel and document review shall be borne by the respective members of their organizations.

4.6 Attendance
Members are expected to attend all RAB meetings. If a member fails to attend two consecutive meetings, the RAB Co-Chairs may ask justification and may ask the member to resign. If the member does not wish to resign, the Community Co-chair may request that community members vote on the membership.

4.7 Terms
The terms of RAB members shall not be limited. This policy will be reviewed every two years. Members of the RAB may choose to fill any vacancies as they occur, seeking candidates from the community as needed.

4.8 Resignation or Removal of Community Members

4.8.1. Any member who determines he or she is unable to continue to participate fully may submit a resignation in writing to either of the Board Co-Chairs. Resigning members may nominate new members to replace them which will be voted on by board members. The Army manager responsible for the installation must ensure new membership continues to reflect the diversity of community interests, by validating new board membership.

4.8.2. The Community Board members in attendance may, by a two-thirds majority vote, remove a community member, if that person is determined to be ineffective or detrimental to the progress of the Board.

STRUCTURE AND OPERATING PROCEDURES

5.1 Meetings will be scheduled on a regular basis and will be open to the public. It is anticipated that meetings will be held on a quarterly basis or as needed. Each meeting will have a purpose and agenda. The agenda items will be compiled by the Co-Chairs. To encourage public attendance and RAB participation, meetings will be held at convenient times and locations. Meeting notice will be provided to the public.

5.2 The LHAAP Site Co-Chair will be responsible for notifying all members of scheduled meetings and providing logistical support.

5.3 The LHAAP Site Co-Chair will be responsible for preparing meeting minutes, including a list of attendees. Before the conclusion of the RAB meeting, the Co-Chairs will query members present for specific concerns and advisory comments. The concerns and comments will be set forth in the meeting minutes to include the RAB's desired methodology for a response. The concerns will remain as open items at following RAB meetings until the issues are resolved. Meeting minutes shall summarize the topics discussed at the RAB meetings;

these will be concise summaries rather than verbatim transcripts to facilitate effective communication.

5.4 The meeting minutes will be reviewed by the RAB members and at the next scheduled RAB meeting, the Co-Chair(s) shall call for any corrections. The RAB will approve the minutes with the corrections noted.

5.5 The RAB shall develop, maintain and use a mailing list of names and addresses of interested parties, who wish to receive information on the cleanup process. Information will be provided to the interested parties in a timely manner.

5.6 Community members will be asked to review and comment on various environmental restoration documents. RAB members may submit written comments to the Community Co-Chair on the subject documents within the time frame specified. The Community Co-Chair shall consolidate comments from the RAB community members and provide them to the LHAAP Site Co-Chair. The LHAAP Site Co-Chair will ensure that a written response is provided to the RAB in a timely manner.

5.7 RAB members who desire to speak to the media should speak only on their own behalf. The official spokesperson(s) for the RAB are the Community and the LHAAP Site Co-Chairs.

5.8 Board members will not make personal attacks or derogatory remarks during the meetings. Repeated offenses will result in a recommendation for removal of the offending party from the RAB by the Co-Chairs.

6. RAB Adjournment

Appropriate circumstances for adjournment include program completion or inadequate sustained community interest. The LHAAP Site Co-Chair shall discuss potential adjournment and consider input from the Board and other stakeholders as appropriate prior to reaching a decision concerning RAB adjournment. If the RAB members decide they do not want to adjourn, the members may agree to decrease the frequency of RAB meetings rather than to adjourn. These guidelines shall expire without further action by the RAB or any other party upon the effective date of adjournment.

7. RAB Dissolution

Appropriate circumstances for dissolution are when a RAB is operating inefficiently or is not fulfilling its intended purpose. When this occurs, the Army's responsible official will make a concerted attempt to resolve the issues that impact the RAB's effectiveness. If unsuccessful, the Army may elect to dissolve the RAB. In the event that the Army elects to dissolve the RAB, the Army's responsible official will follow steps outlined in section 32 CFR 202.10 paragraphs (b) and (d).

7. Effective Date

The effective date of these Guidelines shall be the last date signed by the LHAAP Site Co-Chair or Community Co-Chair.

LHAAP Site Co-Chair — Date: 4/19/12

Community Co-Chair — Date: 4/19/12

APPROVED:

Thomas E. Lederle
Deputy
BRAC Division, ACSIM
U.S. Army

Date: 27 JUNE 2012

LONGHORN ARMY AMMUNITION PLANT
Karnack, Texas

DRAFT FINAL MONTHLY MANAGERS' MEETING

AGENDA

DATE: April 19, 2012
TIME: 2:00 p.m.
PLACE: Call-in: 877-336-1829, Access-8674792, Security-1201 (Courtesy Tulsa District)

Welcome **RMZ**

Action Items

Army

- Review LHAAP-18/24 logs from recent soil sampling (including PID readings).
- Provide opinion pertaining to training requirements of crew performing tree coring
- Provide updated schedule for ongoing LHAAP projects
- Provide construction details of the Groundwater Collection System for LHAAP-18/24
- Provide EPA and TCEQ with letter explaining PBC delay
- Send RAB letter explaining dispute issues

TCEQ

- Review LHAAP-18/24 soil sampling results

EPA

- Review LHAAP-18/24 soil sampling results
- Prepare an attachment to RAB letter regarding outstanding issues, letter will contain decision matrix in chart form to explain issues to the public

Shaw

- Review LHAAP-18/24 logs from recent soil sampling to determine if logs show interface between native soil to the fill material.

Defense Environmental Restoration Program (DERP) PBC Update **PS**

- Document Status/Environmental Sites (Table)
- Groundwater Treatment Plant
- Path forward for ECO

DERP Total Environmental Restoration Contract Update **Army**

- LHAAP-37 Well Installation and results
- Pilot Demonstration Kickoff at LHAAP-37 Status

MMRP Update **Army**

- Update IRP Metals Issue

Programmatic Issues **RMZ/TZ/FD**

- Status of Dispute

USFWS Update **RMZ/PB**

- Environmental Restoration Issues with Transfer Schedule Impact
- USFWS Comments on Documents

EPA – Non-CERCLA

- Update on Phytoforensics Study **TS**

Adjourn

ACRONYM LIST

DERP-	**Defense Environmental Restoration Program**
EPA-	**Environmental Protection Agency**
FS-	**Feasibility Study**
IRP-	**Installation Restoration Program**
ITS-	**Intertek Testing Services**
LHAAP-	**Longhorn Army Ammunition Plant**
MMRP-	**Military Munitions Response Program**
MNA-	**Monitored Natural Attenuation**
PB-	**Paul Bruckwicki**
PBC-	**Performance Based Contract**
PS-	**Praveen Srivastav**
QA-	**Quality Assurance**
QC-	**Quality Control**
RMZ-	**Rose M. Zeiler**
RD-	**Remedial Design**
ROD-	**Record of Decision**
SAP-	**Sampling and Analysis Plan**
TCEQ-	**Texas Commission on Environmental Quality**
USFWS-	**United States Fish and Wildlife Service**

LONGHORN ARMY AMMUNITION PLANT
MONTHLY MANAGERS' MEETING

Location	Longhorn Army Trailer, Karnack, Texas		
Date	19-~~APR~~2012	**Time**	2:00 PM

ATTENDEES

Name (printed)	Signature	Organization	Phone	E-mail
Longhorn Team Members				
Rose M. Zeiler		BRAC	(479) 635-0110	rose.zeiler@us.army.mil
Marilyn Plitnik		USAEC	(210) 424-8779	marilyn.a.plitnik@us.army.mil
Aaron Williams		USACE, Tulsa	(918) 669-4915	aaron.k.williams@usace.army.mil
John Lambert		USACE, Tulsa	(918) 669-4992	john.r.lambert@SWT03.usace.army.mil
Stephen Tzhone		USEPA, Dallas	(214) 665-8409	tzhone.stephen@epa.gov
Terry Burton		USEPA, Dallas	(214) 665-7139	Burton.Terry@epa.gov
Kent Becher		USGS, Dallas	(817) 253-0356	kdbecher@usgs.gov
Fay Duke		TCEQ, Austin	(512) 239-2443	fduke@tceq.state.tx.us
Dale Vodak	By Telephone	TCEQ, Tyler	(903) 535-5147	dvodak@tceq.state.tx.us
Barry Forsythe	By Telephone	USFSW, Dallas	(214) 665-8467	forsythe.barry@epa.gov
Paul Bruckwicki		USFSW, Karnack	(903) 679-4536	paul_bruckwicki@fws.gov
Mark Williams		USFSW, Karnack	(903) 679-9144	mark_williams@fws.gov
Praveen Srivastav		SHAW, Houston	(281) 531-3188	praveen.srivastav@shawgrp.com
Van Vangala		SHAW, Houston	(281) 531-3159	van.vangala@shawgrp.com
Wendy Lanier		USACE Tulsa	918 669 4915	Wendy.d.Lanier@usace.army.mil
Rick Mayer		USEPA	214-665-7442	mayer.richard@epa.gov
Robin Paul		USAEC	210-466-2002	robin.e.paul4.civ@mail.mil
PAUL TORCHETTI		EPA	214 665 6464	

Prepared by
Tulsa District Corps of Engineers

Subject: **Draft Minutes, Monthly Managers Meeting, Longhorn Army Ammunition Plant (LHAAP)**

Location of Meeting: **Army Site Trailer (Call-in Number Provided)**
Date of Meeting: **April 19, 2012; 2:00 PM – 4:00 PM**

Meeting Participants:

BRAC:	Rose M. Zeiler
USACE-Tulsa:	John Lambert, Aaron Williams, Wendy Lanier
USAEC	Robin Paul
Shaw:	Praveen Srivastav, Van Vangala
USEPA Region 6:	Steve Tzhone, Paul Torcoletti, Rich Mayer; Barry Forsythe – USFWS Liason (Teleconference), Kent Becher - USGS Liason
TCEQ:	Fay Duke, Dale Vodak (Teleconference)
USFWS:	Paul Bruckwicki

Welcome **Rose M. Zeiler**

Action Item Status
Army

- Review LHAAP-18/24 logs from recent soil sampling (including PID readings). -USACE discussed soil sampling borings with Shaw's Geologist and found that a backfill material/native soil interface was not generally observed for any of the soil borings. Since a backfill material was not observed soil samples were collected at 10-12 feet, consistent with the agreed upon sampling approach. Except for a couple instances in which water was encountered at ~10 feet, in which case soil samples were collected at 9-10 feet. PID readings were collected and results are located in the left column of the soil boring logs.
- Provide opinion pertaining to training requirements of crew performing tree coring. -EPA recommended 24 hour training with contractor responsible for ensuring workers receive training, USACE concurred with 24 hour training recommendation.
- Provide updated schedule for ongoing LHAAP projects. -Pending, EPA reiterated that until a new schedule is provided the July 2011 schedule is still being used. EPA further stated that all draft, draft final and final dates should be presented as hard dates and without that Army risked being assessed stipulated penalties. There was some discussion, with TCEQ noting that only the draft primary document has a hard date that is subject to stipulated penalties and that all dates following a future draft document, including the draft final, final and follow-on documents, should consist of durations that slide as a result of schedule extensions in accordance with the FFA. All agreed the schedule should be consistent with FFA.

  There was also discussion of force majeure after Army noted that the schedule extension is based on force majeure as a result of the contract award being protested. Some discussion followed regarding whether a contract protest constituted a force majeure.

- Provide construction details of the Groundwater Collection System for LHAAP-18/24. -Wendy Lanier explained that unless construction details were modified from the work plan during construction there would not be "As-Built Drawings", the drawings from the work plan would be considered to be how the Groundwater Collection System was constructed. Nine boxes have been requested from records holding and several books from the Army trailer show promise in answering questions regarding the Groundwater Collection System. Conclusions of findings will be provided in a few months. Army suggested a meeting to discuss Site 18/24. A meeting will be held in Dallas at the Dallas USACE Office on June 20, 2012.
- Provide EPA and TCEQ with letter explaining PBC delay. –Pending, Army will provide letter with new LHAAP schedule
- Send RAB letter explaining dispute issues. –Rather than send a letter it was decided to discuss in general terms the 2 formal disputes (one regarding 8 issues arising from 4 RODs and one issue for stipulated penalty). The details of the dispute will be provided in the 2011 Administrative Record which will be updated by the end of the month.

TCEQ

- Review LHAAP-18/24 soil sampling results -Done

EPA

- Review LHAAP-18/24 soil sampling results- Done
- Prepare an attachment to RAB letter regarding outstanding issues, letter will contain decision matrix in chart form to explain issues to the public –Done – see above.

Shaw

- Review LHAAP-18/24 logs from recent soil sampling to determine if logs show interface between native soil and the fill material. -Done

Defense Environmental Restoration Program (DERP) PBC Update

- Document Status/Environmental Sites (Table) – LHAAP-03 EE/CA : Responses to regulator comments are drafted and RTCs will be provided to regulators within a week. LHAAP-04 FS : RTCs have been submitted to regulators for review. LHAAP-12 RAO Reports : RTCs have been submitted to regulators for review. The UIC report will be incorporated in the next quarterly GWTP Report.
- Groundwater Treatment Plant
  - The GWTP is functioning normally. The treated effluent water is being discharged to the burning ground (via sprinkler system) and injected in ICTs. Regulators requested that future GWTP quarterly reports include discussion of pump tests/problems/replacement, system/well maintenance. Van stated that well data from the March sampling will be ready next week and will be in the Quarterly Report.
- Path forward for ECO- RTCs have been provided to regulators, USACE stated that this ends the ECO effort under this contract and that a new contract will be used to address ECO. TCEQ stated comments would be back in May. Army addressed a TCEQ concern over an RTC related to soil excavation activities at LHAAP-32 which only referenced a reference in a Plexus document. TCEQ was informed that Bill Corrigan had been on site conducting the excavation at LHAAP-32 and has been contacted to retrieve the completion report. Fay requested that the soil excavation/completion report for LHAAP-32 be included in the Admin Record.

DERP Total Environmental Restoration Contract Update

- *LHAAP-37 Well Installation and results*
  - No news to report
- *Pilot Demonstration Kickoff at LHAAP-37 Status*
  - Rose reported to AEC that a GEFBS problem (funding a line of accounting) is preventing initiation of drilling activities at the site.

MMRP Update **Army**

- Update IRP Metals Issue: Steve and Fay will get together to discuss. Plan for a teleconference meeting for regulators and Army to discuss in May.

Programmatic Issues

- Status of Dispute
  - Dispute has gone up to SEC and the public will be notified in accordance with the FFA.

USFWS Update

- Environmental Restoration Issues with Transfer Schedule Impact
  - USFWS and Army reported that a productive meeting was held in Albuquerque and the meeting resulted in an agreement on the permit, the Maintenance Services MOA, the ECP VI parcels, surface water rights, and the transfer of the Landfill 12 Parcel.
- USFWS Comments on Documents - None. Paul Bruckwicki stated that there may be concern stemming from the dispute resolution issues. Fay Duke (TCEQ) noted that the selected remedies are protective and that the dispute issues are a matter of policy.

EPA – Non-CERCLA

- Update on Phytoforensics Study- No news to report **TS**

The next meeting date is scheduled for May 16, 2012 at 10:00 A.M.

Meeting Adjourned

LONGHORN ARMY AMMUNITION PLANT
Karnack, Texas

DRAFT MONTHLY MANAGERS' MEETING

AGENDA

DATE:	May 21, 2012
TIME:	10:00 a.m.
PLACE:	Call-in: 877-336-1829, Access-8674792, Security-1201 (Courtesy Tulsa District)

Welcome **RMZ**

Action Items

Army

- Provide updated schedule for ongoing LHAAP projects with letter explaining PBC delay
- Provide construction details of the Groundwater Collection System for LHAAP-18/24, meeting at Longhorn June 20th

Defense Environmental Restoration Program (DERP) PBC Update **KE**

- LHAAP-04 Final FS is being prepared in track change mode for Army's review. Expect to be sent to Army next week.
- LHAAP-03 RTCs – resolution in progress. Shaw provided as response to Army yesterday.
- LHAAP-12 RTCS in regulatory review.
- GWTP operations normal. No major issues to report. Shaw's POP extended till June 30. Shaw will prepare a quarterly report for the period April-June 2012.

DERP Total Environmental Restoration Contract Update **Army**

- LHAAP-37 Pilot Demonstration Status

MMRP Update **Army**

- Update IRP Metals Issue
- EPA Sampling of Groundwater

Other Environmental Restoration **Army**

- June 20 LHAAP Meeting re Site 18/24 - Update

Programmatic Issues **RMZ/TZ/FD**

- Status of Dispute

USFWS Update **RMZ/PB**

- Environmental Restoration Issues with Transfer Schedule Impact
- USFWS Comments on Documents

EPA – Non-CERCLA

- Update on Phytoforensics Study **TS**

Adjourn

ACRONYM LIST

DERP-	**Defense Environmental Restoration Program**
EPA-	**Environmental Protection Agency**
FS-	**Feasibility Study**
IRP-	**Installation Restoration Program**
ITS-	**Intertek Testing Services**
LHAAP-	**Longhorn Army Ammunition Plant**
MMRP-	**Military Munitions Response Program**
MNA-	**Monitored Natural Attenuation**
PB-	**Paul Bruckwicki**
PBC-	**Performance Based Contract**
PS-	**Praveen Srivastav**
QA-	**Quality Assurance**
QC-	**Quality Control**
RMZ-	**Rose M. Zeiler**
RD-	**Remedial Design**
ROD-	**Record of Decision**
SAP-	**Sampling and Analysis Plan**
TCEQ-	**Texas Commission on Environmental Quality**
USFWS-	**United States Fish and Wildlife Service**

Revised Project Schedule with Interim Evaluation Milestones
(16 May 2012)

Task	FY12												FY13												FY14											
	1st QTR			2nd QTR			3rd QTR			4th QTR			1st QTR			2nd QTR			3rd QTR			4th QTR			1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
Contract Award (start Oct 1st)	C																																			
Demo Plan Development	C	C	C																																	
Regulatory Approval				C	C																															
Site Preparation						C	C																													
System Installation						→	→	→																												
Baseline Sampling								→	→																											
Initiate System Operation									→	→																										
Quarterly Sampling										→	→																									
Interim Reporting/ Evaluation Milestone																																				
Final Reporting																																				
Demobilize System																																				

"C" indicates the task is complete.

"→" indicates the shift in the start of the system installation and sampling schedule caused by Government financial management problems.

Prepared by
Tulsa District Corps of Engineers

Subject: **Draft Minutes, Monthly Managers Meeting, Longhorn Army Ammunition Plant (LHAAP)**

Location of Meeting: **Teleconference**
Date of Meeting: **May 21, 2012; 10:00 AM – 11:00 AM**

Meeting Participants:

BRAC:	Rose M. Zeiler
USACE-Tulsa:	John Lambert, Aaron Williams, Wendy Lanier
USAEC	Marilyn Plitnik, Robin Paul
Shaw:	Praveen Srivastav, Van Vangala
USEPA Region 6:	Steve Tzhone, Paul Torcoletti, Kent Becher - USGS Liason
TCEQ:	Fay Duke
USFWS:	Paul Bruckwicki

Welcome **Rose M. Zeiler**

Action Item Status
Army

- Provide updated schedule for ongoing LHAAP projects with letter explaining PBC delay. – Rose Zeiler explained that letter is ready, Tom Lederle is reviewing and it should be out soon.
- Provide construction details of the Groundwater Collection System for LHAAP-18/24, meeting at Longhorn June 20th. Wendy Lanier provided an update that she has found some information but there are still a lot of boxes and more to find. Wendy will try to get some information out to the group before the meeting and plans to present a power point at the June 20th meeting. Rose asked Kent if he would also prepare a presentation of his report on the evaluation of the IRA at Site 18/24 for the meeting on the 20th and he agreed. Group discussed plans for meeting June 19th at the GWTP at 2:00pm to first observe the tree coring activities and then observe field activities for LHAAP-37 Pilot Bioplug demonstration. USACE will look into reserving a conference room at the Hampton for the June 20th meetings beginning at 8:30am. Meetings will include the Monthly Manager's meeting, presentation of construction details of the Groundwater Collection System for LHAAP-18/24 and the USGS Evaluation of the Interim Remedial Action (18/24).

Defense Environmental Restoration Program (DERP) PBC Update

- LHAAP-04 Final FS is being prepared in track change mode for Army's review. Expect to be sent to Army next week.
- LHAAP-03 RTCs – resolution in progress. Shaw provided a response to Army yesterday. Aaron Williams stated that the response had been forwarded to the regulators and that TCEQ was looking for a map showing where lead exceeded RRS2 . Shaw asked for the request to be forwarded and they would take a look.
- LHAAP-12 RTCS in regulatory review. The Army thought that regulatory approval had already been received for the LHAAP-12 RAO Reports. Remaining concerns were related to the monitoring network and sampling frequency. The Army has agreed to collect

groundwater elevation information from all the wells at LHAAP-12 during the next sampling event and will sample in a different season. The results and any changes in monitoring will be evaluated at the Five Year Review. Upon review of emails it appeared that concurrence had not yet been received from TCEQ. TCEQ action is to send concurrence email.

- GWTP operations normal. No major issues to report. Shaw's POP extended till June 30. Shaw will prepare a quarterly report for the period April-June 2012.Groundwater Treatment Plant – TCEQ asked how much volume of extraction went up with functioning pumps? Shaw will check and get back to the group. Rose asked about the status of communication cable at LHAAP-16 that was damaged during the recent controlled burn by the Refuge. Shaw indicated that the cable was fixed but that they still can't see level in the tank but that this was not critical for continued operation.

DERP Total Environmental Restoration Contract Update

- LHAAP-37 Pilot Demonstration Status
  - Currently finishing up electric/putting utilities in. June 19th group will see drilling and installation of system.

MMRP Update **Army**

- Update IRP Metals Issue
- EPA Sampling of Groundwater- TCEQ commented that EPA hadn't identified instrument for sampling yet. EPA plans to conduct sampling in late June or early July. EPA was concerned that Shaw's SOP called for a 14 day wait between redevelopment and sampling and whether this needed to be followed? John Lambert replied no, 14 days is not a magic/set number. Could be less than 14 days in which equilibrium is established. EPA will come up with their own language/procedure for time between redevelopment and sampling. EPA stated that funding has arrived for this effort. John Lambert informed the group that USACE scientist provided some additional information on the 6860 method and John forwarded the information to the group. EPA asked USACE if they had the well construction documentation for wells 131 & 132 for LHAAP-001-R-01 and for wells 127 & 128 for LHAAP-003-R-01.

Programmatic Issues

- Status of Dispute
  - Dispute has gone up to SEC and the public will be notified in accordance with the FFA.

Other Environmental Restoration **Army**

- June 20 LHAAP Meeting re Site 18/24 – Update- Already discussed with action items.

USFWS Update

- Environmental Restoration Issues with Transfer Schedule Impact- None.
- USFWS Comments on Documents – None.

EPA – Non-CERCLA

- Update on Phytoforensics Study- Army will submit comments for the QAPP **TS**

The next meeting date is scheduled for June 20, 2012 at 8:30 A.M.

Meeting Adjourned

LONGHORN ARMY AMMUNITION PLANT
Karnack, Texas

DRAFT MONTHLY MANAGERS' MEETING

AGENDA

DATE:	June 20, 2012
TIME:	8:30 a.m.
PLACE:	Hampton Inn, Marshall Texas

Welcome **RMZ**

Action Items

Army

- Provide updated schedule for ongoing LHAAP projects with letter explaining PBC delay *Completed*
- Provide construction details of the Groundwater Collection System for LHAAP-18/24, meeting at Longhorn June 20th *Completed with today's presentation*
- **EPA**
- Prepare presentation of USGS Site 18/24 IRA Evaluation Report *Completed with today's presentation*

Defense Environmental Restoration Program (DERP) PBC Update **KE**

- LHAAP-04 Final FS in track change mode is in regulatory review.
- LHAAP-03 RTCs in regulatory review.
- LHAAP-12 RTCS in regulatory review. Received EPA concurrence, awaiting TCEQ written concurrence following verbal concurrence.
- GWTP operations normal. No major issues to report. Shaw's POP extended till June 30. Shaw will prepare a quarterly report for the period April-June 2012. 1st Qtr report for the period January-March 2012 submitted.

DERP Total Environmental Restoration Contract Update **Army**

- LHAAP-37 Pilot Demonstration Status
- Status of Supplemental BERA

MMRP Update **Army**

- Update IRP Metals Issue Status
- EPA Sampling of Groundwater

Other Environmental Restoration **Army**

- Status Environmental Restoration Contract
- Status of Schedule change Request and Force Majeure

Programmatic Issues **RMZ/TZ/FD**

- Status of Dispute

USFWS Update **RMZ/PB**

- Environmental Restoration Issues with Transfer Schedule Impact

- USFWS Comments on Documents

EPA – Non-CERCLA

- Update on Phytoforensics Study **TS**

Adjourn

ACRONYM LIST

DERP-	**Defense Environmental Restoration Program**
EPA-	**Environmental Protection Agency**
FS-	**Feasibility Study**
IRP-	**Installation Restoration Program**
ITS-	**Intertek Testing Services**
LHAAP-	**Longhorn Army Ammunition Plant**
MMRP-	**Military Munitions Response Program**
MNA-	**Monitored Natural Attenuation**
PB-	**Paul Bruckwicki**
PBC-	**Performance Based Contract**
PS-	**Praveen Srivastav**
QA-	**Quality Assurance**
QC-	**Quality Control**
RMZ-	**Rose M. Zeiler**
RD-	**Remedial Design**
ROD-	**Record of Decision**
SAP-	**Sampling and Analysis Plan**
TCEQ-	**Texas Commission on Environmental Quality**
USFWS-	**United States Fish and Wildlife Service**

LHAAP Monthly Managers Meeting
June 20, 2012

INFORMATION UPDATE
ON
INTERIM REMEDIAL ACTION
AT BURNING GROUND NO.3
FOR
ICT CONSTRUCTION & SOURCE REMOVAL

DRAFT TIME LINE FOR BG 3 -LHAAP 18/24

Dec-91	FFA
May-93	Data Summary Report
Nov-93	Additional RI
Dec-93	EA for IRA completed
Feb-94	Phase 1 BG 3 - Treatability Studies
Apr-94	Phase II Pilot Study (ICT1, ICT2, HEW, & VEW)
Jul-94	IRA Proposed Plan
Sep-94	IRA Final Workplan
Jul-95	Completed 20 new borings for Source material outside
Oct-95	Completed 101 borings for ICT Design
Dec-95	IRA ROD
Dec-96	Construction of GWTP
Apr-97	Construction of LTTP
Jun-97	Soil Source Removal
Nov-97	ICT Construction
Feb-98	Dismantle LTTP
Apr-98	GWTP Operational

Discovered to Date for Collection System

- Construction QA and QC reports
- 101 Bore Hole Documentation for ICT
- Construction Profiles of 14 ICT's
- State Plane Survey Data for 101 Bore Holes & Piezometers
- Geomembrane only in ICT 12 (southwest side) & ICT 13 (northwest side)

00114060

CONFIDENTIAL - PROPRIETARY!

THIS DRAWING AND ALL INFORMATION CONTAINED HEREIN ARE THE PROPERTY OF DOW ENVIRONMENTAL. REPRODUCTION OR TRANSMITTAL IS PROHIBITED.

FILE.dwg: S:\2379\DEIDWG\CIVIL\GWCP111.DWG
PLOTTED: 05/18/95 2:00 PM

DRAWING NUMBER	DRAWING TITLE
	REFERENCE DRAWINGS

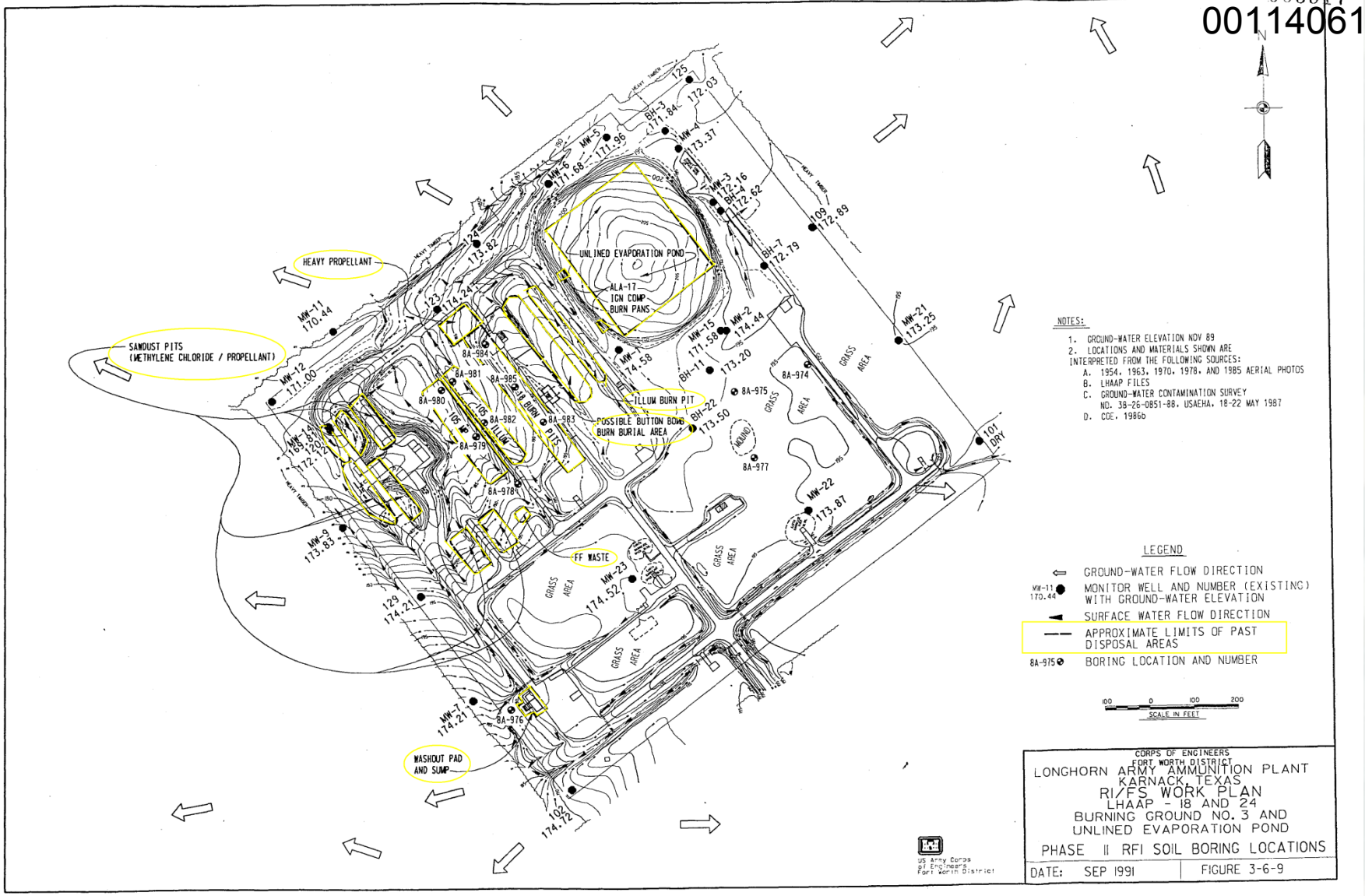
REV	ISSUE DESCRIPTION	ISSUE DATE	DESIGN	CHK'D	APP'D	APP'D	APP'D
	ISSUED FOR COMMENTS	05/18/95	GWB	RSP			

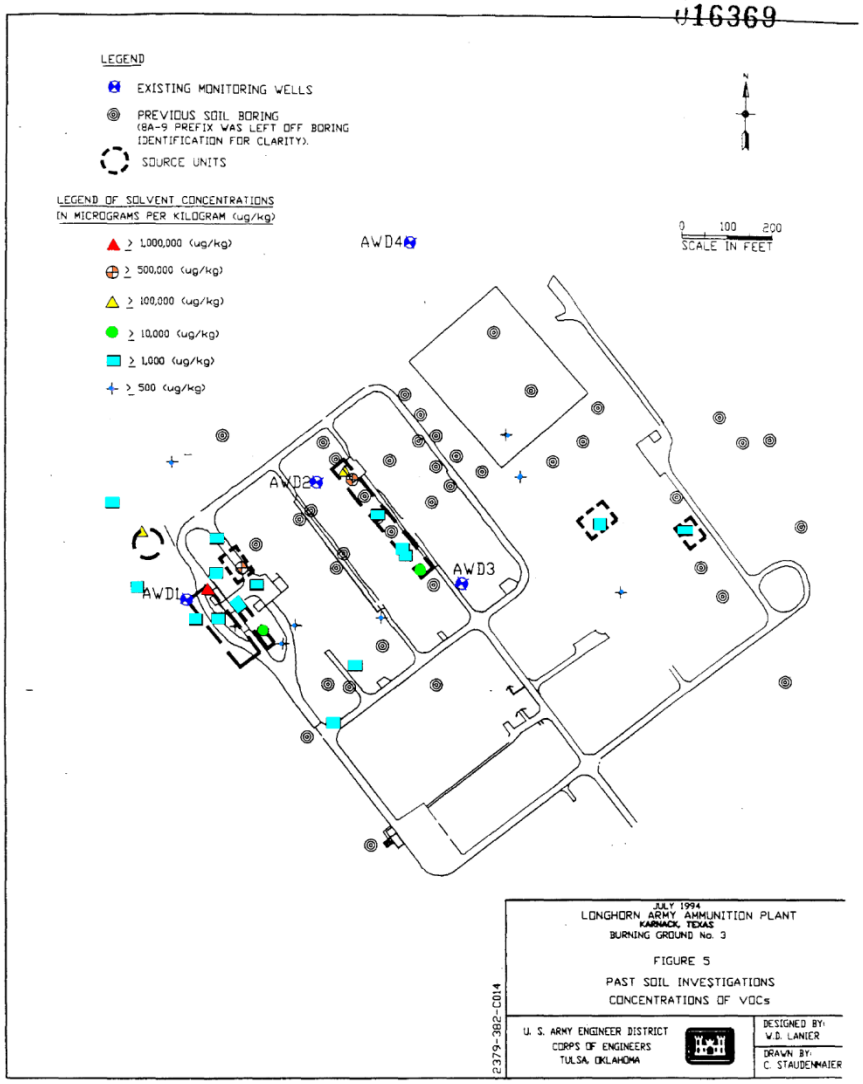
Dow Dow Environmental

CONCEPTUAL WELLHEAD AND UNDERGROUND GATHERING SYSTEM PIPING & PLOT PLAN
BURNING GROUND No. 3
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

PROJECT	PROJECT NO.	SCALE	DRAWING NUMBER	REV
LHAAP 18 & 24 III, IRA	2379	1"=100'	GWCP-III-1	A

BUILDING STRONG®


HEAVY PROPELLANT
SAWDUST PITS
(METHYLENE CHLORIDE / PROPELLANT)
UNLINED EVAPORATION POND
ALA-17
IGN COMP
BURN PANS
ILLUM BURN PIT
POSSIBLE BUTTON BOMB
BURN BURIAL AREA
FF WASTE
WASHOUT PAD
AND SUMP
GRASS AREA
MOUND
NOTES:
1. GROUND-WATER ELEVATION NOV 89
2. LOCATIONS AND MATERIALS SHOWN ARE INTERPRETED FROM THE FOLLOWING SOURCES:
A. 1954, 1963, 1970, 1978, AND 1985 AERIAL PHOTOS
B. LHAAP FILES
C. GROUND-WATER CONTAMINATION SURVEY NO. 38-26-0851-88, USAEHA, 18-22 MAY 1987
D. COE, 1986b
LEGEND
GROUND-WATER FLOW DIRECTION
MW-11 170.44 MONITOR WELL AND NUMBER (EXISTING) WITH GROUND-WATER ELEVATION
SURFACE WATER FLOW DIRECTION
APPROXIMATE LIMITS OF PAST DISPOSAL AREAS
8A-975 BORING LOCATION AND NUMBER
100 0 100 200
SCALE IN FEET
US Army Corps of Engineers Fort Worth District
CORPS OF ENGINEERS
FORT WORTH DISTRICT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
RI/FS WORK PLAN
LHAAP - 18 AND 24
BURNING GROUND NO. 3 AND
UNLINED EVAPORATION POND
PHASE II RFI SOIL BORING LOCATIONS
DATE: SEP 1991
FIGURE 3-6-9


#16369
LEGEND
EXISTING MONITORING WELLS
PREVIOUS SOIL BORING
(8A-9 PREFIX WAS LEFT OFF BORING IDENTIFICATION FOR CLARITY).
SOURCE UNITS
LEGEND OF SOLVENT CONCENTRATIONS
IN MICROGRAMS PER KILOGRAM (ug/kg)
≥ 1,000,000 (ug/kg)
≥ 500,000 (ug/kg)
≥ 100,000 (ug/kg)
≥ 10,000 (ug/kg)
≥ 1,000 (ug/kg)
≥ 500 (ug/kg)
AWD4
AWD2
AWD3
AWD1
0 100 200
SCALE IN FEET
JULY 1994
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
BURNING GROUND No. 3
FIGURE 5
PAST SOIL INVESTIGATIONS
CONCENTRATIONS OF VOCs
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
TULSA, OKLAHOMA
DESIGNED BY: W.D. LANIER
DRAWN BY: C. STAUDENMAIER
2379-302-C014

1-10

IRA Data Update continued

- Piping and Instrument Diagrams for Sumps
- Areas of Source Removal within BG 3 Fence
- Pump/Flow test results 1998
- Photographs of IRA Construction

Source Material Near ACD

FOLLOW-UP

- USACE will provide scanned copies of all drawings/documents
- USACE will write a summary MFR with findings
- Information will be added to Administrative Record

Evaluation of Interim Remedial Action at Site 18/24, Longhorn Army Ammunition Plant, Karnack, Texas

Longhorn Superfund Site Managers Meeting Marshall, Texas, June 20, 2012

Kent Becher, Chris Braun, and Daniel Pearson

USGS science for a changing world

Study Background

- EPA asked the USGS to review the LHAAP Five-Year Review Report to determine if there were IRAs that might need additional data collected beyond what was covered in the Five-Year Review.

- USGS reviewed the document and recommended collecting additional data at site 18/24 because few water-quality data have been collected since the IRA was modified in 2007.

USGS
science for a changing world

Additional Study Background

- Data collected from several wells by Shaw Environmental, Inc. at site in March 2010 were compared to data collected at that those particular wells in 2009.

- USEPA and TCEQ have requested a list of the wells sampled in November 2009, along with the data for COC's where the concentrations exceed Federal or State standards.

USGS
science for a changing world

Project Plan

- TVA and USGS wrote a work plan and QAPP that was approved by the EPA.

- USGS selected and prioritized the wells for data collected on the basis of available historical data, including well depth, and location.

- TVA was tasked with collecting water-quality samples and measuring water-level altitudes at a subset of 49 wells at or near site 18/24.

- The data TVA collected was evaluated along with historical data. Groundwater-level altitudes, contaminant concentrations, and plume locations over time were evaluated.

USGS
science for a changing world

Purpose of Study

➢Changes in groundwater-level altitudes were evaluated to better understand horizontal and vertical flow. Groundwater-level altitudes, contaminant concentrations and plume locations were evaluated for three time periods:

- May 1994 (before IRA implementation)
- May 2006 (during IRA implementation and before IRA modification)
- November 2009 (after reinjection modification in 2007)

USGS science for a changing world

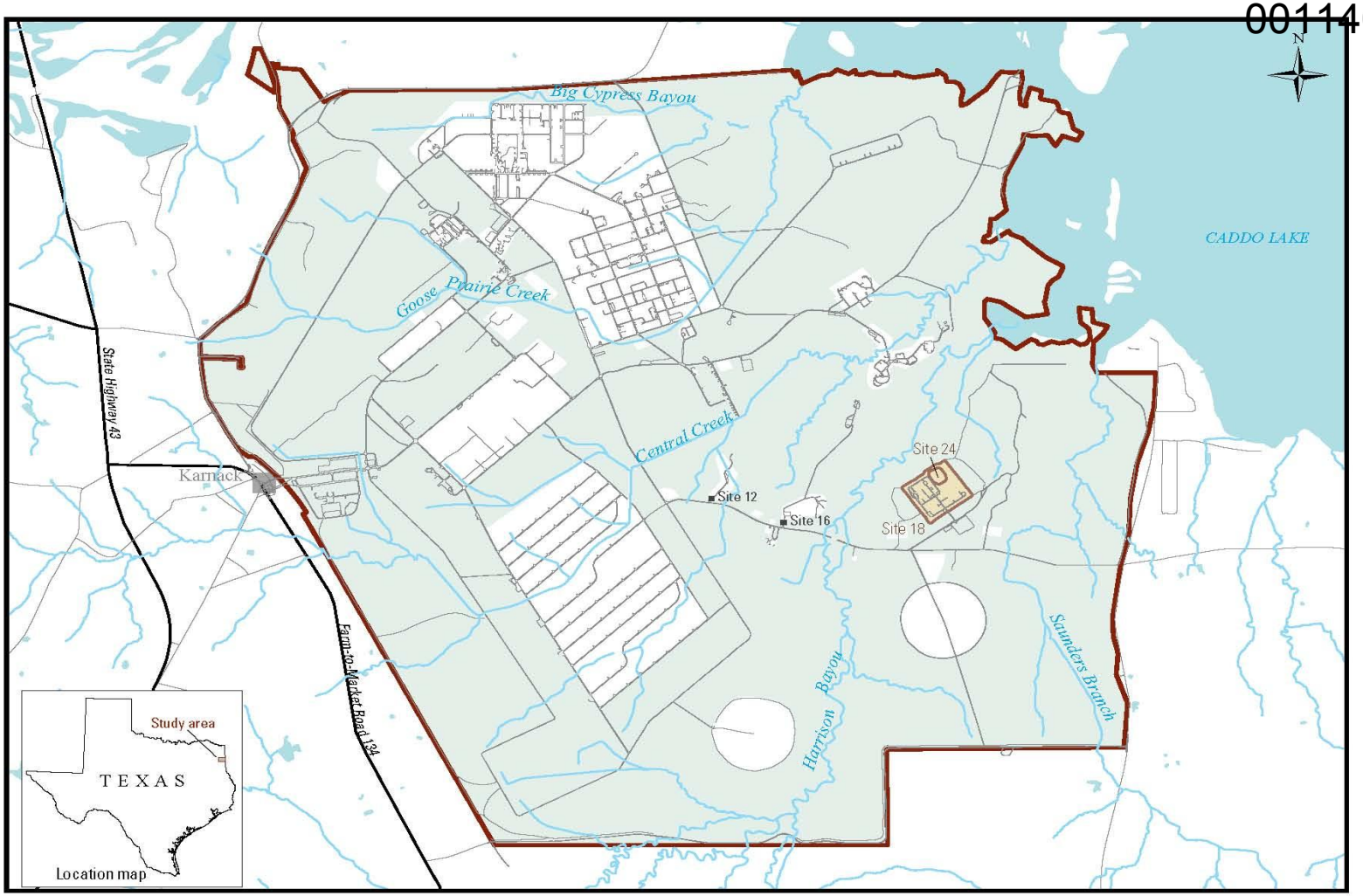


Figure 1. Locations of sites 12, 16, and 18/24, Longhorn Army Ammunition Plant, Karnack, Texas.

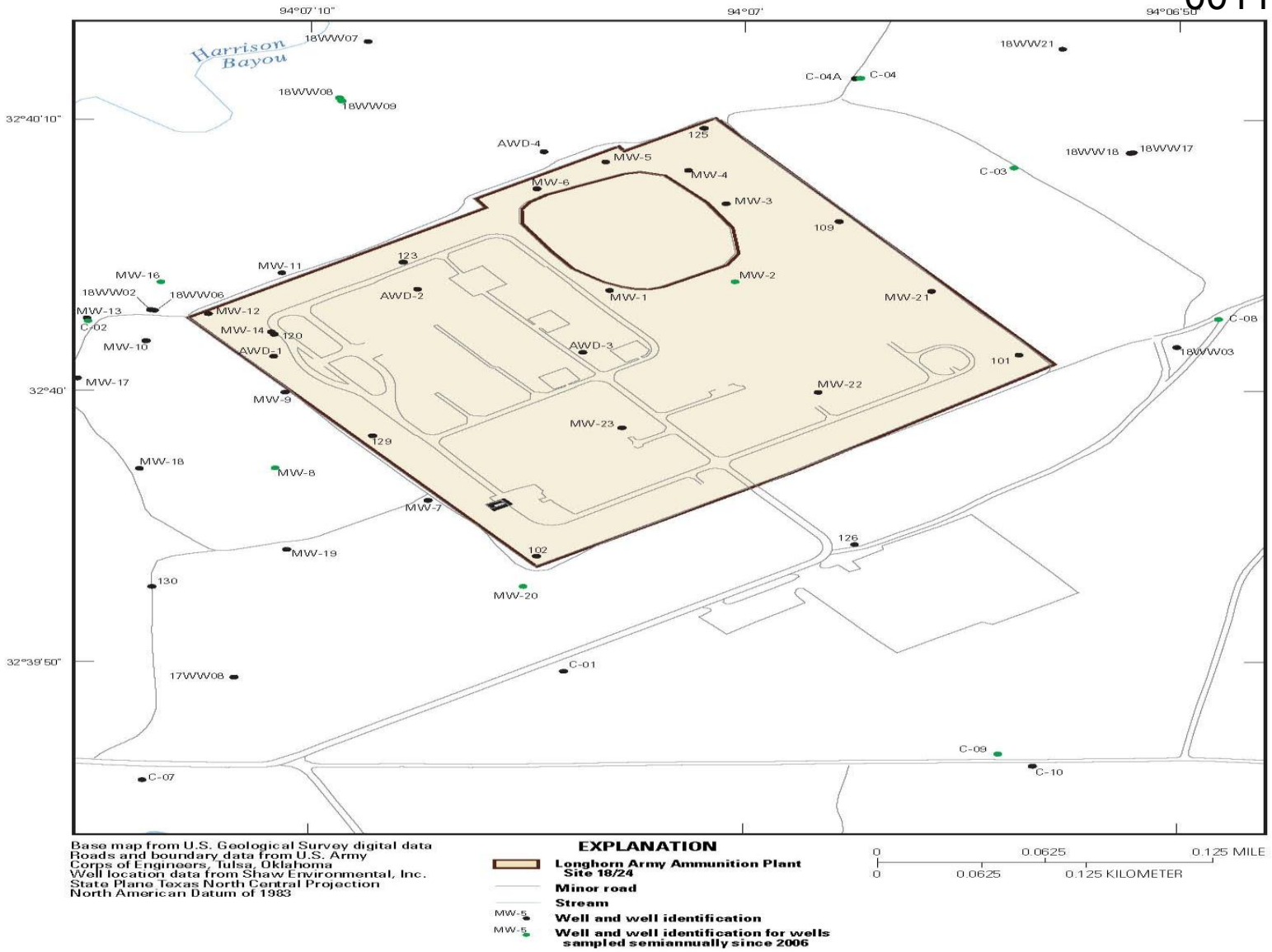


Figure 3. Locations of monitoring wells, Longhorn Army Ammunition Plant site 18/24, near Karnack, Texas.

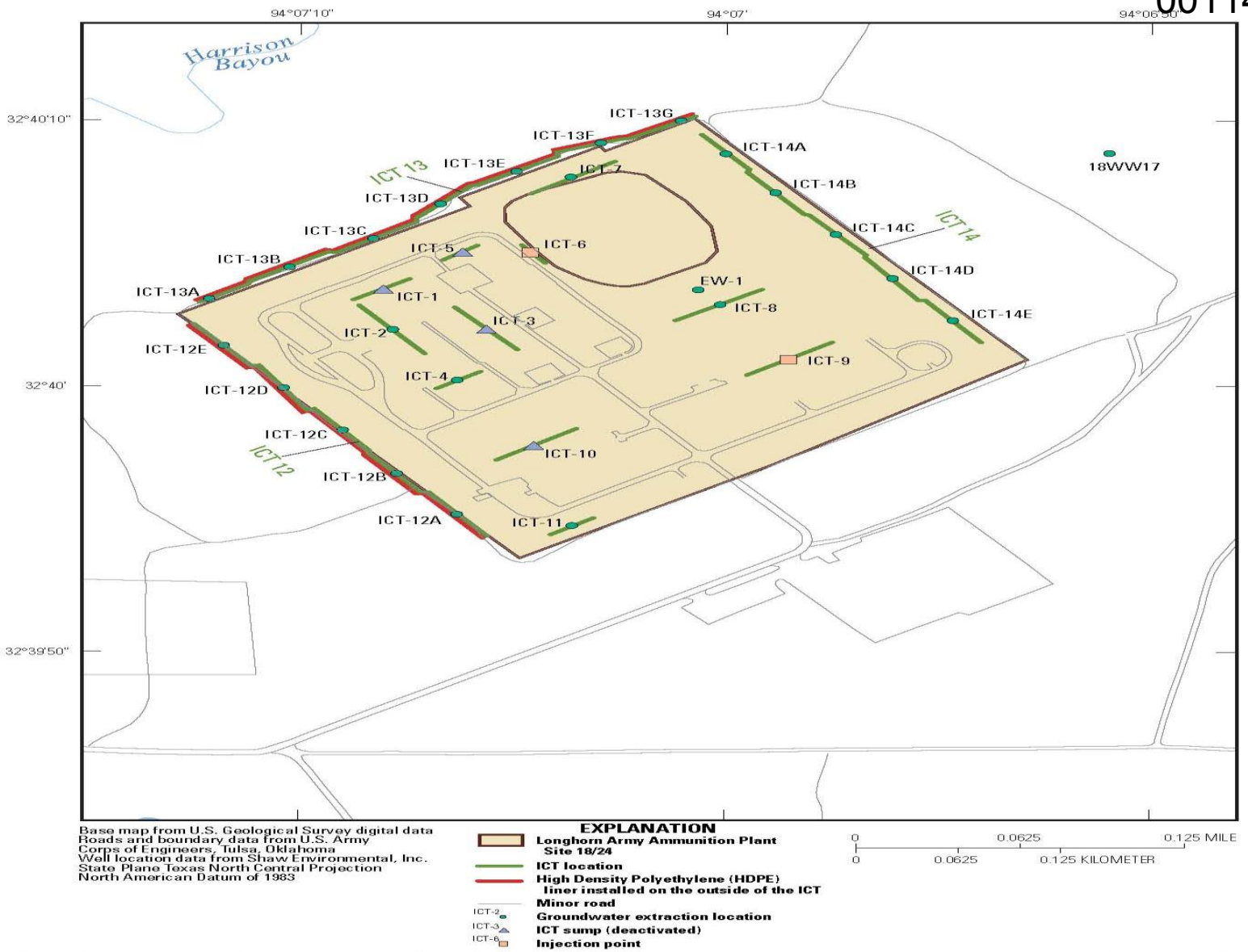


Figure 2. Locations of interceptor trenches (ICTs) and injection points for reinjecting treated groundwater at Longhorn Army Ammunition Plant site 18/24, near Karnack, Texas (Shaw Environmental, Inc., 2010).

Groundwater-level altitude and flow direction in 1994:

- Groundwater high identified in a north to south orientation along the western edge of site.
- Groundwater flowed radially outward from this groundwater high toward Harrison Bayou and Saunders Branch.

USGS
science for a changing world

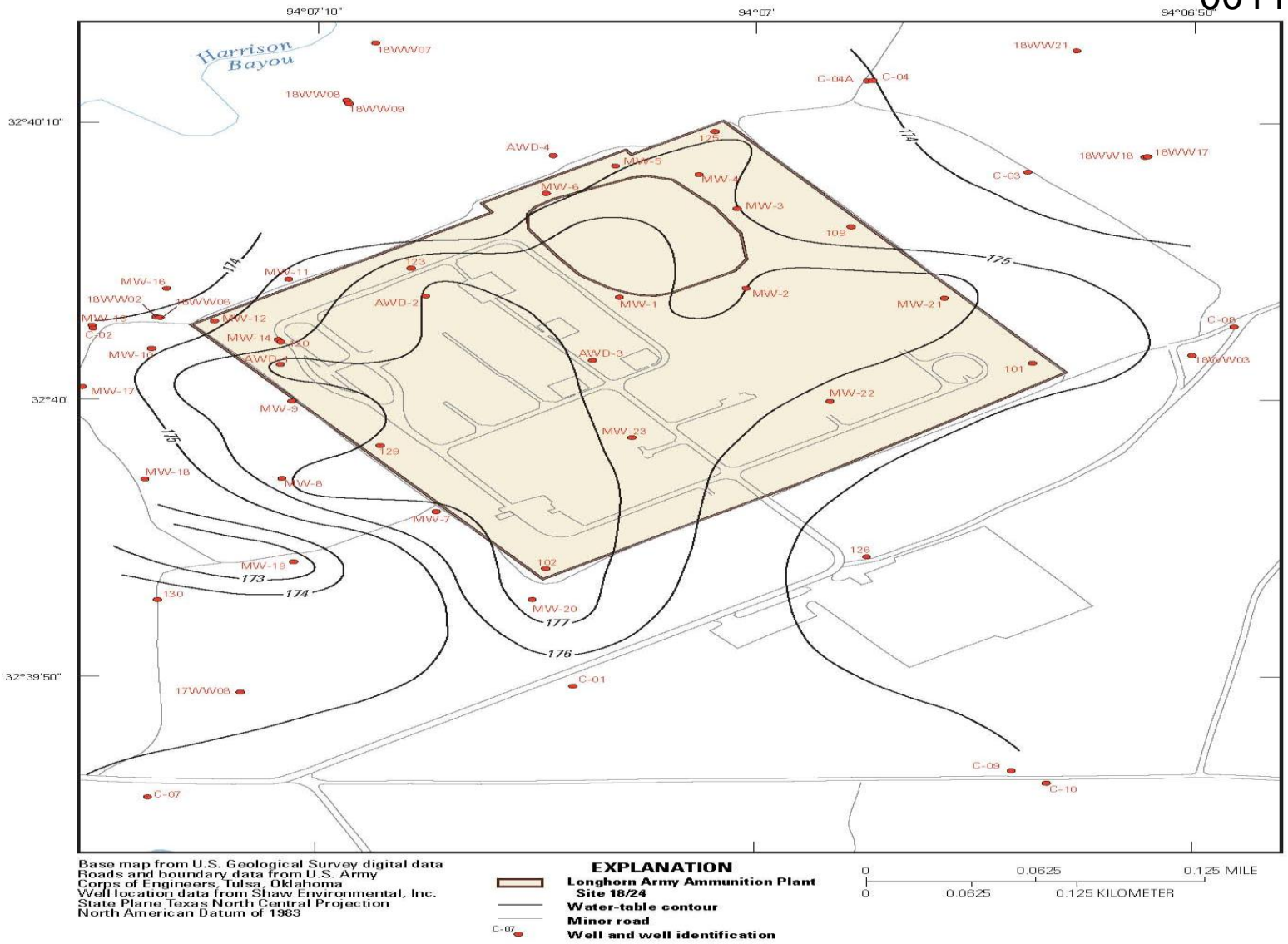


Figure 4. Groundwater-level altitude contours in April 1994 (before interim remedial actions began in 1998), in and near Longhorn Army Ammunition Plant site 18/24, near Karnack, Texas. Modified from U.S. Environmental Protection Agency, 1995.

Groundwater altitude and flow direction in 2006:

- The groundwater high was identified; this high was orientated in a northeast to southwest direction.
- The groundwater flowed from this high toward the northwest, northeast, and southeast toward Harrison Bayou and other small drainages.

Groundwater-level altitude and flow direction 2006—Cont.

- A groundwater high was located in the southwestern corner of site where groundwater-level altitudes were about 5 ft higher than surrounding groundwater-level altitudes.
- The groundwater gradient in 2006 within the containment zone at site had flattened since the installation of the IRA.

USGS science for a changing world

Groundwater-level altitude and flow direction 2006—Cont.

- Groundwater-level altitudes had declined about 8 to 9 ft across site since 1994.

USGS science for a changing world

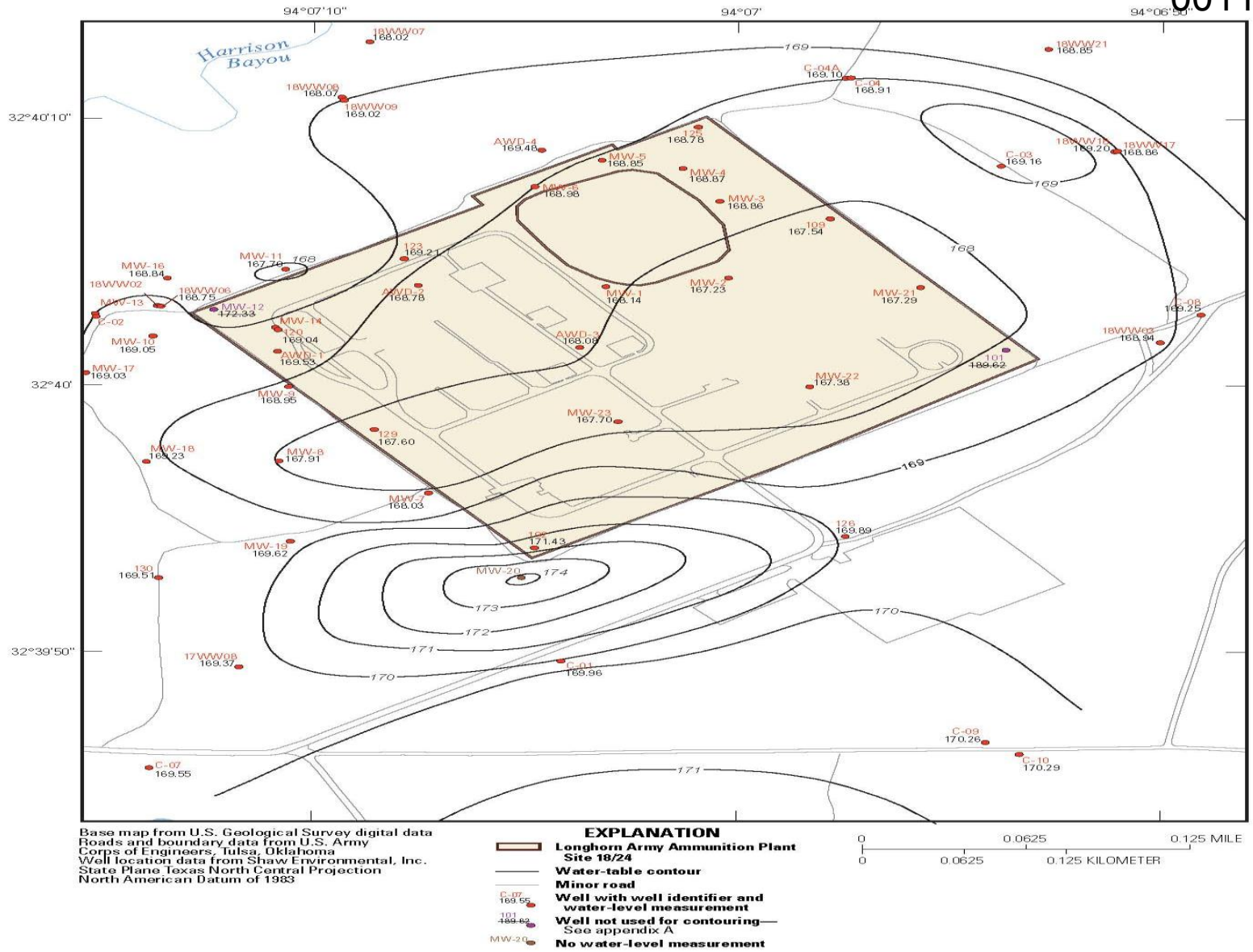


Figure 5. Groundwater-level altitude contours in May 2006 (after installation of interim remedial actions in 1998 and before reinjection of treated groundwater began in 2007), in and near Longhorn Army Ammunition Plant site 18/24, near Karnack, Texas.

Groundwater-level altitude and flow direction in 2009:

- By 2009 groundwater highs had developed in the northwestern part of site near well 123 as well as in the northeastern corner of site near well 125.
- The mounding of groundwater in the southwestern corner of site near well MW–20 observed from 2009 data was consistent with the mounding observed in previous data collection efforts since IRA installation.

Groundwater-level altitude and flow direction 2009—Cont.

- Groundwater-flow direction near MW 123 was radial in 2009, flowing away from the groundwater highs towards the ICTs.
- Groundwater gradients were steeper toward the ICTs and areas outside of site, with the steepest gradients surrounding the groundwater high.

USGS science for a changing world

Groundwater-level altitude and flow direction 2009—Cont.

- Groundwater-level altitudes in 2009 were about 2 ft higher in some areas of site than in 1994.
- Groundwater-level altitudes were still 2 to 3 ft lower in the areas outside of site compared with levels measured in 1994 and 2006 before the implementation of the IRA and reinjection of treated water.

USGS science for a changing world

Groundwater-level altitude and flow direction 2009—Cont.

- Overall, groundwater-level altitudes increased within the site in 2009 and approached groundwater-level altitudes measured in 1994.
- On the basis of groundwater-level altitudes measured in 2009, the reinjection of treated water into ICT 9 on the southeastern side of site might be causing groundwater to flow away from site toward the southeast.

USGS
science for a changing world

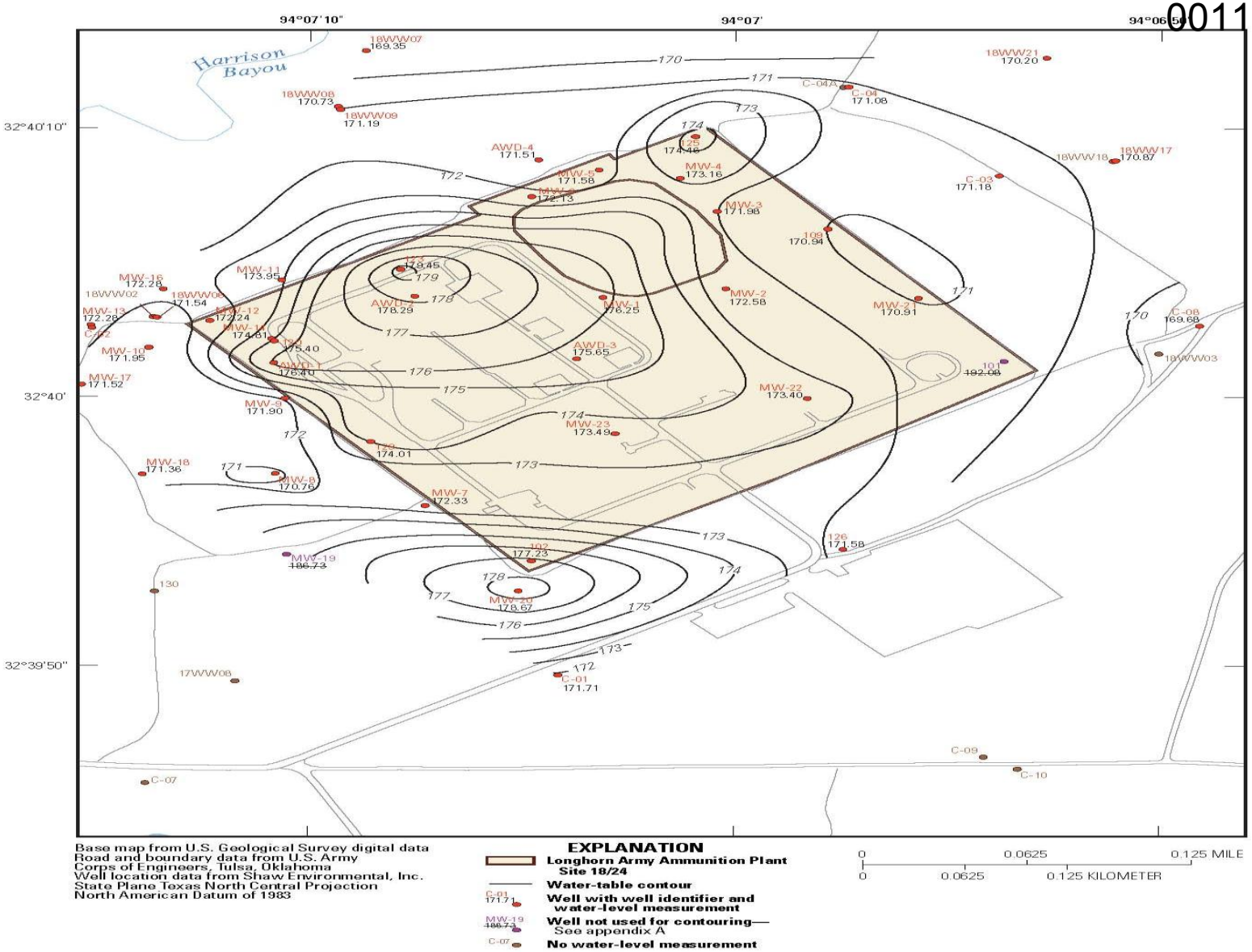


Figure 6. Groundwater-level altitude contours in November 2009 (after reinjection of treated groundwater began in 2007), in and near Longhorn Army Ammunition Plant site 18/24, near Karnack, Texas.

Vertical Gradient

- Wells MW–3 (intermediate depth, screened 39 to 44 ft) and MW–4 (shallow/intermediate depth, screened 36 to 41 ft) were used to evaluate vertical gradient. Groundwater-level altitudes in November 2009 indicate a downward gradient.
- Site 18/24 lacks the intermediate and deep monitoring wells needed to fully characterize vertical gradients at the site.

Vertical Gradient—Cont.

- Reinjection of treated water should cause gradients to increase, which would induce flow toward the ICTs and liners. The reinjection also results in a mounding effect, which increases potential vertical migration because of an increase in groundwater-level altitudes.
- Overall, the number of monitoring wells screened at depth adjacent to shallower monitoring wells is insufficient to accurately characterize vertical groundwater migration in the areas of contamination and reinjection.

Methylene Chloride 1994

- The largest concentration of methylene chloride was measured in samples collected at MW–2 before the IRA was 10,550,000 µg/L.
- The methylene chloride plume extended over much of the site and several plume lobes extended outside the site to the northwest, southwest, southeast, and northeast.

Methylene Chloride 1994—Cont.

- **In 1994, large concentrations of methylene chloride, ranging from 100 to more than 1,000,000 µg/L, were detected in samples collected from monitoring wells at site, and concentrations as large as 100,000 µg/L were measured in samples collected from monitoring wells in areas defining plume lobes outside of the ICT system.**

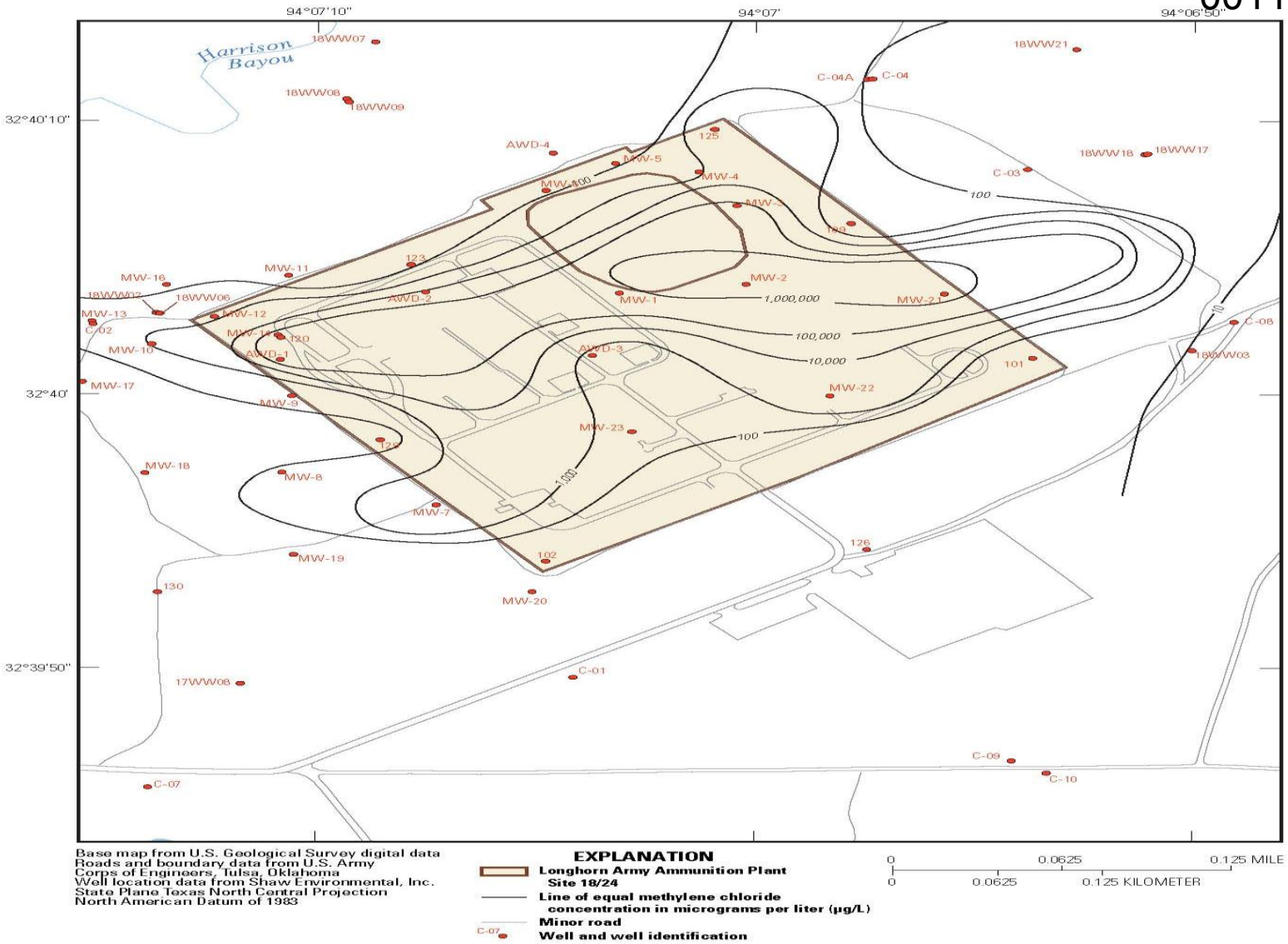


Figure 7. Concentrations of methylene chloride measured in groundwater samples collected in April 1994 (before implementation of interim remedial actions began in 1998), in and near Longhorn Army Ammunition Plant site 18/24, near Karnack, Texas. Modified from U.S. Environmental Protection Agency, 1995.

Methylene Chloride 2006

- The concentrations and areal extent of methylene chloride pre- and post-IRA decreased between 1994 and 2006.
- Concentrations in the main plume decreased from more than 1,000,000 in 1994 to 10,500 µg/L in 2006, and the areal extent of the plume was reduced within the boundaries of the ICTs, as were the size of the lobes that extend outside the ICTs to the east and west.

USGS
science for a changing world

Methylene Chloride 2006—Cont.

- The decrease in size and concentration magnitudes of the methylene chloride plume indicate that the soil removal and contaminated groundwater treatment system described in the 1995 ROD has helped to reduce and control a large part of the shallow groundwater contamination at the site.

USGS science for a changing world

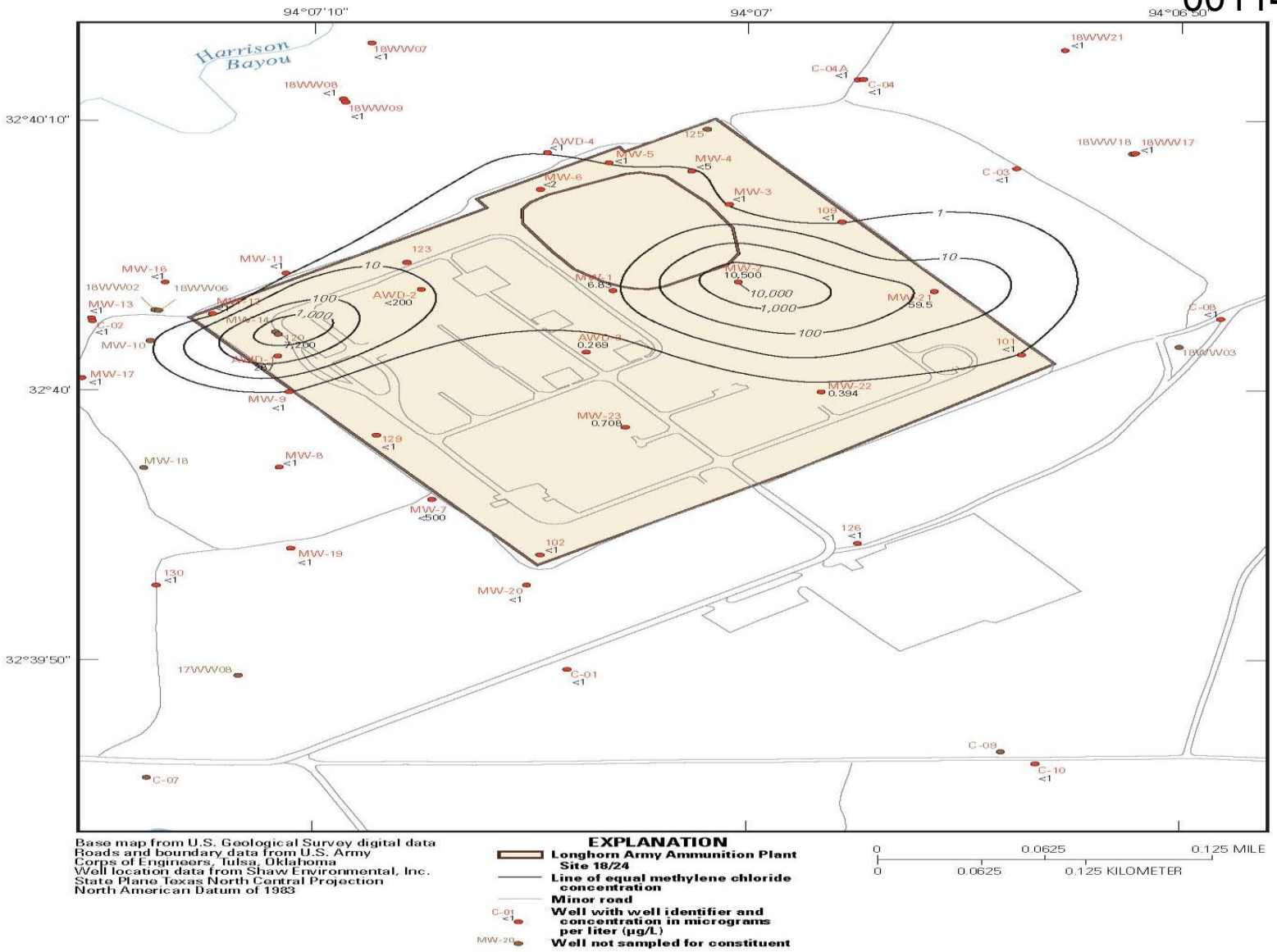


Figure 8. Concentrations of methylene chloride measured in groundwater samples collected in May 2006 (after implementation of interim remedial actions began in 1998 and before reinjection of treated groundwater began in 2007), in and near Longhorn Army Ammunition Plant site 18/24, near Karnack, Texas.

Water Quality—2009 overview

- In 2009, there were 80 detections of VOCs and heavy metals that exceeded the USEPA maximum contaminant level or State of Texas residential drinking water standards.
- There were one or more detections of COCs in 25 of the 44 wells sampled.

Methylene Chloride (2006 and 2009)

- Two distinct methylene chloride plumes were evident using the results of samples collected in November 2009. The first plume was centered around monitoring well MW–2 on the eastern side of site, and the second plume was along the western side of site.
- Western methylene chloride plume shifted towards the south in 2009 compared with 2006.

Methylene Chloride (2009 and 2010)

- The largest concentration of methylene chloride detected in 2009 was 3,600,000 µg/L in the sample collected from monitoring well MW–2 (more than two orders of magnitude since reinjection began in 2007).
- Rain event prior to November 2009 sampling -14 inches (late October).
- March 2010- WTP report- MW-2 concentration of 327,000 µg/L (order of magnitude lower than November).

Methylene Chloride 2009 and 2010—Cont.

- Well MW–9- 60,000 µg/L (located just west of ICT trench and liner). Well MW–9 had not been sampled since 2006 and was non-detect.
- Well MW–8 had a concentration of methylene chloride of 6 µg/L in March 2010. Well is located south of MW-9.
- Well AWD-1 had a concentration of methylene chloride of 700 µg/L (November 2009) more than twice the concentration of 287 µg/L in 2006. AWD-1 is north of well MW–9 and is located inside the site.

Methylene Chloride– key findings

- Well MW–9- 60,000 µg/L (located just west of ICT trench and liner). Well MW–9 had not been sampled since 2006 and was non-detect.
- Groundwater flow direction and changes in concentration may indicate potential bypass of ICT and liner. Depth of ICTs are not known.

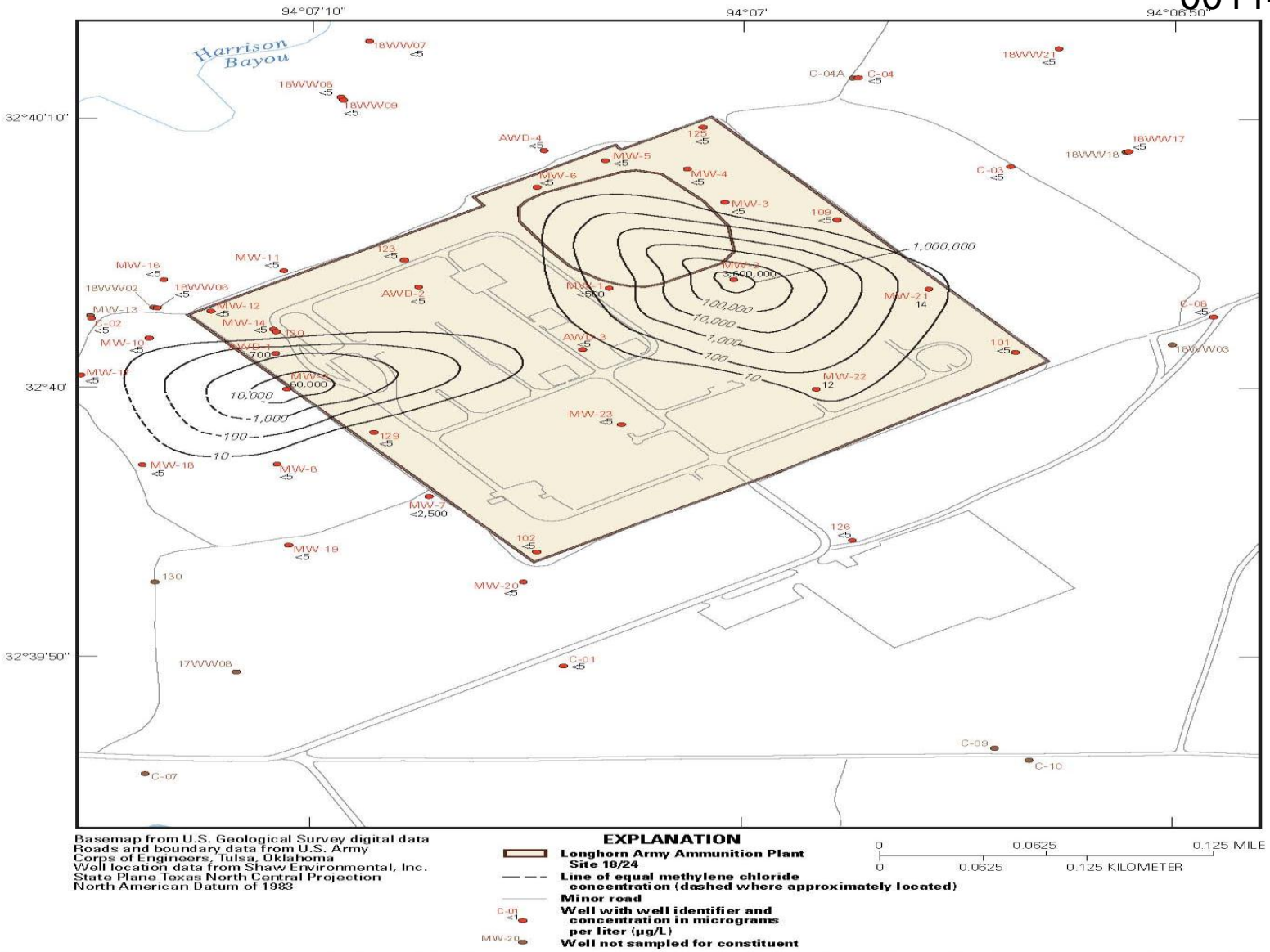


Figure 9. Concentrations of methylene chloride measured in groundwater samples collected in November 2009 (after reinjection of treated groundwater began in 2007), in and near Longhorn Army Ammunition Plant site 18/24, near Karnack, Texas.

TCE 1994

- The largest concentration of TCE measured at site was 1,520,000 µg/L in the sample collected from monitoring well MW–2 in April 1994.
- The areal extent of the TCE plume covered almost the entire site, and plume lobes extended outside of site towards the south, west, north, and northeast.

TCE 1994—Cont.

- Concentrations of TCE ranging from 10 to 1,520,000 µg/L were detected in samples from monitoring wells within site while concentrations in excess of 10,000 µg/L were measured in samples from wells in the southern lobe of the plume, outside of site.

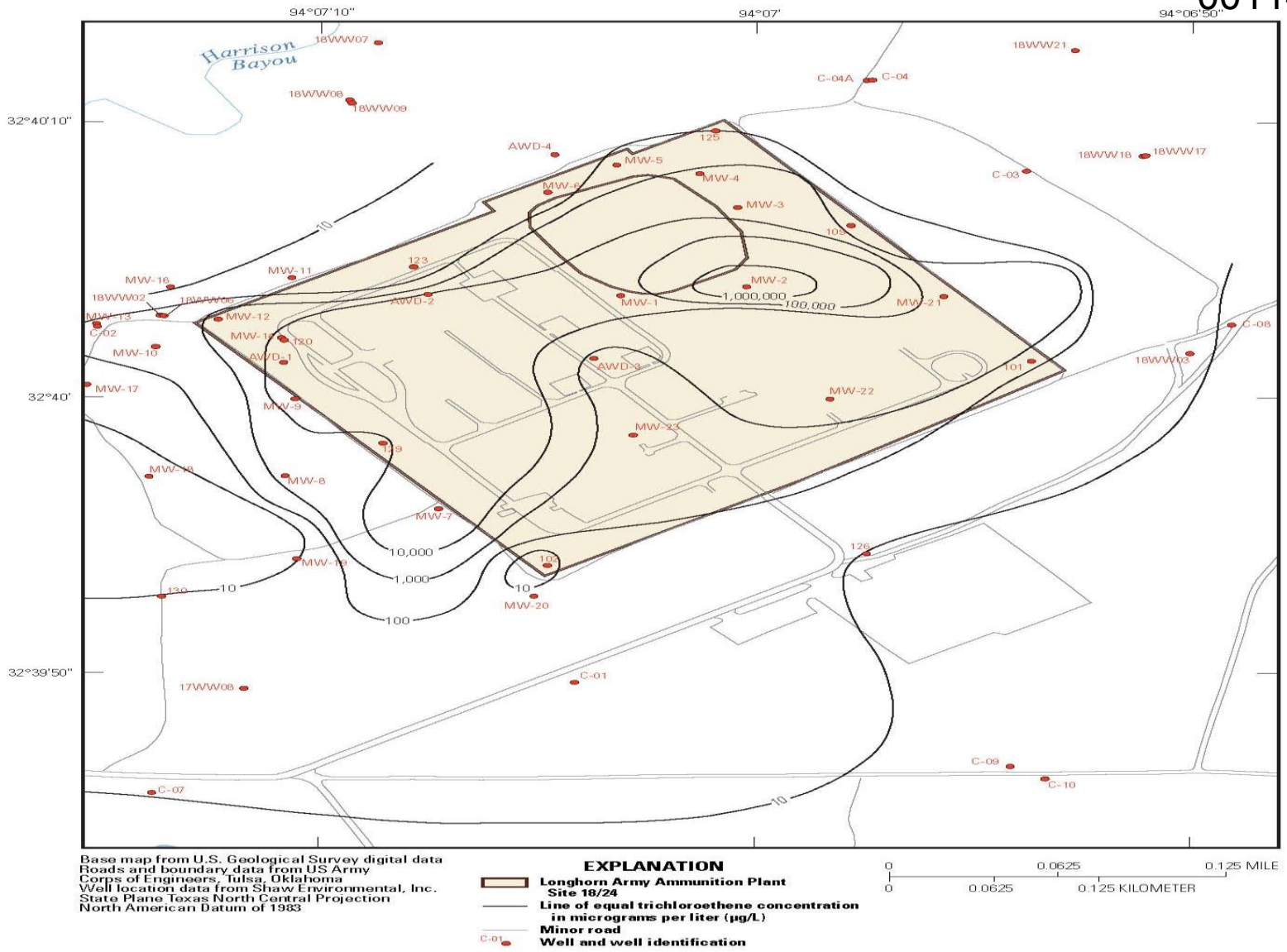


Figure 10. Concentrations of trichloroethene measured in groundwater samples collected in April 1994 (before implementation of interim remedial actions began in 1998), in and near Longhorn Army Ammunition Plant site 18/24, near Karnack, Texas. Modified from U.S. Environmental Protection Agency, 1995.

TCE (1994 to 2006)

- The concentrations of TCE measured in samples collected from MW–2 decreased from 1,520,000 to 47,000 µg/L between 1994 and 2006.
- The areal extent of the plume within the boundaries of site has remained constant.
- The decrease in the concentration of TCE in 2006 compared to 1994 around well MW–2 indicates that the soil removal and contaminated groundwater treatment system have helped reduce concentrations of TCE at site.

TCE (1994 to 2006)—Cont.

- The decrease in the concentration of TCE in 2006 compared to 1994 around monitoring well MW–2 indicates that the soil removal and contaminated groundwater treatment system has helped to reduce concentrations of TCE at site.

USGS
science for a changing world

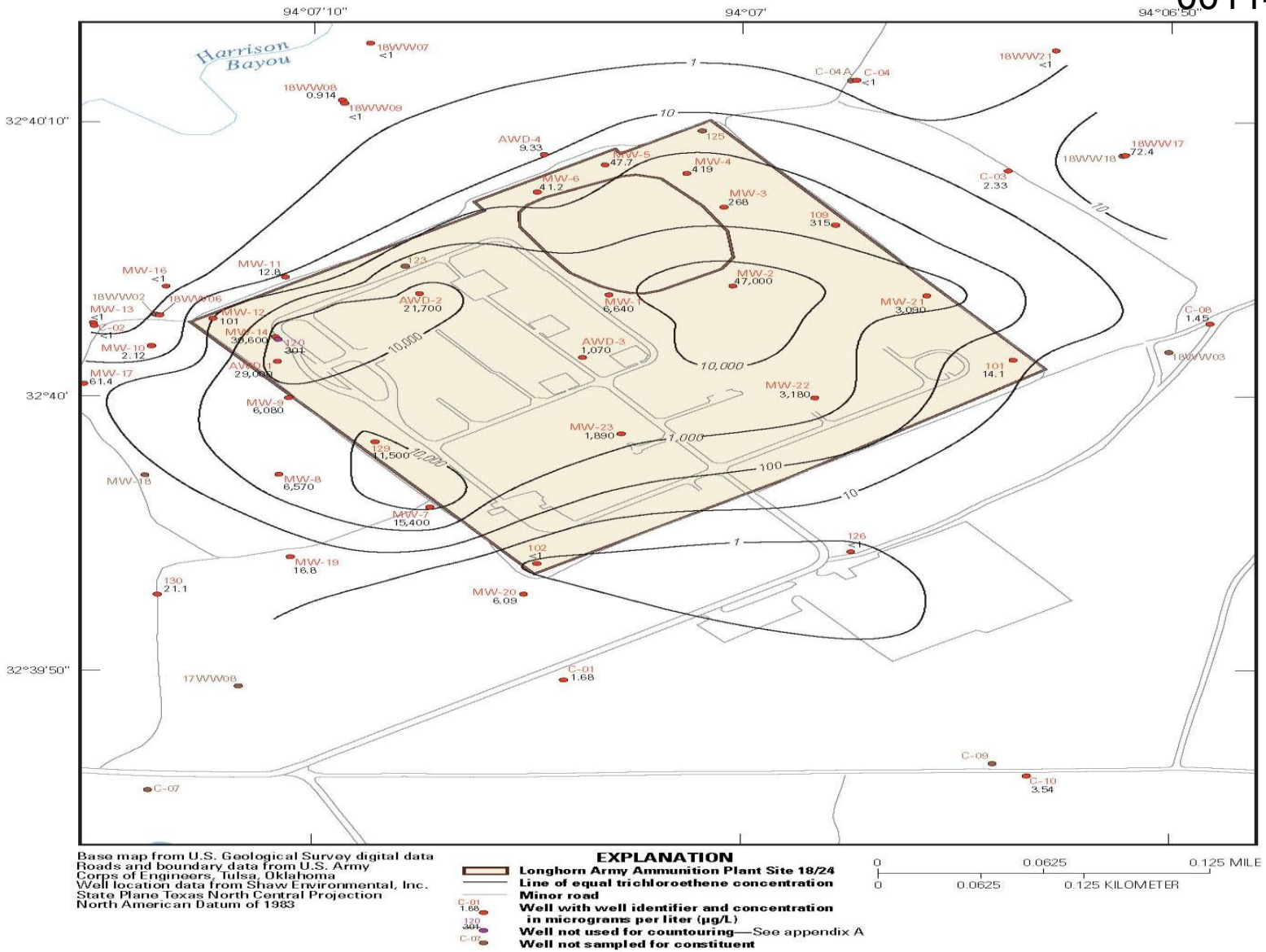


Figure 11. Concentrations of trichlorethene measured in groundwater samples collected in May 2006 (after implementation of interim remedial actions began in 1998 and before reinjection of treated groundwater began in 2007), in and near Longhorn Army Ammunition Plant site 18/24, near Karnack, Texas.

TCE (2006 to 2009)

- As of 2009, there are several plume lobes extending outside site to the northwest, southwest, and northeast.
- The areal extent of the plume has only slightly decreased within the site.
- Three areas with large concentrations of TCE remained in 2009 but have changed in concentration magnitude and areal extent compared to 2006.

TCE (2006 to 2009)—Cont.

- The largest concentration of TCE detected in 2009 was 230,000 µg/L in the sample collected from well MW–2 (increase in concentration since 2006 of almost an order of magnitude).
- Rain event prior to November sampling -14 inches (late October).
- The combination of heavy rain and reinjection of treated water likely combined to cause the increase in TCE concentrations measured in November 2009 at site compared to TCE concentrations measured in 2006.

TCE (2006 to 2009) —Cont.

- The TCE plume near well AWD-1 and AWD-2 was reduced in size and the concentrations have decreased at well AWD-2 by more than three orders of magnitude (21,700 to 11 µg/L). Concentrations of TCE in well AWD-1 decreased slightly from 2006 to 2009 (29,000 to 25,000 µg/L).
- Well MW–9 have increased by almost an order of magnitude during that same period (6,080 to 53,000 µg/L).

USGS
science for a changing world

TCE (2006 to 2009)—Cont.

- The TCE plume near well AWD-1 and AWD-2 was reduced in size and the concentrations have decreased at well AWD-2 by more than three orders of magnitude (21,700 to 11 µg/L). Concentrations of TCE in well AWD-1 decreased slightly from 2006 to 2009 (29,000 to 25,000 µg/L).
- Well MW–9 have increased by almost an order of magnitude during that same period (6,080 to 53,000 µg/L).

TCE (2006 to 2010)

- March 2010- WTP report- MW-2 concentration of 49,400 µg/L.
- The size and shape of the 2006 and 2009 TCE plumes are similar.
- Concentrations of TCE ranged from non detected (less than the method detection limit of 0.37 µg/L) to 230,000 µg/L in samples collected from monitoring wells within site during both years.

TCE—Key findings

- A relatively large concentration of TCE (12,000 µg/L) was measured in the sample collected from well MW–7. This well is outside LHAAP–18/24.
- Groundwater flow direction and changes in concentration may indicate potential bypass of ICT and liner. Depth of ICTs are not known.

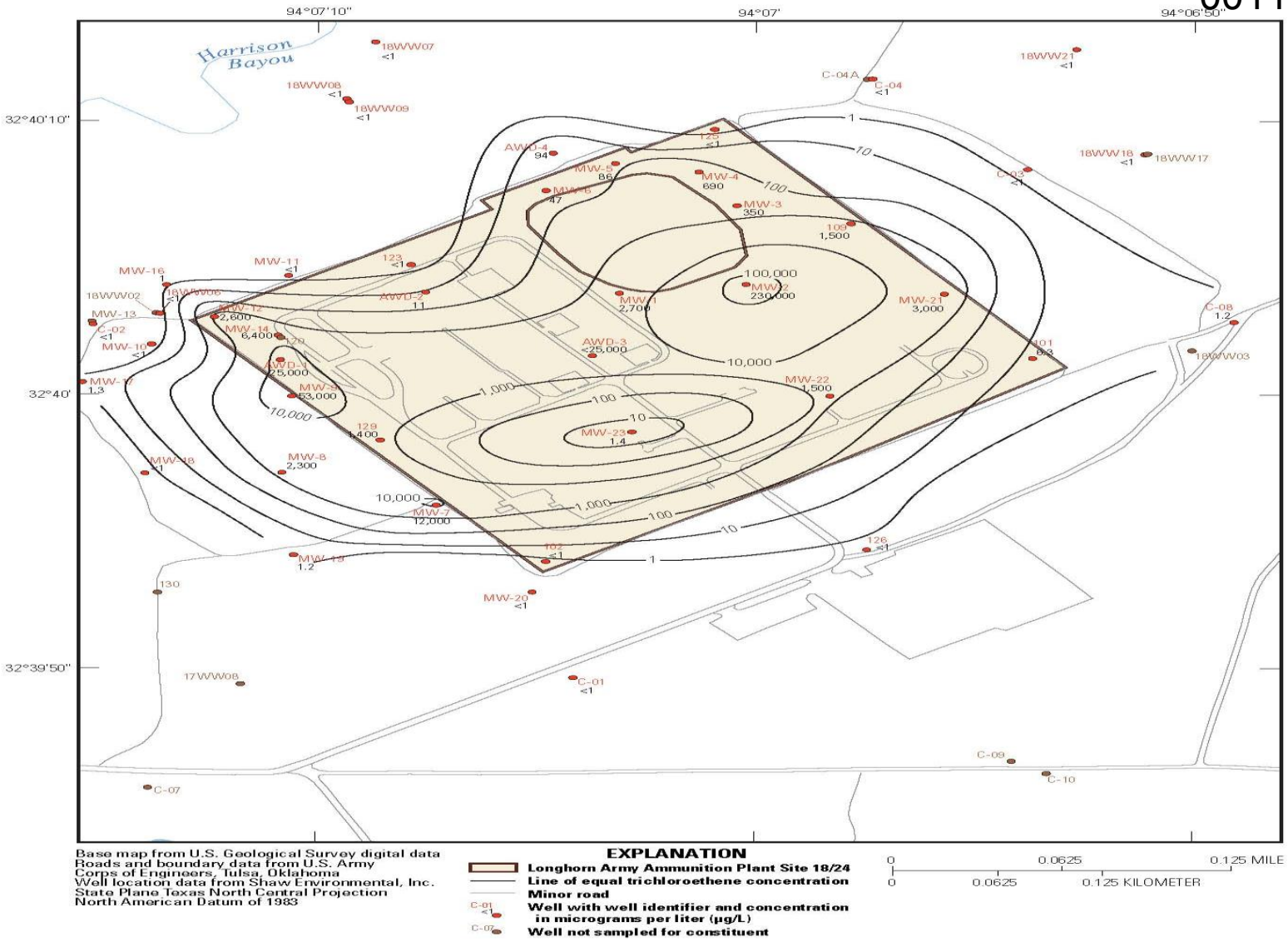


Figure 12. Concentrations of trichloroethene measured in groundwater samples collected in November 2009 (after reinjection of treated groundwater began in 2007), in and near Longhorn Army Ammunition Plant site 18/24, near Karnack, Texas.

Summary

- Water levels and gradients changed between 1994, 2006, and 2009.

- Groundwater-level altitudes indicate groundwater may potentially flow out of the site to the south since the reinjection began in 2006.

USGS
science for a changing world

Summary—Cont.

- Vertical gradient is unknown within the IRA boundary.
- In 2009, there were 80 detections of VOCs and heavy metals that exceeded the USEPA maximum contaminant level or State of Texas residential drinking water standards.
- There were one or more detections of COCs in 25 of the 44 wells sampled.

Summary—Cont.

- The methylene chloride plume appears to have moved to the south since reinjection began in 2007.
- Concentrations of methylene chloride and TCE can vary by orders of magnitude between sampling events.
- The soil and groundwater treatment processes appear to have been more effective at reducing methylene chloride concentrations than TCE concentrations in shallow groundwater at site.
- Overall, the IRA appears to have minimized contamination reaching Harrison Bayou.

USGS
science for a changing world

Summary—Cont.

- The methylene chloride plume appears to have moved to the south since reinjection began in 2007.

- Groundwater-flow direction and changes in contaminants concentration may indicate potential bypass of ICT and liner. Depth of ICTs are not known.

- Reinjection of treated water has increased groundwater-level altitudes across the site; the increase in groundwater-level altitudes could increase vertical movement of groundwater and contaminants.

USGS
science for a changing world

Recommendations

- There are no intermediate and deep wells within the site to determine vertical groundwater gradients or concentrations of contaminants with depth. Installing intermediate and deep monitoring wells at MW–2, MW–21, MW–5, and MW–9 (located outside of IRA) would make it possible to determine vertical gradients and concentrations at depth so that the performance of the treatment system can be more fully assessed.

USGS
science for a changing world

Recommendations—Cont.

- Only two monitoring wells (MW–2 and MW–22 [added to semi-annual sampling in 2010]) currently (2012) are being sampled on a routine basis within the site. The locations of the plumes have shifted since reinjection began. Groundwater-level maps indicate the potential for transport of contaminated water in all directions from the groundwater high, but the south and southeast corner might be susceptible to movement of contaminated groundwater beyond the site because there are no liners to prevent transport of contaminants. Sampling all of the monitoring wells within site on a routine basis is recommended to determine the concentrations and locations of the plumes within the site.

Recommendations—Cont.

- Monitoring well numbers MW–7, MW–9, MW–11, AWD-4, and 18WW06 are all just outside the contaminant liners and ICTs; these monitoring wells should be sampled on a regular basis to monitor for potential bypass of the ICTs and liners.

Prepared by
Tulsa District Corps of Engineers

Subject: **Draft Minutes, Monthly Managers Meeting, Longhorn Army Ammunition Plant (LHAAP)**

Location of Meeting: **Hampton Inn Conference Room, Marshall, Texas**
Date of Meeting: **June 20, 2012; 8:30 AM – 11:00 AM**

Meeting Participants:

BRAC:	Rose M. Zeiler
USACE-Tulsa:	Aaron Williams, Wendy Lanier
USAEC	Marilyn Plitnik, Robin Paul
USEPA Region 6:	Steve Tzhone, Paul Torcoletti, Rich Mayer, Kent Becher - USGS Liason
TCEQ:	Fay Duke, Dale Vodak
USFWS:	Paul Bruckwicki

Welcome **Rose M. Zeiler**

Action Item Status
Army

- Provide updated schedule for ongoing LHAAP projects with letter explaining PBC delay. – Completed
- Provide construction details of the Groundwater Collection System for LHAAP-18/24, meeting at Longhorn June 20th. - Wendy Lanier presented a power point at the June 20th meeting providing a historical outline of activities completed during construction of the IRA. The construction profiles for the 14 ICTs along with pictures of IRA activities were found in the connex behind the GWTP and were presented to the regulators for review at the meeting. Other documentation found included Construction QA and QC reports, documentation for 101 bore holes for ICTs, State Plane survey data for 101 bore holes & piezometers, geomembrane documentation, P&I diagrams for sumps and areas of source removal within BG3 boundary. As an action item the Army and regulators were going to provide a list to USACE of priority documents to be included in the Administrative Record. USACE will provide scanned copies of all drawings/documents. USACE will write a summary MFR with findings.

  Kent also prepared a presentation of his report on the evaluation of the IRA at Site 18/24. The presentation displayed that the groundwater gradients within the boundary of 18/24 have changed with the addition of the ICTs and with the reinjection of treated water and that groundwater may potentially flow out of the site to the south, vertical gradients and vertical migration cannot be evaluated with lack of intermediate and deep wells. Kent recommended the addition of intermediate and deep monitoring wells near MW-2, MW-21, MW-5, and MW-9 and recommended sampling all the monitoring wells within the site on a routine basis and sample MW-7, MW-9, MW-11, AWD-4, and 18WW06 just outside the contaminant liners and ICTs on a routine basis. As an action item, EPA will provide a list of wells to monitor at 18/24.

Defense Environmental Restoration Program (DERP) PBC Update

- LHAAP-04 Final FS is in track change mode and is in regulatory review. Regulators indicated that they were done with review and could send an approval email.
- LHAAP-03 RTCs in regulatory review. TCEQ indicated that there are still some concerns with the soil removal, a teleconference will be scheduled to resolve issues.
- LHAAP-12 RTCS in regulatory review. Received EPA concurrence, awaiting TCEQ written concurrence following verbal concurrence. TCEQ stated that written approval would be provided to move forward.
- GWTP operations. The GWTP is currently not pumping and treating water due to damage to the scrubber blower unit and scrubber unit on 5/21/2012. Currently water is being re-circulated through the FBR to keep the microbes alive. The Army has provided the regulators with a proposed interim or stop gap measure to get the GWTP operational again in the interim awaiting GWTP equipment repairs/replacement. The GWTP 1st Qtr report for the period January-March 2012 was submitted. The GWTP Quarterly report includes the requested documentation for reinjection.

DERP Total Environmental Restoration Contract Update **Army**

- LHAAP-37 Pilot Demonstration Status- Army, USFWS and regulators conducted a site visit and observed the contractor installing bioplugs and monitoring wells. The test startup of the bioplug is scheduled for the same timeframe as the next RAB meeting July 19,2012.
- Status of Supplemental BERA- Negotiations complete and request for funds has been made, expect award by the end of June.

MMRP Update **Army**

- Update IRP Metals Issue- Discussion put off until complete another round of sampling for the 10 wells.
- EPA Sampling of Groundwater. Sampling will take place in mid-July or mid-August timeframe. RMZ reminded EPA that a 2-week advance notice is requested to allow Army time to prepare for split samples.

Other Environmental Restoration **Army**

- Status Environmental Restoration Contract- Anticipate news by the end of the week.
- Status of Schedule change Request and Force Majeure- EPA accepts the contracting Force Majeure, however, EPA lawyers are asking for a copy of the protest letter (redacted as necessary). Pending Army action- letter from the KO.

Programmatic Issues

- Status of Dispute- At the end of month plan to submit revised RODs

USFWS Update

- Environmental Restoration Issues with Transfer Schedule Impact- None. FWS stated that Shaw reported the storage building at site 16 was broken into and stuff was taken. The FWS notified the sheriff's office.
- USFWS Comments on Documents

EPA – Non-CERCLA

- Update on Phytoforensics Study- Army, USFWS and regulators visited site 16 and observed tree coring for two trees.

Action Items

Army

- **Provide contract protest letter so that EPA has proof of a force majeure**
- **Provide MFR with findings regarding site 18/24 historic documents**
- **Provide electronic copies of the GWTP interim measures request**
- **Provide scanned copies of all drawings/documents which are not currently in the Admin Record**
- **Submit revised RODs**

EPA

- **Provide 2-week notice of sampling at MMRP sites**
- **Provide list of wells at site 18/24 recommended for sampling**
- **Provide list of site 18/24 historic documents for the Admin Record**
- **Provide email concurrence on site 4 tracked change FS**

TCEQ

- **Provide list of site 18/24 historic documents for the Admin Record**
- **Provide email concurrence on site 12 RTCs**
- **Provide email concurrence on site 4 tracked change FS**

Meeting Adjourned

LONGHORN ARMY AMMUNITION PLANT
Karnack, Texas

DRAFT MONTHLY MANAGERS' MEETING

AGENDA

DATE: July 19, 2012
TIME: 8:30 a.m.
PLACE: **Army Corps Trailer, Longhorn AAP, Karnack**, Texas

Welcome **RMZ**

Action Items
Army

- Provide contract protest letter so that EPA has proof of a force majeure
- Provide MFR with findings regarding site 18/24 historic documents
- Provide electronic copies of the GWTP interim measures request
- Provide scanned copies of all drawings/documents which are not currently in the Admin Record
- Submit revised RODs

EPA

- Provide 2-week notice of sampling at MMRP sites
- Provide list of wells at site 18/24 recommended for sampling
- Provide list of site 18/24 historic documents for the Admin Record
- Provide email concurrence on site 4 tracked change FS

TCEQ

- Provide list of site 18/24 historic documents for the Admin Record
- Provide email concurrence on site 12 RTCs
- Provide email concurrence on site 4 tracked change FS

Defense Environmental Restoration Program (DERP) PBC Update **Army**

- LHAAP-04 Final FS in track change mode. Received EPA concurrence, awaiting clarification for TCEQ comment/concern.
- LHAAP-03 RTCs in regulatory review.
- LHAAP-12 RAO Reports. Received EPA and TCEQ concurrence, reports being finalized.
- GWTP Status. Due to scrubber problem, water is not being extracted or discharged. GWTP operating in recirculation mode to keep the bacteria active in the FBR. Shaw's POP extended till July 18.

DERP Total Environmental Restoration Contract Update **Army**

- LHAAP-37 Pilot Demonstration Status
- Status of Supplemental BERA

MMRP Update **Army**

- Update status of EPA Groundwater Sampling

Other Environmental Restoration **Army**

- Administrative Record
- CRP/CIP Update
- Status Environmental Restoration Contract
- Status of Schedule change Request and Force Majeure

Programmatic Issues **RMZ/ST/FD**

- Status of Dispute – Redline RODs, SEC Issues

USFWS Update **RMZ/PB**

- Environmental Restoration Issues with Transfer Schedule Impact
- USFWS Comments on Documents

EPA – Non-CERCLA

- Update on Phytoforensics Study **ST**

Adjourn

ACRONYM LIST

DERP-	**Defense Environmental Restoration Program**
EPA-	**Environmental Protection Agency**
FS-	**Feasibility Study**
IRP-	**Installation Restoration Program**
ITS-	**Intertek Testing Services**
LHAAP-	**Longhorn Army Ammunition Plant**
MMRP-	**Military Munitions Response Program**
MNA-	**Monitored Natural Attenuation**
PB-	**Paul Bruckwicki**
PBC-	**Performance Based Contract**
PS-	**Praveen Srivastav**
QA-	**Quality Assurance**
QC-	**Quality Control**
RMZ-	**Rose M. Zeiler**
RD-	**Remedial Design**
ROD-	**Record of Decision**
SAP-	**Sampling and Analysis Plan**
TCEQ-	**Texas Commission on Environmental Quality**
USFWS-	**United States Fish and Wildlife Service**

Perchlorate Results for Creek Sampling

Longhorn Army Ammunition Plant, Karnack, Texas

Creek Sample ID	GW-Res	Mar 2008	Jun 2008	Sep 2008	Dec 2008	May 2009	July 2009	Aug 2009	Sep 2009	Dec 2009	Mar 2010	Jun 2010	Sep 2010	Dec 2010	Mar 2011	Jun 2011	Sep 2011	Dec 2011	Mar 2012	Jun 2012
GPW-1	26	27	0.5U	0.5U	0.22U	16	4U	NS	1.2U	3.7	1.3J	0.6U	dry	0.1U	8.7	dry	dry	1.76	0.163J	dry
GPW-3	26	21.9	9.42	1.1	0.22U	8.9	4U	NS	0.6U	2.8	1.8J	0.6U	dry	0.199J	0.673	dry	dry	1.31	0.261	dry
HBW-1	26	0.5U	0.5U	0.5U	0.22U	0.55U	4U	NS	1.5U	0.275U	1.5U	0.6U	dry	0.1U	0.2U	dry	dry	0.1U	0.1U	dry
HBW-7	26	0.5U	0.5U	0.5U	0.22U	0.55U	4U	24*	1.2U	0.275U	1.5U	0.6U	dry	0.1U	0.2U	dry	dry	0.171J	0.1U	dry
HBW-10	26	0.5U	0.5U	0.5U	0.22U	0.55U	4U	NS	1.5U	0.275U	1.2U	0.6U	dry	0.1U	0.2U	dry	dry	0.1U	0.1U	dry

NOTES:
all units in micrograms/liter (µg/L)
* One sample taken during GWTP shutdown
U undetected
J approximate value present below normal reporting limit
GW-Res groundwater medium-specific concentration for residential use
NS not sampled
GP is Goose Prairie Creek
HB is Harrison Bayou
W is surface water

General Creek Conditions for last 7 sampling events:
September 2010 conditions: All creek sampling locations were dry in September.
December 2010 conditions: GP sampling locations some water but no visible flow; HB sampling locations plenty of water volume but very little flow
March 2011 conditions: GP sampling locations slow flow; HB sampling locations fairly good flow
June 2011 conditions: All creek sampling locations were dry in June.
September 2011 conditions: All creek sampling locations were dry in September.
December 2011 conditions: Small amount of flow at Harrison Bayou locations and no visible flow at Goose Prairie Creek locations.
March 2012 conditions: Good flow at Harrison Bayou locations and small amount of flow at Goose Prairie Creek locations.
June 2012 conditions: All creek sampling locations had no flow in June.

Longhorn Army Ammunition Plant
Monthly Managers' Meeting

Location	Karnack Community Center
Date	19-Jul-2012 8:30 AM

Please sign in the space provided or add your name and address if your name does not appear below.

ATTENDEES

Name (printed)	Signature	Organization	Phone	E-mail
Rose M. Zeiler		Longhorn AAP	(479) 635-0110	rose.zeiler@us.army.mil
Marilyn Plitnik		USAEC	(210) ~~424-8779~~ 924-1701	marilyn.a.plitnik@~~us.army.mil~~ mil
Robin Paul		USAEC	(210) 466-2002	robin.e.paul4.civ@mail.mil
Aaron Williams		USACE, Tulsa	(918) 669-4915	aaron.k.williams@usace.army.mil
John Lambert		USACE, Tulsa	(918) 669-4992	john.r.lambert@SWT03.usace.army.mil
Wendy Lanier		USACE, Tulsa	(918) 669-4980	wendy.d.lanier@usace.army.mil
Steve Tzhone		USEPA, Dallas	(214) 665-8409	tzhone.stephen@epa.gov
Terry Burton		USEPA, Dallas	(214) 665-7139	burton.terry@epa.gov
Rich Mayer		USEPA, Dallas	(214) 665-1442	mayer.richard@epa.gov
Kent Becher		USGS, Dallas	(817) 253-0356	kdbecher@usgs.gov
Fay Duke		TCEQ, Austin	(512) 239-2443	fduke@tceq.state.tx.us
Dale Vodak		TCEQ	(903) 535-5147	dvodak@tceq.state.tx.us
Paul Bruckwicki		USFWS	(903) 679-4536	paul_bruckwicki@fws.gov
Barry Forsythe		USFWS	(214) 665-8467	forsythe.barry@epa.gov
Mark Williams		USFWS	(903) 679-9144	mark_williams@fws.gov
Manish Joshi		AECOM	(210) 271-0925	manish.joshi@aecom.com
Dave Wacker		AECOM	210 253 7514	dave.wacker@aecom.com
PAUL TORCOLETTI		USEPA, DALLAS	214-665-6414	TORCOLETTI.PAUL@EPA.GOV
Rich Mayer		USEPA Dallas	214-665-7442	MAYER.richard@epa.gov
~~Steven Tzhone~~				
JAnetta Coats		EPA	214.665.7308	coats.janetta@epa.gov
Gene Fabian		US ARMY ATC	410-278-7421	GENE.L.FABIAN.CIV@MAIL.MIL
~~Terry Burton~~		~~USEPA/OEO, DALLAS~~	~~214.665.7139~~	~~B~~

Prepared by
Tulsa District Corps of Engineers

Subject: **Draft Minutes, Monthly Managers Meeting, Longhorn Army Ammunition Plant (LHAAP)**

Location of Meeting: **Karnack Community Center, Karnack, Texas**
Date of Meeting: **July 19, 2012; 8:30 AM – 11:30 AM**

Meeting Participants:

BRAC:	Rose M. Zeiler
USACE-Tulsa:	John Lambert, Aaron Williams, Wendy Lanier
USAEC	Marilyn Plitnik
AECOM	Dave Wacker, Manish Joshi
ATC	Gene Fabian
USEPA Region 6:	Steve Tzhone, Terry Burton, Paul Torcoletti, Rich Mayer, Janetta Coats, Barry Forsythe, Kent Becher - USGS Liason
TCEQ:	Fay Duke, Dale Vodak
USFWS:	Paul Bruckwicki

Welcome **Rose M. Zeiler**

Action Item Status
Army

- Provide contract protest letter so that EPA has proof of a force majeure- Done and approved by EPA.
- Provide MFR with findings regarding site 18/24 historic documents- Working on it, still tracking down information
- Provide electronic copies of the GWTP interim measures request- Done, regulators approve the request.
- Provide scanned copies of all drawings/documents which are not currently in the Admin Record- Continued effort, partially complete.
- Submit revised RODs- Completed, this is with regard to dispute. Received TCEQ comments and will be receiving EPA comments. EPA proposed interim RODs. Army (BRAC and AEC) stated they would have to go back and get permission. EPA stated that the proposal would be emailed the following week. Discussion of current policy and possibility of interim ROD ensued.

EPA

- Provide 2-week notice of sampling at MMRP sites- Will receive QAPP at end of month and looking at sampling the week of August 13th. Need to redevelop wells first, looking at 9 work days total. 4 hours development time to stabilize and 12 hours minimum recovery, recovery within 1-foot of initial level. Samples will be analyzed for explosives, perchlorate (6860 method ICMS), TAL metals less mercury, anions sulfate & chlorate and TDS. It was asked whether purge water could go into the GWTP. No issue was identified with purge water going to the GWTP just need to let Scott know.

- Provide list of wells at site 18/24 recommended for sampling- Recommendations were provided in the USGS report and presentation but will take a closer look and provide input. AECOM and the rest of the group will also look at current 18/24 recommendations. USACE will provide copies of the USGS report and presentation to AECOM. AECOM will plan to provide some recommendations by end of September for review for meeting. Group will meet and discuss recommendations on October 18th. USGS stated that the last data dump with wells and logs that they received from Shaw was through 2008. USACE will check with Shaw to get a current data dump. USACE will provide AECOM with the list of 22 wells currently approved for sampling at 18/24.
- Provide list of site 18/24 historic documents for the Admin Record- EPA will review list of historic documents that will be provided by USACE to determine which should go into the Admin Record.
- Provide email concurrence on site 4 tracked change FS- Completed.

TCEQ

- Provide list of site 18/24 historic documents for the Admin Record- TCEQ will review list of historic documents that will be provided by USACE to determine which should go into the Admin Record.
- Provide email concurrence on site 12 RTCs- Completed.
- Provide email concurrence on site 4 tracked change FS- One comment/concern was submitted by TCEQ, Shaw is addressing comment.

Defense Environmental Restoration Program (DERP) PBC Update Army

- LHAAP-04 Final FS in track change mode. Received EPA concurrence, awaiting clarification for TCEQ comment/concern.- TCEQ is seeking clarification that performance monitoring wells will be determined/addressed in the RD.
- LHAAP-03 RTCs in regulatory review.- EPA will be sending comments on LHAAP-03. Rose noted that EPA's comments are late and in order to avoid this problem in the future all will have to follow the FFA, that means that if resolution is not reached after the first round (with some informal discussion), then informal dispute must be invoked.
- LHAAP-12 RAO Reports. Received EPA and TCEQ concurrence, reports being finalized.
- GWTP Status. Due to scrubber problem, water is not being extracted or discharged. GWTP operating in recirculation mode to keep the bacteria active in the FBR. Shaw's POP extended till July 18.- It was reported to the group that now the PLC program is down and recirculation in the FBR is no longer occurring. AECOM is getting the plant operators on board, PLC contractor is coming out and will get a laboratory on board.

DERP Total Environmental Restoration Contract Update Army

- LHAAP-37 Pilot Demonstration Status- Project involves installation of bioreactors, injecting nutrients and air and populating bioreactors with microbes. The project will last a little over 2 years. AECOM will install the monitoring well network at LHAAP-37 but will not monitor until after the project is complete and the formation has returned to anaerobic conditions. The ATC contractor has been installing the 300 bioplugs and completed installation of 12 monitoring wells. Baseline sampling of all the monitoring wells was conducted during the week along with microbial sampling. Plan to get caught up with schedule next week. Gene asked if the drill cuttings which were classified as Class 2 with trace metals could be disposed of on site. The

results need to be reviewed and check with EPA and TCEQ. Gene will provide drill cutting results to Army and regulators.

- Status of Supplemental BERA- The contract will be awarded by the end of the month. The PMP & QAPP deliverable will be within the first 30 days of award, so should be reviewing the sampling plan by September.

MMRP Update **Army**

- Update status of EPA Groundwater Sampling- Discussed above.

Other Environmental Restoration **Army**

- Administrative Record- An updated version through February 2012 has been provided to the group. The Admin Record is typically updated quarterly, so the next update should be out in September. Wendy mentioned that she had made the Administrative Record searchable and a majority of the group expressed interest in having the searchable version.
- CRP/CIP Update- AEC is contracting the activity, Army will coordinate with EPA.
- Status Environmental Restoration Contract- John informed the group that the stop work order had been rescinded on Monday July 16, 2012 and introduced Manish Joshi, Program Manager and Dave Wacker, Project Manager, with AECOM.
- Status of Schedule change Request and Force Majeure- Army submitted to EPA and TCEQ. EPA approved.

Programmatic Issues **RMZ/ST/FD**

- Status of Dispute – Redline RODs, SEC Issues- Issues 2-8 are close to resolution.

USFWS Update **RMZ/PB**

- Environmental Restoration Issues with Transfer Schedule Impact- None
- USFWS Comments on Documents- None

EPA – Non-CERCLA **ST**

- Update on Phytoforensics Study- 60 of 188 samples had perchlorate and TCE, the results are being plotted on a map.
- Steve Tzhone informed the group that he would be leaving for a 6-month assignment with Headquarters in Washington D.C. Carlos will decide on a replacement within 3 weeks, if no decision is made then Carlos will be the POC.

The next meeting will be a teleconference on Tuesday August 21st at 10:00am.

Action Items

AECOM

- **Get the GWTP back up and running**
- **Provide recommendations for well sampling at 18/24**
- **Provide Administrative Record update in September**

Army

- **Provide MFR with findings regarding site 18/24 historic documents**

- **Provide scanned copies of all drawings/documents which are not currently in the Admin Record**
- **Seek approval in pursuing interim RODs for the RODs in dispute**
- **Get current data dump from Shaw**
- **Provide drill cutting results to Army and regulators**
- **Send Site 18/24 powerpoint and Kent's evaluation to AECOM.**
- **Provide link for Site 18/24 logs.**

EPA

- **Provide list of wells at site 18/24 recommended for sampling**
- **Provide list of site 18/24 historic documents for the Admin Record**
- **Submit proposal for interim RODs for the RODs in dispute**
- **Provide comments for Redline RODs**
- **Provide comments on LHAAP-03**
- **Provide list of 2012 dispute-related (letterhead) documents to Army for September AR update.**

TCEQ

- **Provide list of site 18/24 historic documents for the Admin Record**
- **Provide email concurrence on site 4 tracked change FS**
- **Provide comments on LHAAP-03**
- **Provide letter of concurrence on force majeure schedule change request.**
- **Provide list of 2012 dispute-related (letterhead) documents to Army for September AR update.**

Meeting Adjourned

From: Stephen Tzhone [Tzhone.Stephen@epamail.epa.gov]
Sent: Monday, July 23, 2012 6:58 PM
To: 'Zeiler, Rose Ms CIV USA OSA'; Lambert, John R SWT; Williams, Aaron K SWT; Plitnik, Marilyn A USA CIV US ; Lanier, Wendy SWT; Dave Wacker (Dave.Wacker@aecom.com); Joshi, Manish
Cc: Fay Duke; Dale Vodak; Terry Burton; Richard Mayer; Paul Torcoletti; kdbecher@usgs.gov; Forsythe.Barry@epamail.epa.gov; paul_bruckwicki@fws.gov; Carlos Sanchez; Stephanie Kordzi
Subject: EPA Review: LHAAP GWTP Interim Operation
Attachments: Request EPA Concurrence GWTP Interim Operation.pdf; Request TCEQ Concurrence GWTP Interim Operation.pdf; 106533checklist No Control Device.pdf; air emmission approval from TNRCC (2).pdf; Untreated Emission Rates.xls; acronyms.pdf; L values.pdf

Hi Rose,

The EPA has completed its review of Army's request to implement a GWTP interim measure and has no further comments.

Please proceed with the implementation and include the following email chain, detailing the comments and agreements for the interim operation, in the site administrative record.

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

From: Fay Duke <fay.duke@tceq.texas.gov>
To: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>, Stephen Tzhone/R6/USEPA/US@EPA, "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>
Cc: "Dave Wacker (Dave.Wacker@aecom.com)" <Dave.Wacker@aecom.com>, "Joshi, Manish" <Manish.Joshi@aecom.com>
Date: 07/17/2012 02:51 PM
Subject: TCEQ Review: LHAAP GWTP Interim Operation Memo

Rose/Aaron:

The TCEQ has completed its review of Army's request to implement a "stop gap" interim measure to reinstate the groundwater treatment system at the LHAAP Site. We generally concur with the proposal to reinstate the groundwater extraction as soon as possible to mitigate the migration of contaminant of concern into Harrison Bayou. We want to be clear that this approval is for an interim operation of the GWTP until such time that equipment replacement to the vapor treatment system is made by the new contractor.

To ensure that the interim measure will be protective of the human health and the environment, we believe that it is imperative that air monitoring for volatile organic compounds be performed. It is my understanding that in additions to collecting daily PID/FID reading, Army will also be performing weekly sampling with a Summa canister analyzed using EPA method TO-15. We request that the analysis be performed with an expedited turnaround time and air emissions be evaluated against the TCEQ effects screening levels (ESLs). I have included a copy of the latest published ESLs. You can find additional information on the TCEQ ESLs in the following link:

http://www.tceq.texas.gov/toxicology/esl/list_main.html#esl_1

Please let me know if you should have any questions or concerns.

Thanks,

Fay Duke (MC-136)
Remediation Division, TCEQ
PO Box 13087
Austin, Texas 78711-3087
512-239-2443
fay.duke@tceq.texas.gov

From: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>
To: Stephen Tzhone/R6/USEPA/US@EPA, "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>
Cc: Fay Duke <Fay.Duke@tceq.texas.gov>, "Dave Wacker (Dave.Wacker@aecom.com)" <Dave.Wacker@aecom.com>, "Joshi, Manish" <Manish.Joshi@aecom.com>
Date: 07/17/2012 10:39 AM
Subject: RE: GWTP Interim Operation Memo (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Steve,

Agree, any exceedance of the emission criteria under 30TAC 106.533(f) from 106.261 or 106.262, whichever is more stringent, will be reported to EPA and TCEQ during the implementation of the interim measure.

Thanks,

Aaron K. Williams
Environmental Engineer, ARMY/FUDS Section
HTRW Design Center
Tulsa District
U.S. Army Corps of Engineers
918-669-4915

From: Stephen Tzhone/R6/USEPA/US
To: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>
Cc: Fay Duke <Fay.Duke@tceq.texas.gov>, "Dave Wacker (Dave.Wacker@aecom.com)" <Dave.Wacker@aecom.com>, "Joshi, Manish" <Manish.Joshi@aecom.com>
Date: 07/17/2012 10:12 AM
Subject: RE: GWTP Interim Operation Memo (UNCLASSIFIED)

Hi Rose, Aaron,

So, just to clarify, we are all agreeing that the criteria (i.e. TAC106-533(f), the emission criteria must follow 106-261 or 106-262, whichever is more stringent) will be the discharge criteria used for comparison during this interim measure, and any exceedances will be reported... correct?

Any exceedances does not necessarily mean the interim measure must stop, it just means the exceedances has to be

reported to EPA and TCEQ.

"The below mentioned emission criteria could be used in evaluating the emissions to see if we meet the Permit By Rule emission criteria for a waiver or how close we are to meeting these criteria."

"The concentrations of each individual compound can be converted to lbs/hour and compared to the discharge criteria."

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

From: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>
To: Stephen Tzhone/R6/USEPA/US@EPA, "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>, "Dave Wacker (Dave.Wacker@aecom.com)" <Dave.Wacker@aecom.com>, "Joshi, Manish" <Manish.Joshi@aecom.com>
Cc: Fay Duke <Fay.Duke@tceq.texas.gov>
Date: 07/17/2012 08:53 AM
Subject: RE: GWTP Interim Operation Memo (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Steve,

These are the emission criteria for meeting Permit By Rule waiver for vapor treatment, as stated earlier we are not requesting a Permit By Rule waiver but rather implementation of an interim measure. The below mentioned emission criteria could be used in evaluating the emissions to see if we meet the Permit By Rule emission criteria for a waiver or how close we are to meeting these criteria. This is an interim solution while vapor treatment equipment is repaired/replaced to prevent further perchlorate migration.

Thanks,

Aaron K. Williams
Environmental Engineer, ARMY/FUDS Section
HTRW Design Center
Tulsa District
U.S. Army Corps of Engineers
918-669-4915

From: Stephen Tzhone/R6/USEPA/US
To: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>
Cc: Fay Duke <Fay.Duke@tceq.texas.gov>
Date: 07/16/2012 12:12 PM
Subject: RE: GWTP Interim Operation Memo (UNCLASSIFIED)

Hi Rose, Aaron,

Just to verify, is this the emission criteria?

Under the TAC106-533(f), the emission criteria must follow 106-261 or 106-262 (whichever is more stringent):

http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=106&rl=533

http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=106&rl=261

http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=106&rl=262

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

From: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>
To: Stephen Tzhone/R6/USEPA/US@EPA, Fay Duke <Fay.Duke@tceq.texas.gov>
Cc: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>
Date: 07/16/2012 08:26 AM
Subject: RE: GWTP Interim Operation Memo (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Steve and Fay,

Is the below proposal for emissions sampling acceptable for the interim operation?

Thanks,

Aaron K. Williams
Environmental Engineer, ARMY/FUDS Section
HTRW Design Center
Tulsa District
U.S. Army Corps of Engineers
918-669-4915

From: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>
To: Stephen Tzhone/R6/USEPA/US@EPA, Fay Duke <Fay.Duke@tceq.texas.gov>, "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>, "Plitnik, Marilyn A USA CIV US " <marilyn.a.plitnik.civ@mail.mil>, "Paul, Robin E CIV (US)" <robin.e.paul4.civ@mail.mil>, "Srivastav, Praveen" <Praveen.Srivastav@shawgrp.com>
Cc: Paul Bruckwicki <paul_bruckwicki@fws.gov>, Dale Vodak <Dale.Vodak@tceq.texas.gov>, Richard Mayer/R6/USEPA/US@EPA, Paul Torcoletti/R6/USEPA/US@EPA, "kdbecher@usgs.gov" <kdbecher@usgs.gov>, Barry Forsythe/R6/USEPA/US@EPA

Date: 07/05/2012 10:04 AM
Subject: RE: GWTP Interim Operation Memo (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Steve and Fay,

In response to your concern, to ensure emissions requirements are met, we propose to include weekly sampling with a Summa canister analyzed using EPA method TO-15. Use of the Summa canister to sample the vapor stream and EPA method TO-15 analysis will provide a detailed concentration of various compounds present in the stream. The concentrations of each individual compound can be converted to lbs/hour and compared to the discharge criteria.

Thanks,

Aaron K. Williams
Environmental Engineer, ARMY/FUDS Section
HTRW Design Center
Tulsa District
U.S. Army Corps of Engineers
918-669-4915

From: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>
To: Stephen Tzhone/R6/USEPA/US@EPA, "'Zeiler, Rose Ms CIV USA OSA'" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Plitnik, Marilyn A USA CIV US " <marilyn.a.plitnik.civ@mail.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>, "Paul, Robin E CIV (US)" <robin.e.paul4.civ@mail.mil>
Cc: Fay Duke <Fay.Duke@tceq.texas.gov>, Dale Vodak <Dale.Vodak@tceq.texas.gov>, Terry Burton/R6/USEPA/US@EPA, Richard Mayer/R6/USEPA/US@EPA, Paul Torcoletti/R6/USEPA/US@EPA, "kdbecher@usgs.gov" <kdbecher@usgs.gov>, Barry Forsythe/R6/USEPA/US@EPA
Date: 07/03/2012 09:17 AM
Subject: RE: Army Proposal for Longhorn GWTP Interim Operation (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Steve,

Please see the responses embedded in Stephanie's email below, along with the attachments. Based on some discussions we had with TCEQ we need to clarify for your review and in response to Stephanie's conclusion that we are not trying to apply for a permit but rather requesting a temporary stop-gap measure while equipment repairs/replacements are made under the new contract which should be in place soon.

Thanks,

Aaron K. Williams
Environmental Engineer, ARMY/FUDS Section
HTRW Design Center
Tulsa District
U.S. Army Corps of Engineers
918-669-4915

From: Stephanie Kordzi/R6/USEPA/US
To: Richard Mayer/R6/USEPA/US@EPA, Stephen Tzhone/R6/USEPA/US@EPA
Cc: Jeffrey Robinson/R6/USEPA/US
Date: 06/29/2012 08:34 AM
Subject: Re: GWTP status - Analysis of Potential Air Emissions from Groundwater Treament Plant at Longhorn Army Ammunition Plant

---

Rich and Stephen,

* See my specific observations on the spreadsheets below:

1. The spreadsheet(s) attached to Stephen Tzhone's 5/30/12 e-mail do not provide "calculations." 2010 AIR and TK300 only give effluent concentration (ug/L) data.

The calculations are at the end of the spread sheet in Tab TK300 from columns AM through AU.

2. The other spreadsheet does not define the equation(s) used or what the variables and/or acronyms are.

Please see the attachments for detailed acronyms

3. I can't identify which sampling results were used to calculate lbs/hr.

Maximum values from several sampling events were used to calculate lbs/hr

4. There is no discussion of why only 13 individual VOC pollutants were summed versus the entire list(s) for 2010 AIR and TK300.

The rest of the compounds are non detect

5. The information doesn't state whether the original variables in the 1996 monitoring plan are the same (diameter, elevation, time, etc.) for when the lb/hr emission rates were calculated from the 2010 data.

These values remained the same

*
* I can answer one question stated in the e-mail thread below. The 1 lb/hr criteria of total emissions of petroleum hydrocarbons is the threshold (when a control device is used) that TCEQ defines in the standard exemption (now permit by rule) regulations (formerly Texas Administrative Code 116.211, but is now PBR 106.533 found at: http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=106&rl=533 <http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=106&rl=533>). The attached PBR Checklist for PBR 106.533 (for remediation) states the emission quantities meet the applicability criteria of PBR 261 and 262 (which are "generic" PBRs). This PBR does not require registration by TCEQ, only notification (this approach was approved by EPA).

* 106.533 PBR requirements:
(d) Requirements for sites contaminated only with petroleum compounds. For the remediation of sites contaminated only with petroleum compounds, the following requirements must be met. (1) For facilities with an off-site receptor within 100 feet: (A) if a control device meeting the conditions of subsection (g) of this section is used, the total emissions from each facility must meet the following emission limits: (i) total

petroleum hydrocarbons must not exceed 1.0 pound per hour (lb/hr); (ii) the benzene component must not exceed 0.1 lb/hr; and (iii) the hydrogen sulfide component (for non fuel-dispensing sites) must not exceed 0.1 lb/hr; and (B) when a control device is not used, the total emissions from each facility must meet the following emission limits: (i) the total petroleum hydrocarbons must not exceed 0.1 lb/hr; (ii) the benzene component must not exceed 0.01 lb/hr; and (iii) the hydrogen sulfide component (for non fuel-dispensing sites) must not exceed 0.01 lb/hr.

* Background on exemptions/PBRs: TCEQ 106 "permit by rules" replaced the 116 "standard exemptions." Specifically, TCEQ rules state "The authorizations formerly known as standard exemptions and exemptions from permitting are referred to as permits by rule in this title. Types of facilities and changes within facilities authorized by those standard exemptions and exemptions from permitting continue to be authorized unless modifications or changes to those facilities has caused them to no longer meet the conditions of the former standard exemption or exemption from permitting and the general requirements of this subchapter."

* Found a link to TCEQ remediation guidance - FYI:

http://www.tceq.state.tx.us/assets/public/permitting/air/Guidance/NewSourceReview/soilreme.pdf
<http://www.tceq.state.tx.us/assets/public/permitting/air/Guidance/NewSourceReview/soilreme.pdf>

* The original 4/16/96 Air Monitoring Plan for the Remedial Action, Section 4.2 states that the potential VOC air emissions from the groundwater treatment plant (stream 118) were estimated to be 1.9 tpy (based on the sum of VOC values listed in Appendix A of 0.5327 lbs/hr) - that original handwritten calculation at the bottom of the page appears adequate.

* CONCLUSION: In addition to needing clarifying information to adequately assess the results, based on what they said -a control device will NOT be used. so it appears that the total petroleum hydrocarbons emitted at the site EXCEED the 0.l lb/hr emission limit and the facility will NOT qualify for coverage under the PBR - it appears that they will have to apply for an individual NSR permit from TCEQ.

Stephanie Kordzi
Environmental Engineer
Air Permits Section (6PD-R)
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, TX 75202
(214) 665-7520
FAX (214) 665-6762

From: Stephen Tzhone/R6/USEPA/US
To: '"Zeiler, Rose Ms CIV USA OSA'" <rose.zeiler@us.army.mil>, '"Lambert, John R SWT'" <John.R.Lambert@SWT03.usace.army.mil>, '"Williams, Aaron K SWT'" <Aaron.K.Williams@usace.army.mil>, "Plitnik, Marilyn A USA CIV US " <marilyn.a.plitnik.civ@mail.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>, "Paul, Robin E CIV (US)" <robin.e.paul4.civ@mail.mil>
Cc: Fay Duke <Fay.Duke@tceq.texas.gov>, Dale Vodak <Dale.Vodak@tceq.texas.gov>, Terry Burton/R6/USEPA/US@EPA, Richard Mayer/R6/USEPA/US@EPA, Paul Torcoletti/R6/USEPA/US@EPA, kdbecher@usgs.gov, Forsythe.Barry@epamail.epa.gov
Date: 06/29/2012 08:07 PM
Subject: Re: Army Proposal for Longhorn GWTP Interim Operation

---

Hi Rose,

Below is the air analysis (provided by the EPA R6 Air Permits Section) on the Army proposal for Longhorn GWTP Interim

Operation.

Let's plan for a call on path forward, I'm available anytime Monday and before noon on Tuesday.

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

From: Stephanie Kordzi/R6/USEPA/US
To: Richard Mayer/R6/USEPA/US@EPA, Stephen Tzhone/R6/USEPA/US@EPA
Cc: Jeffrey Robinson/R6/USEPA/US
Date: 06/29/2012 08:34 AM
Subject: Re: GWTP status - Analysis of Potential Air Emissions from Groundwater Treament Plant at Longhorn Army Ammunition Plant

---

Rich and Stephen,

- See my specific observations on the spreadsheets below:

    1. The spreadsheet(s) attached to Stephen Tzhone's 5/30/12 e-mail do not provide "calculations." 2010 AIR and TK300 only give effluent concentration (ug/L) data.

    2. The other spreadsheet does not define the equation(s) used or what the variables and/or acronyms are.

    3. I can't identify which sampling results were used to calculate lbs/hr.

    4. There is no discussion of why only 13 individual VOC pollutants were summed versus the entire list(s) for 2010 AIR and TK300.

    5. The information doesn't state whether the original variables in the 1996 monitoring plan are the same (diameter, elevation, time, etc.) for when the lb/hr emission rates were calculated from the 2010 data.

-
- I can answer one question stated in the e-mail thread below. The 1 lb/hr criteria of total emissions of petroleum hydrocarbons is the threshold (when a control device is used) that TCEQ defines in the standard exemption (now permit by rule) regulations (formerly Texas Administrative Code 116.211, but is now PBR 106.533 found at: http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=106&rl=533). The attached PBR Checklist for PBR 106.533 (for remediation) states the emission quantities meet the applicability criteria of PBR 261 and 262 (which are "generic" PBRs). This PBR does not require registration by TCEQ, only notification (this approach was approved by EPA).

- 106.533 PBR requirements:

    (d) Requirements for sites contaminated only with petroleum compounds. For the remediation of sites

contaminated only with petroleum compounds, the following requirements must be met. (1) For facilities with an off-site receptor within 100 feet: (A) if a control device meeting the conditions of subsection (g) of this section is used, the total emissions from each facility must meet the following emission limits: (i) **total petroleum hydrocarbons must not exceed 1.0 pound per hour (lb/hr);** (ii) the benzene component must not exceed 0.1 lb/hr; and (iii) the hydrogen sulfide component (for non fuel-dispensing sites) must not exceed 0.1 lb/hr; and (B) **when a control device is not used, the total emissions from each facility must meet the following emission limits: (i) the total petroleum hydrocarbons must not exceed 0.1 lb/hr;** (ii) the benzene component must not exceed 0.01 lb/hr; and (iii) the hydrogen sulfide component (for non fuel-dispensing sites) must not exceed 0.01 lb/hr.

- Background on exemptions/PBRs: TCEQ 106 "permit by rules" replaced the 116 "standard exemptions." Specifically, TCEQ rules state "The authorizations formerly known as standard exemptions and exemptions from permitting are referred to as permits by rule in this title. Types of facilities and changes within facilities authorized by those standard exemptions and exemptions from permitting continue to be authorized unless modifications or changes to those facilities has caused them to no longer meet the conditions of the former standard exemption or exemption from permitting and the general requirements of this subchapter."

- Found a link to TCEQ remediation guidance - FYI: http://www.tceq.state.tx.us/assets/public/permitting/air/Guidance/NewSourceReview/soilreme.pdf

- The original 4/16/96 Air Monitoring Plan for the Remedial Action, Section 4.2 states that the potential VOC air emissions from the groundwater treatment plant (stream 118) were estimated to be 1.9 tpy (based on the sum of VOC values listed in Appendix A of 0.5327 lbs/hr) - that *original handwritten* calculation at the bottom of the page appears adequate.

- **CONCLUSION: In addition to needing clarifying information to adequately assess the results, based on what they said -a control device will NOT be used. so it appears that the total petroleum hydrocarbons emitted at the site EXCEED the 0.l lb/hr emission limit and the facility will NOT qualify for coverage under the PBR - it appears that they will have to apply for an individual NSR permit from TCEQ.**

Stephanie Kordzi
Environmental Engineer
Air Permits Section (6PD-R)
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, TX 75202
(214) 665-7520
FAX (214) 665-6762

From: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>
To: Fay Duke <fay.duke@tceq.texas.gov>, Stephen Tzhone/R6/USEPA/US@EPA
Cc: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>, "Plitnik, Marilyn A USA CIV US " <marilyn.a.plitnik.civ@mail.mil>, "Paul, Robin E CIV (US)" <robin.e.paul4.civ@mail.mil>, "Srivastav, Praveen" <Praveen.Srivastav@shawgrp.com>, Paul Bruckwicki <paul_bruckwicki@fws.gov>
Date: 06/26/2012 11:20 AM
Subject: RE: GWTP Interim Operation Memo (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

It is in Volume 1 of 5, 1996. Located in Appendix C of the Final Work Plan (BS016755-017237), Air Monitoring Plan begins at BS016835

Aaron K. Williams
Environmental Engineer, ARMY/FUDS Section
HTRW Design Center
Tulsa District
U.S. Army Corps of Engineers
918-669-4915

From: Fay Duke <fay.duke@tceq.texas.gov>
To: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>, Stephen Tzhone/R6/USEPA/US@EPA
Cc: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>, "Plitnik, Marilyn A USA CIV US " <marilyn.a.plitnik.civ@mail.mil>, "Paul, Robin E CIV (US)" <robin.e.paul4.civ@mail.mil>, "Srivastav, Praveen" <Praveen.Srivastav@shawgrp.com>, Paul Bruckwicki <paul_bruckwicki@fws.gov>
Date: 06/26/2012 11:12 AM
Subject: RE: GWTP Interim Operation Memo (UNCLASSIFIED)

Aaron,

One more quick question...do you know the location in the AdminRec where I can find the Air Monitoring Plan?

From: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>
To: Stephen Tzhone/R6/USEPA/US@EPA, Fay Duke <fay.duke@tceq.texas.gov>
Cc: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>, "Plitnik, Marilyn A USA CIV US " <marilyn.a.plitnik.civ@mail.mil>, "Paul, Robin E CIV (US)" <robin.e.paul4.civ@mail.mil>, "Srivastav, Praveen" <Praveen.Srivastav@shawgrp.com>, Paul Bruckwicki <paul_bruckwicki@fws.gov>
Date: 06/21/2012 09:14 AM
Subject: GWTP Interim Operation Memo (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Steve and Fay,

Please see attached electronic copy of documents transmitted last week requesting interim operation of the GWTP without use of the catalytic oxidizer until such time that equipment replacement may take place.

Thanks,

Aaron K. Williams
Environmental Engineer, ARMY/FUDS Section
HTRW Design Center
Tulsa District

U.S. Army Corps of Engineers
918-669-4915

Classification: UNCLASSIFIED
Caveats: NONE

From: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>
To: Fay Duke <fay.duke@tceq.texas.gov>, Stephen Tzhone/R6/USEPA/US@EPA
Cc: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>
Date: 05/30/2012 03:00 PM
Subject: RE: LHAAP-GWTP Emission Calculations (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Van Vangala referenced the 1 lb/hr from the checklist provided- which is actually for TPH. The calculations provided were done by Shaw's air emissions expert back in 2010 the air expert is no longer with them. I would say disregard the 1 lb/hr reference and let your air expert evaluate. I have provided Shaw the checklist to fill out.

The boundary of LHAAP from the GWTP is > 3000 feet, therefore any off-site receptor would be greater than 3000 feet away and the basis of the distance used to calculate E.

Thanks,

From: Fay Duke <fay.duke@tceq.texas.gov>
To: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>, Stephen Tzhone/R6/USEPA/US@EPA
Cc: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>
Date: 05/30/2012 02:05 PM
Subject: RE: LHAAP-GWTP Emission Calculations (UNCLASSIFIED)

Aaron,

Sorry...one more quick question...what off-site receptor did Shaw used. In another word, what is the basis of the distance used to calculate some of the parameter?

From: Fay Duke <fay.duke@tceq.texas.gov>
To: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>, Stephen Tzhone/R6/USEPA/US@EPA
Cc: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>
Date: 05/30/2012 01:49 PM
Subject: RE: LHAAP-GWTP Emission Calculations (UNCLASSIFIED)

Aaron,

Where did the 1lb/hr criteria comes from?

From: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>
To: Stephen Tzhone/R6/USEPA/US@EPA, Fay Duke <fay.duke@tceq.texas.gov>
Cc: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>
Date: 05/30/2012 01:21 PM
Subject: LHAAP-GWTP Emission Calculations (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Steve & Fay,

Attached is a spreadsheet showing calculations of emission rates of untreated gases from the stripper. The calculations were done in 2010 so the data are a little old but calculations should still hold because influent concentrations probably have not changed much. As you will see, the estimated discharge of 0.98 lb/hr is slightly below the criteria of 1 lb/hr with not much room for error. However, with a factor of safety of 20% it will exceed the discharge criteria of 1lb/hr and the site would not qualify for permit by rule.

After talking with Van, it sounds like this option would not necessarily be a quick solution, need an air monitoring probe and a modification for air stripper air emissions but this is still potentially one option.

Shaw is also currently looking into the use of a UV oxidation unit after the metals removal for treatment of VOCs. Hope to hear something about this in the next few days.

Thanks,

Aaron K. Williams
Environmental Engineer, ARMY/FUDS Section
HTRW Design Center
Tulsa District
U.S. Army Corps of Engineers
918-669-4915

Classification: UNCLASSIFIED
Caveats: NONE

From: Fay Duke <fay.duke@tceq.texas.gov>
To: "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, Stephen Tzhone/R6/USEPA/US@EPA
Cc: "Lambert, John" <john.r.lambert@usace.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>, "Wililams, Aaron" <aaron.k.williams@usace.army.mil>
Date: 05/30/2012 11:44 AM
Subject: RE: RE: GWTP Catox repair

Rose/Aaron,

I wanted to follow up on our earlier conference call. Could you have Shaw complete the checklist to claim permit by rule. I'm assuming that they are claiming it under the soil and groundwater remediation exemption. The checklist can be found at the following link.

http://www.tceq.texas.gov/permitting/air/permitbyrule/subchapter-x/remediation.html

From: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>
To: Stephen Tzhone/R6/USEPA/US@EPA
Cc: Fay Duke <fay.duke@tceq.texas.gov>, "Lambert, John R SWT" <John.R.Lambert@usace.army.mil>, "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Lanier, Wendy SWT" <Wendy.D.Lanier@usace.army.mil>
Date: 05/23/2012 03:13 PM
Subject: LHAAP- Scrubber Breakdown at GWTP (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Steve,

To summarize what Rose has already conveyed via phone call/message:

The bearing on the scrubber blower unit shattered and damaged the blower when the operators were in the process of shutting down the Catox unit around 1:00 p.m. on 5/21. Due to the failure of the blower, the hot gases from the Catox unit entered the scrubber unit and the operators hoped that the hot gases would slowly cool down and escape to the atmosphere through the scrubber unit. However, the operators discovered the next morning that hot gases caused significant damage to the scrubber unit. From the preliminary assessment, it is observed that the plastic media is completely melted and the stack is warped.

We are waiting on a cost estimate for replacement parts and looking at other potential options to get the GWTP operational again. We will let you know as soon as we determine the path forward.

Thanks,

Aaron K. Williams
Environmental Engineer, ARMY/FUDS Section
HTRW Design Center
Tulsa District
U.S. Army Corps of Engineers
918-669-4915

Classification: UNCLASSIFIED
Caveats: NONE

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

June 14, 2012

DAIM-ODB-LO

Mr. Stephen Tzhone
US Environmental Protection Agency
Superfund Division (6SF-AT)
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Groundwater Treatment Plant status and proposal for interim GWTP operation without use of the catalytic oxidizer

As you are aware the bearing on the scrubber blower unit shattered and damaged the blower when the operators were in the process of shutting down the Catox unit around 1:00 p.m. on 5/21. Due to the failure of the blower, the hot gases from the Catox unit entered the scrubber unit and caused significant damage to the scrubber unit. From the preliminary assessment, it is observed that the plastic media is completely melted and the stack is warped.

Shaw has contacted a vendor for replacement of equipment and Shaw was informed that procurement would take 4-6 weeks. Because perchlorate migration was observed during a 2 month shutdown of the GWTP in 2009, the Army is seeking an interim solution that would have the GWTP operational in the short term.

Shaw looked into bypassing the airstripper and treating the water through the existing GAC units however the vendor informed Shaw that the GAC will not treat methylene chloride, vinyl chloride and acetone.

Shaw is now looking at running the water through the air stripper and discharging the untreated gases from the air stripper. Shaw has provided air emission calculations for untreated gases from the air stripper based on 2010 influent and effluent results. The estimated discharge is less than 1 lb/hr for all pollutants combined. While this option (discharging the untreated gases from the air stripper) does not include the catalytic oxidizer, the air emission estimates meet the criteria for permit exemption with the total estimated discharge less than 1 lb/hr for all pollutants. In addition, the emissions and monitoring would comply with the Air Monitoring Plan as documented in the following Administrative Records excerpts.

Please see language referenced from the 22 June 1998 Proof of Performance Test Results document (Batestamp 023345-023388), section 1.4 POP Test Objectives:

“The POP Tests at the groundwater treatment plant were conducted to demonstrate that the treatment unit can meet performance standards for site-specific cleanup goals and applicable air emission standards. As specified in the Air Monitoring Plan, the criteria for chemical emissions to the air from the GWTP is based on TNRCC Standard Exemption 68 and 118 (b), (c), and (d), which states that "chemicals shall not be emitted from the control equipment in a quantity greater than 5 tons per year or in a quantity that is greater than the maximum allowable hourly emission (calculated based on distance to the nearest off-site reception and TNRCC limits for parameters of concern) which never exceeds 6 lbs/hr. The treated water effluent discharge limits are shown in Table 2.”

And Page 2-1:
“Table 2-1 shows the emission rates for each of 40 volatile organic compounds for the three test runs, expressed in terms of nanograms per liter (ng/L). Only 16 of the 40 target VOCs were detected in any of the YOST samples. Table 2-1 also shows the average emission rate for all three test runs, in terms of ng/L as well as pounds per hour (lbs/hr). Lastly, Table 2-1 shows the total VOC emissions (i.e., the sum of-all the VOCs), expressed as lbs/hr and tons per year (tons/yr). As shown in Table 2-1, the average total VOC emission rate was O.13lbs/hr. Assuming operation 24 hours per day, 365 days per year, the total emissions were calculated to be 0.6 tons per year based on the measured hourly average.

The results show the sum of VOC emissions to be significantly less than the 6 lbs/hr and 5 tons/yr limits cited in the Standard Exemptions pertinent to the operation. Likewise, all discharge limit requirements were met for the treated water (i.e., effluent).”

Also please see attached 26 February 1997 letter from TNRCC determining operation conforms to the criteria for permit exemption under Standard Exemptions 68 and 118 (Batestamp 018538 – 018545).

Therefore, LHAAP Army requests concurrence from the USEPA Region 6 and TCEQ for interim operation of the GWTP without use of the catalytic oxidizer until such time that equipment replacement may take place. To accomplish this, the air stripper would be modified to include a discharge stack and a daily PID reading would be taken to ensure emissions requirements are met. The continued operation of the GWTP will help ensure increased perchlorate migration beyond the ICT boundary does not occur, as was observed during the shutdown in June, July and part of August in 2009.

The completed Permit by Rule checklist is enclosed.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Enclosures:
1. Permit by Rule Checklist
2. 26 February 1997 letter from TNRCC

Copies furnished:
Fay Duke, TCEQ, Austin, TX
Paul Bruckwicki, Caddo Lake NWR, TX
Aaron Williams, COE – Tulsa District, OK
John Lambert, COE – Tulsa District, OK
Wendy Lanier, COE – Tulsa District, OK
Marilyn Plitnik, AEC
Robin Paul, AEC
Praveen Srivastav, Shaw – Houston, TX

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

June 14, 2012

DAIM-ODB-LO

Ms. Fay Duke (MC-136)
Texas Commission on Environmental Quality
SSDAT/Superfund Section – Remediation Division
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Groundwater Treatment Plant status and proposal for interim GWTP operation without use of the catalytic oxidizer

As you are aware the bearing on the scrubber blower unit shattered and damaged the blower when the operators were in the process of shutting down the Catox unit around 1:00 p.m. on 5/21. Due to the failure of the blower, the hot gases from the Catox unit entered the scrubber unit and caused significant damage to the scrubber unit. From the preliminary assessment, it is observed that the plastic media is completely melted and the stack is warped.

Shaw has contacted a vendor for replacement of equipment and Shaw was informed that procurement would take 4-6 weeks. Because perchlorate migration was observed during a 2 month shutdown of the GWTP in 2009, the Army is seeking an interim solution that would have the GWTP operational in the short term.

Shaw looked into bypassing the airstripper and treating the water through the existing GAC units however the vendor informed Shaw that the GAC will not treat methylene chloride, vinyl chloride and acetone.

Shaw is now looking at running the water through the air stripper and discharging the untreated gases from the air stripper. Shaw has provided air emission calculations for untreated gases from the air stripper based on 2010 influent and effluent results. The estimated discharge is less than 1 lb/hr for all pollutants combined. While this option (discharging the untreated gases from the air stripper) does not include the catalytic oxidizer, the air emission estimates meet the criteria for permit exemption with the total estimated discharge less than 1 lb/hr for all pollutants. In addition, the emissions and monitoring would comply with the Air Monitoring Plan as documented in the following Administrative Records excerpts.

Please see language referenced from the 22 June 1998 Proof of Performance Test Results document (Batestamp 023345-023388), section 1.4 POP Test Objectives:

“The POP Tests at the groundwater treatment plant were conducted to demonstrate that the treatment unit can meet performance standards for site-specific cleanup goals and applicable air emission standards. As specified in the Air Monitoring Plan, the criteria for chemical emissions to the air from the GWTP is based on TNRCC Standard Exemption 68 and 118 (b), (c), and (d), which states that "chemicals shall not be emitted from the control equipment in a quantity greater than 5 tons per year or in a quantity that is greater than the maximum allowable hourly emission (calculated based on distance to the nearest off-site reception and TNRCC limits for parameters of concern) which never exceeds 6 lbs/hr. The treated water effluent discharge limits are shown in Table 2.”

And Page 2-1:
“Table 2-1 shows the emission rates for each of 40 volatile organic compounds for the three test runs, expressed in terms of nanograms per liter (ng/L). Only 16 of the 40 target VOCs were detected in any of the YOST samples. Table 2-1 also shows the average emission rate for all three test runs, in terms of ng/L as well as pounds per hour (lbs/hr). Lastly, Table 2-1 shows the total VOC emissions (i.e., the sum of-all the VOCs), expressed as lbs/hr and tons per year (tons/yr). As shown in Table 2-1, the average total VOC emission rate was O.13lbs/hr. Assuming operation 24 hours per day, 365 days per year, the total emissions were calculated to be 0.6 tons per year based on the measured hourly average.

The results show the sum of VOC emissions to be significantly less than the 6 lbs/hr and 5 tons/yr limits cited in the Standard Exemptions pertinent to the operation. Likewise, all discharge limit requirements were met for the treated water (i.e., effluent).”

Also please see attached 26 February 1997 letter from TNRCC determining operation conforms to the criteria for permit exemption under Standard Exemptions 68 and 118 (Batestamp 018538 – 018545).

Therefore, LHAAP Army requests concurrence from the USEPA Region 6 and TCEQ for interim operation of the GWTP without use of the catalytic oxidizer until such time that equipment replacement may take place. To accomplish this, the air stripper would be modified to include a discharge stack and a daily PID reading would be taken to ensure emissions requirements are met. The continued operation of the GWTP will help ensure increased perchlorate migration beyond the ICT boundary does not occur, as was observed during the shutdown in June, July and part of August in 2009.

The completed Permit by Rule checklist is enclosed.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Enclosures:
1. Permit by Rule Checklist
2. 26 February 1997 letter from TNRCC

Copies furnished:
Stephen Tzhone, EPA, Dallas, TX
Paul Bruckwicki, Caddo Lake NWR, TX
Aaron Williams, COE – Tulsa District, OK
John Lambert, COE – Tulsa District, OK
Wendy Lanier, COE – Tulsa District, OK
Marilyn Plitnik, AEC
Robin Paul, AEC
Praveen Srivastav, Shaw – Houston, TX

LHAAP GWTP - Feasibilty of GAC System
Nov 2, 2010

Data for liquid-phase GAC system

Parameter	Units	Influent Case 1 Result	Influent Case 2 Result	Effluent
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	6.25
1,1,1-Trichloroethane	ug/L	ND	ND	6.25
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	5
1,1,2-Trichloroethane	ug/L	ND	ND	6.25
1,1-Dichloroethane	ug/L	6.67	8.004	3.13
1,1-Dichloroethene	ug/L	43.4	52.08	12.5
1,1-Dichloropropene	ug/L	ND	ND	6.25
1,2,3-Trichlorobenzene	ug/L	ND	ND	3.75
1,2,3-Trichloropropane	ug/L	ND	ND	12.5
1,2,4-Trichlorobenzene	ug/L	ND	ND	5
1,2,4-Trimethylbenzene	ug/L	ND	ND	6.25
1,2-Dibromo-3-chloropropane	ug/L	ND	ND	25
1,2-Dibromoethane	ug/L	ND	ND	6.25
1,2-Dichlorobenzene	ug/L	ND	ND	3.13
1,2-Dichloroethane	ug/L	40.4	48.48	6.25
1,2-Dichloropropane	ug/L	ND	ND	5
1,2-Dimethylbenzene (o-Xylene)	ug/L	ND	ND	6.25
1,3,5-Trimethylbenzene	ug/L	ND	ND	6.25
1,3-Dichlorobenzene	ug/L	ND	ND	6.25
1,3-Dichloropropane	ug/L	ND	ND	5
1,4-Dichlorobenzene	ug/L	ND	ND	3.13
2,2-Dichloropropane	ug/L	ND	ND	6.25
2-Butanone	ug/L	ND	ND	125
2-Chloroethyl vinyl ether	ug/L	ND	ND	50
2-Chlorotoluene	ug/L	ND	ND	3.13
2-Hexanone	ug/L	ND	ND	62.5
4-Chlorotoluene	ug/L	ND	ND	6.25
Acetone	ug/L	213	255.6	62.5
Benzene	ug/L	6.25	7.5	3.13
Bromobenzene	ug/L	ND	ND	3.13
Bromochloromethane	ug/L	ND	ND	5
Bromodichloromethane	ug/L	ND	ND	6.25
Bromoform	ug/L	ND	ND	12.5
Bromomethane	ug/L	ND	ND	12.5
Carbon disulfide	ug/L	155	186	12.5
Carbon tetrachloride	ug/L	ND	ND	6.25
Chlorobenzene	ug/L	ND	ND	3.13
Chloroethane	ug/L	ND	ND	12.5
Chloroform	ug/L	13.2	15.84	3.13
Chloromethane	ug/L	ND	ND	12.5
cis-1,2-Dichloroethene	ug/L	1310	1572	6.25
cis-1,3-Dichloropropene	ug/L	ND	ND	6.25
Dibromochloromethane	ug/L	ND	ND	6.25
Dibromomethane	ug/L	ND	ND	6.25
Dichlorodifluoromethane	ug/L	ND	ND	6.25

Ethylbenzene	ug/L	ND	ND	6.25
Hexachlorobutadiene	ug/L	ND	ND	6.25
Isopropylbenzene	ug/L	ND	ND	6.25
m,p-Xylenes	ug/L	ND	ND	12.5
Methyl isobutyl ketone	ug/L	ND	ND	62.5
Methylene chloride	ug/L	1740	2088	6.25
Naphthalene	ug/L	ND	ND	5
n-BUTYLBENZENE	ug/L	ND	ND	6.25
n-PROPYLBENZENE	ug/L	ND	ND	3.13
p-ISOPROPYLTOLUENE	ug/L	ND	ND	6.25
sec-BUTYLBENZENE	ug/L	ND	ND	6.25
Styrene	ug/L	ND	ND	3.13
tert-BUTYLBENZENE	ug/L	ND	ND	6.25
Tetrachloroethene	ug/L	18.1	21.72	6.25
Toluene	ug/L	ND	ND	6.25
trans-1,2-Dichloroethene	ug/L	12.5	15	6.25
trans-1,3-Dichloropropene	ug/L	ND	ND	12.5
Trichloroethene	ug/L	6290	7548	6.25
Trichlorofluoromethane	ug/L	ND	ND	6.25
Vinyl acetate	ug/L	ND	ND	62.5
Vinyl chloride	ug/L	15.9	19.08	6.25

Note: Influent Case 1 values are the max values from Sept 2010 results.
Influent Case 2 values are 1.2 times Case 1 values.
Effleuent values are representative ND values.

LHAAP GWTP - Feasibilty of GAC System
Nov 2, 2010

Data for vapor-phase GAC system

Parameter	Units	Influent Case 1	Influent Case 2	Effluent Result
1,1,1-Trichloroethane	ppbv			0.44
1,1,2,2-Tetrachloroethane	ppbv			0.37
1,1,2-Trichloroethane	ppbv			0.56
1,1-Dichloroethane	ppbv	11.0	13.2	0.63
1,1-Dichloroethene	ppbv	73.2	87.9	4.7
1,2,4-Trichlorobenzene	ppbv			0.63
1,2,4-Trimethylbenzene	ppbv			0.57
1,2-Dibromoethane	ppbv			0.35
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ppbv			0.38
1,2-Dichlorobenzene	ppbv			0.53
1,2-Dichloroethane	ppbv	66.8	80.1	3.3
1,2-Dichloropropane	ppbv			0.55
1,2-Dimethylbenzene (o-Xylene)	ppbv			0.61
1,3,5-Trimethylbenzene	ppbv			0.52
1,3-Dichlorobenzene	ppbv			0.49
1,4-Dichlorobenzene	ppbv			0.49
Allyl chloride	ppbv			1.1
Benzene	ppbv	13.1	15.7	0.76
Benzyl chloride	ppbv			0.61
Bromomethane	ppbv			0.65
Carbon tetrachloride	ppbv			0.38
Chlorobenzene	ppbv			0.52
Chloroethane	ppbv			1.3
Chloroform	ppbv	18.1	21.7	0.49
Chloromethane	ppbv			1.2
cis-1,2-Dichloroethene	ppbv	2209.6	2651.5	130
cis-1,3-Dichloropropene	ppbv			0.45
Dichlorodifluoromethane	ppbv			0.57
Ethylbenzene	ppbv			0.56
Freon 113	ppbv			250
Hexachlorobutadiene	ppbv			0.35
m,p-Xylenes	ppbv			1.1
Methylene chloride	ppbv	3350.2	4020.2	16
p-Ethyltoluene	ppbv			0.49
Styrene	ppbv			3.9
Tetrachloroethene	ppbv	17.8	21.4	0.36
Toluene	ppbv			0.64
trans-1,3-Dichloropropene	ppbv			0.56
Trichloroethene	ppbv	7828.4	9394.1	410
Trichlorofluoromethane	ppbv			0.45
Vinyl chloride	ppbv	41.6	49.9	1

Note: Influent Case 1 and Case 2 values are based on liquid influent results, assuming 100% transfer of VOCs from liquid stream to vapor stream.
Effluent values are from sample LH-CEM-5356 (2010 0818).

TK300

LOCATION_CODE			TK300			TK300			TK300		
SAMPLE_NO			LH-TK300-7363-G			LH-TK300-7366-G			LH-TK300-7370-G		
SAMPLE_DATE			1-Sep-10			8-Sep-10			15-Sep-10		
SAMPLE_PURPOSE			REG			REG			REG		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	1,1,1-Trichloroethane	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	2	U	U	5	U	U	4	U	U
VOLATILES	1,1,2-Trichloroethane	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	1,1-Dichloroethane	ug/L	4.75	J	J	6.67	J	J	6.35	J	J
VOLATILES	1,1-Dichloroethene	ug/L	20.2			42.6			40.5		
VOLATILES	1,1-Dichloropropene	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	1,2,3-Trichlorobenzene	ug/L	1.5	U	U	3.75	U	U	3	U	U
VOLATILES	1,2,3-Trichloropropane	ug/L	5	U	U	12.5	U	U	10	U	U
VOLATILES	1,2,4-Trichlorobenzene	ug/L	2	U	U	5	U	U	4	U	U
VOLATILES	1,2,4-Trimethylbenzene	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	10	U	U	25	U	U	20	U	U
VOLATILES	1,2-Dibromoethane	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	1,2-Dichlorobenzene	ug/L	1.25	U	U	3.13	U	U	2.5	U	U
VOLATILES	1,2-Dichloroethane	ug/L	31.4			40.3			36.8		
VOLATILES	1,2-Dichloropropane	ug/L	2	U	U	5	U	U	4	U	U
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	1,3,5-Trimethylbenzene	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	1,3-Dichlorobenzene	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	1,3-Dichloropropane	ug/L	2	U	U	5	U	U	4	U	U
VOLATILES	1,4-Dichlorobenzene	ug/L	1.25	U	U	3.13	U	U	2.5	U	U
VOLATILES	2,2-Dichloropropane	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	2-Butanone	ug/L	25	U	U	62.5	U	U	50	U	U
VOLATILES	2-Chloroethyl vinyl ether	ug/L	20	U	U	50	U	U	40	U	U
VOLATILES	2-Chlorotoluene	ug/L	1.25	U	U	3.13	U	U	2.5	U	U
VOLATILES	2-Hexanone	ug/L	25	U	U	62.5	U	U	50	U	U
VOLATILES	4-Chlorotoluene	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	Acetone	ug/L	25	U	U	162	J	J	50	U	U
VOLATILES	Benzene	ug/L	1.39	J	J	3.13	U	U	2.5	U	U
VOLATILES	Bromobenzene	ug/L	1.25	U	U	3.13	U	U	2.5	U	U
VOLATILES	Bromochloromethane	ug/L	2	U	U	5	U	U	4	U	U
VOLATILES	Bromodichloromethane	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	Bromoform	ug/L	5	U	U	12.5	U	U	10	U	U
VOLATILES	Bromomethane	ug/L	5	U	U	12.5	U	U	10	U	U
VOLATILES	Carbon disulfide	ug/L	15.9			55.9			155		
VOLATILES	Carbon tetrachloride	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	Chlorobenzene	ug/L	1.25	U	U	3.13	U	U	2.5	U	U
VOLATILES	Chloroethane	ug/L	5	U	U	12.5	U	U	10	U	U
VOLATILES	Chloroform	ug/L	7.95	J	J	12.9	J	J	12.1	J	J
VOLATILES	Chloromethane	ug/L	5	U	U	12.5	U	U	10	U	U
VOLATILES	cis-1,2-Dichloroethene	ug/L	848			1270			1250		
VOLATILES	cis-1,3-Dichloropropene	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	Dibromochloromethane	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	Dibromomethane	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	Dichlorodifluoromethane	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	Ethylbenzene	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	Hexachlorobutadiene	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	Isopropylbenzene	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	m,p-Xylenes	ug/L	5	U	U	12.5	U	U	10	U	U
VOLATILES	Methyl isobutyl ketone	ug/L	25	U	U	62.5	U	U	50	U	U
VOLATILES	Methylene chloride	ug/L	57.6			178			21.6	J	J
VOLATILES	Naphthalene	ug/L	2	U	U	5	U	U	4	U	U
VOLATILES	n-BUTYLBENZENE	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	n-PROPYLBENZENE	ug/L	1.25	U	U	3.13	U	U	2.5	U	U
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	sec-BUTYLBENZENE	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	Styrene	ug/L	1.25	U	U	3.13	U	U	2.5	U	U
VOLATILES	tert-BUTYLBENZENE	ug/L	2.5	U	U	6.25	U	U	5	U	U

TK300

LOCATION_CODE			TK300			TK300			TK300		
SAMPLE_NO			LH-TK300-7363-G			LH-TK300-7366-G			LH-TK300-7370-G		
SAMPLE_DATE			1-Sep-10			8-Sep-10			15-Sep-10		
SAMPLE_PURPOSE			REG			REG			REG		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
VOLATILES	Tetrachloroethene	ug/L	8.57	J	J	14	J	J	18.1	J	J
VOLATILES	Toluene	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	trans-1,2-Dichloroethene	ug/L	3.75	J	J	7.41	J	J	7.14	J	J
VOLATILES	trans-1,3-Dichloropropene	ug/L	5	U	U	12.5	U	U	10	U	U
VOLATILES	Trichloroethene	ug/L	2750			4530			4810		
VOLATILES	Trichlorofluoromethane	ug/L	2.5	U	U	6.25	U	U	5	U	U
VOLATILES	Vinyl acetate	ug/L	25	U	U	62.5	U	U	50	U	U
VOLATILES	Vinyl chloride	ug/L	3.68	J	J	10.8	J	J	15.9	J	J

2010 AIR

LOCATION_CODE			CEM-AIR			CEM-AIR			CEM-AIR		
SAMPLE_NO			LH-CEM-7284			LH-CEM-5314			LH-CEM-5356		
SAMPLE_DATE			18-Feb-10			11-May-10			18-Aug-10		
SAMPLE_PURPOSE			REG			REG			REG		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
VOLATILES	1,1,1-Trichloroethane	ppbv	0.29	U	U	0.045	U	U	0.44	U	U
VOLATILES	1,1,2,2-Tetrachloroethane	ppbv	0.24	U	U	0.038	U	U	0.37	U	U
VOLATILES	1,1,2-Trichloroethane	ppbv	0.37	U	U	0.057	U	U	0.56	U	U
VOLATILES	1,1-Dichloroethane	ppbv	0.41	U	U	0.064	U	U	0.63	U	U
VOLATILES	1,1-Dichloroethene	ppbv	0.63	U	U	1.2			4.7		
VOLATILES	1,2,4-Trichlorobenzene	ppbv	0.42	U	U	0.065	U	U	0.63	U	U
VOLATILES	1,2,4-Trimethylbenzene	ppbv	0.37	U	U	2.2			0.57	U	U
VOLATILES	1,2-Dibromoethane	ppbv	0.23	U	U	0.036	U	U	0.35	U	U
VOLATILES	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ppbv	0.25	U	U	0.039	U	U	0.38	U	U
VOLATILES	1,2-Dichlorobenzene	ppbv	0.35	U	U	0.054	U	U	0.53	U	U
VOLATILES	1,2-Dichloroethane	ppbv	0.43	U	U	0.73			3.3		
VOLATILES	1,2-Dichloropropane	ppbv	0.36	U	U	0.056	U	U	0.55	U	U
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ppbv	0.4	U	U	4.1			0.61	U	U
VOLATILES	1,3,5-Trimethylbenzene	ppbv	0.34	U	U	0.79			0.52	U	U
VOLATILES	1,3-Dichlorobenzene	ppbv	0.32	U	U	0.05	U	U	0.49	U	U
VOLATILES	1,4-Dichlorobenzene	ppbv	0.32	U	U	0.05	U	U	0.49	U	U
VOLATILES	Allyl chloride	ppbv	0.69	U	U	0.11	U	U	1.1	U	U
VOLATILES	Benzene	ppbv	0.5	U	U	19			0.76	U	U
VOLATILES	Benzyl chloride	ppbv	0.4	U	U	0.063	U	U	0.61	U	U
VOLATILES	Bromomethane	ppbv	0.43	U	U	0.067	U	U	0.65	U	U
VOLATILES	Carbon tetrachloride	ppbv	0.25	U	U	0.039	U	U	0.38	U	U
VOLATILES	Chlorobenzene	ppbv	0.34	U	U	0.054	U	U	0.52	U	U
VOLATILES	Chloroethane	ppbv	0.82	U	U	0.13	U	U	1.3	U	U
VOLATILES	Chloroform	ppbv	0.32	U	U	0.3			0.49	U	U
VOLATILES	Chloromethane	ppbv	0.77	U	U	0.12	U	U	1.2	U	U
VOLATILES	cis-1,2-Dichloroethene	ppbv	36			32			130		
VOLATILES	cis-1,3-Dichloropropene	ppbv	0.29	U	U	0.046	U	U	0.45	U	U
VOLATILES	Dichlorodifluoromethane	ppbv	0.37	U	U	0.41			0.57	U	U
VOLATILES	Ethylbenzene	ppbv	0.36	U	U	3.2			0.56	U	U
VOLATILES	Freon 113	ppbv	120	D		42	D		250	D	
VOLATILES	Hexachlorobutadiene	ppbv	0.23	U	U	0.035	U	U	0.35	U	U
VOLATILES	m,p-Xylenes	ppbv	0.73	U	U	13			1.1	U	U
VOLATILES	Methylene chloride	ppbv	0.48	U	U	5.7			16		
VOLATILES	p-Ethyltoluene	ppbv	0.32	U	U	0.86			0.49	U	U
VOLATILES	Styrene	ppbv	0.37	U	U	1.7			3.9		
VOLATILES	Tetrachloroethene	ppbv	0.23	U	U	0.27			0.36	U	U
VOLATILES	Toluene	ppbv	0.42	U	U	22			0.64	U	U
VOLATILES	trans-1,3-Dichloropropene	ppbv	0.37	U	U	0.057	U	U	0.56	U	U
VOLATILES	Trichloroethene	ppbv	120			120	D		410	D	
VOLATILES	Trichlorofluoromethane	ppbv	0.3	U	U	0.046	U	U	0.45	U	U
VOLATILES	Vinyl chloride	ppbv	0.68	U	U	1.7			1	U	U

Pollutant	Hourly Emission Rate (Lb/Hr)	TLV (L)	TLV Reference	Distance (ft)	(K) value
1,1-Dichloroethane	0.000667966	810	ACGIH List	3000	8
1,1-Dichloroethene	0.004386345	20	ACGIH List	3000	8
1,2-Dichloroethane	0.004316243	40	ACGIH List	3000	8
Acetone	0.021330854	4	106.262 List	3000	8
Benzene	0.000625905	3	106.262 List	3000	8
Carbon disulfide	0.015522452	31	ACGIH List	3000	8
Chloroform	0.001321912	10	106.262 List	3000	8
cis-1,2-Dichloroethene	0.131189758	793	ACGIH List	3000	8
Methylene chloride	0.174252045	26	106.262 List	3000	8
Tetrachloroethene	0.001812622	335	ACGIH List	3000	8
trans-1,2-Dichloroethene	0.001251811	793	ACGIH List	3000	8
Trichloroethene	0.629911127	135	106.262 List	3000	8
Vinyl chloride	0.001592303	2	106.262 List	3000	8
	0.988181343				

(1) The maximum hourly limit allowed by this PBR, per pollutant, is 6 lbs/hr. The E value was overridden with 6 lb/hr when the ca

	Tons Per Year
1,1-Dichloroethane	0.002925692
1,1-Dichloroethene	0.019212189
1,2-Dichloroethane	0.018905145
Acetone	0.093429139
Benzene	0.002741465
Carbon disulfide	0.067988341
Chloroform	0.005789975
cis-1,2-Dichloroethene	0.574611139
Methylene chloride	0.763223956
Tetrachloroethene	0.007939284
trans-1,2-Dichloroethene	0.005482931
Trichloroethene	2.759010738
Vinyl chloride	0.006974288

Calculated Maxium Hourly Emission Limit [1] (E) = L/K	Status
6	PASS
2.5	PASS
5	PASS
0.5	PASS
0.375	PASS
3.875	PASS
1.25	PASS
6	PASS
3.25	PASS
6	PASS
6	PASS
6	PASS
0.25	PASS

alculated E was higher.

00114157

Figure 1: 30 TAC §106.262(a)(2)

D, Feet	K	
100	326	E = maximum allowable hourly emission, and never to exceed 6 pounds per hour.
200	200	
300	139	
400	104	
500	81	L = value as listed or referenced in Table 262
600	65	
700	54	
800	46	K = value from the table on this page. (interpolate intermediate values)
900	39	
1,000	34	
2,000	14	D = distance to the nearest off-plant receptor.
3,000 or more	8	

Figure 2: 30 TAC §106.262(a)(2)

TABLE 262
LIMIT VALUES (L) FOR USE WITH EXEMPTIONS FROM PERMITTING §106.262

The values are not to be interpreted as acceptable health effects values relative to the issuance of any permits under Chapter 116 of this title (relating to Control of Air Pollution by Permits for New Construction or Modification).

Compound	Limit (L) Milligrams Per Cubic Meter
Acetone	590.
Acetaldehyde	9.
Acetone Cyanohydrin	4.
Acetonitrile	34.
Acetylene	2662.
N-Amyl Acetate	2.7
Sec-Amyl Acetate	1.1
Benzene	3.
Beryllium and Compounds	0.0005
Boron Trifluoride, as HF	0.5
Butyl Alcohol, -	76.
Butyl Acrylate	19.
Butyl Chromate	0.01
Butyl Glycidyl Ether	30.
Butyl Mercaptan	0.3
Butyraldehyde	1.4
Butyric Acid	1.8
Butyronitrile	22.
Carbon Tetrachloride	12.

Chloroform	10.
Chlorophenol	0.2
Chloroprene	3.6
Chromic Acid	0.01
Chromium Metal, Chromium II and III Compounds	0.1
Chromium VI Compounds	0.01
Coal Tar Pitch Volatiles	0.1
Creosote	0.1
Cresol	0.5
Cumene	50.
Dicyclopentadiene	3.1
Diethylaminoethanol	5.5
Diisobutyl Ketone	63.9
Dimethyl Aniline	6.4
Dioxane	3.6
Dipropylamine	8.4
Ethyl Acrylate	0.5
Ethylene Dibromide	0.38
Ethylene Glycol	26.
Ethylene Glycol Dinitrate	0.1
Ethylidene-2-norbornene, 5-	7.
Ethyl Mercaptan	0.08
Ethyl Sulfide	1.6
Glycolonitrile	5.
Halothane	16
Heptane	350.
Hexanediamine, 1,6-	0.32

	1.
Hydrogen Fluoride	0.5
Hydrogen Sulfide	1.1
Isoamyl Acetate	133.
Isoamyl Alcohol	15.
Isobutyronitrile	22.
Kepone	0.001
Kerosene	100.
Malononitrile	8.
Mesityl Oxide	40.
Methyl Acrylate	5.8
Methyl Amyl Ketone	9.4
Methyl-t-butyl ether	45.
Methyl Butyl Ketone	4.
Methyl Disulfide	2.2
Methylenebis (2-chloroaniline) (MOCA)	0.003
Methylene Chloride	26.
Methyl Isoamyl Ketone	5.6
Methyl Mercaptan	0.2
Methyl Methacrylate	34.
Methyl Propyl Ketone	530.
Methyl Sulfide	0.3
Mineral Spirits	350.
Naphtha	350.
Nickel, Inorganic Compounds	0.015
Nitroglycerine	0.1
Nitropropane	5.

	350.
Parathion	0.05
Pentane	350.
Perchloroethylene	33.5
Petroleum Ether	350
Phenyl Mercaptan	0.4
Propionitrile	14.
Propyl Acetate	62.6
Propylene Oxide	20.
Propyl Mercaptan	0.23
Silica-amorphous- precipitated, silica gel	4.
Silicon Carbide	4.
Stoddard Solvent	350.
Styrene	21.
Succinonitrile	20.
Tolidine	0.02
Trichloroethylene	135.
Trimethylamine	0.1
Valeric Acid	0.34
Vinyl Acetate	15.
Vinyl Chloride	2.

NOTE: The time weighted average (TWA) Threshold Limit Value (TLV) published by the American Conference of Governmental Industrial Hygienists (ACGIH), in its TLVs and BEIs guide (1997 Edition) shall be used for compounds not included in the table. The Short Term Exposure Level (STEL) or Ceiling Limit (annotated with a "C") published by the ACGIH shall be used for compounds that do not have a published TWA TLV. This section cannot be used if the compound is not listed in the table or does not have a published TWA TLV, STEL, or Ceiling Limit in the ACGIH TLVs and BEIs guide.

00114162

Final

Remedial Action Operation Summary Report, Years 1 and 2 Landfill 12 (LHAAP-12) Longhorn Army Ammunition Plant Karnack, Texas

Prepared for U.S. Army Corps of Engineers – Tulsa District
1645 South 101st, East Avenue
Tulsa, Oklahoma 74128

Prepared by Shaw Environmental, Inc.
1401 Enclave Parkway, Suite 250
Houston, Texas 77077

Contract No. W912QR-04-D-0027, Task Order No. DS02
Project No. 117591
Rev 0
July 2012

Shaw® a world of Solutions™

Shaw® Shaw Environmental, Inc.

Date: July 27, 2012

Project No.: 117591

TRANSMITTAL LETTER:

To: Mr. Aaron Williams

Address: US Army Corps of Engineers - Tulsa
CESWT-PP-M
1645 South 101st East Ave
Tulsa, Oklahoma 74128

Re: ***Final Remedial Action Operation Summary Report, Years 1 and 2, Landfill 12 (LHAAP-12)***

Contract No. W912QR-04-D-0027/DS02

For: Review ____ As Requested ____ Approval ____ Corrections ____ Submittal **X** Other ____

Item No:	*No. of Copies*	*Date:*	*Document Title*
1	2	July 2012	**Final Remedial Action Operation Summary Report, Years 1 and 2 Landfill 12 (LHAAP-12) Longhorn Army Ammunition Plant, Karnack, Texas**

Aaron– Enclosed are 2 copies of the above-named document for your files. Copies have been distributed as indicated at the end of this message.

Please call with any questions or comments.

Sincerely:

For Praveen Srivastav
Project Manager

Distribution:
R. Zeiler, BRAC (1)
M. Plitnik, AEC (1)
S. Tzhone, USEPA (2)
F. Duke, TCEQ (2)
D. Vodak, TCEQ (1)
P. Bruckwicki, USFWS (1)

1401 Enclave Parkway, Suite 250, Houston, Texas 77077 Phone: (281) 531-3100/Fax: (281) 531-3136

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

July 27, 2011

DAIM-ODB-LO

Mr. Stephen Tzhone
US Environmental Protection Agency
Superfund Division (6SF-AT)
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Final Remedial Action Operation Summary Report, Years 1 and 2, Landfill 12 (LHAAP-12), Longhorn Army Ammunition Plant, Karnack, Texas, July 2012

Dear Mr. Tzhone,

The above-referenced document is being transmitted to you for your records. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility.

The point of contact for this action is the undersigned. I ask that Praveen Srivastav, Shaw's Project Manager, be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
F. Duke, TCEQ, Austin, TX
D. Vodak, TCEQ, Tyler, TX
P. Bruckwicki, Caddo Lake NWR, TX
J. Lambert, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
M. Plitnik, USAEC, San Antonio, TX
P. Srivastav, Shaw – Houston, TX (for project files)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

July 27, 2011

DAIM-ODB-LO

Ms. Fay Duke (MC-136)
SSDAT/Superfund Section
Remediation Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Remedial Action Operation Summary Report, Years 1 and 2, Landfill 12 (LHAAP-12), Longhorn Army Ammunition Plant, Karnack, Texas, July 2012
SUP 126

Dear Ms. Duke,

The above-referenced document is being transmitted to you for your records. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility.

The point of contact for this action is the undersigned. I ask that Praveen Srivastav, Shaw's Project Manager be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
S. Tzhone, USEPA Region 6, Dallas, TX
D. Vodak, TCEQ, Tyler, TX
P. Bruckwicki, Caddo Lake NWR, TX
J. Lambert, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
M. Plitnik, USAEC, San Antonio, TX
P. Srivastav, Shaw, Houston, TX (for project files)

From:	Stephen Tzhone
To:	Zeiler, Rose Ms CIV USA OSA; Lambert, John R SWT; Williams, Aaron K SWT; Plitnik, Marilyn A CIV USA IMCOM AEC
Cc:	Fay Duke; Dale Vodak; Richard Mayer; Paul Torcoletti; kdbecher@usgs.gov; Terry Burton; Forsythe.Barry@epamail.epa.gov
Subject:	EPA Comments on LHAAP-12 RA Operation Reports: RTC to Year 1 and 2 Report and Draft Years 3 and 4 Report
Date:	Monday, February 27, 2012 2:10:57 PM
Attachments:	ATT00002.gif RTC-LHAAP-12 Annual RAO Rpt Yr 1 and 2 TCEQ and EPA 112811.doc

Hi Rose,

The EPA has no further comments on the RTCs for LHAAP-12 RA Operation Year 1 and 2 Report.

The EPA has these comments for the Year 3 and 4 Report:

---

1) General: Consistent with comments provided by the TCEQ, the current monitoring well network appears inadequate and monitoring well coverage east of 12WW24 is an apparent data gap. Additional groundwater data is needed from this area to substantiate the statement on page 3-1 that the *"...the size of the plume is stable or shrinking around monitoring well 12WW24..."*

2) General: Substantial variation in VOC concentrations was observed in historic monitoring data when collected at a greater frequency (e.g. quarterly). Seasonal variation is a possible cause of these observed concentration differences. Figures 2-3 and 2-4 demonstrate the concentration maxima were generally observed in approximately the first calendar quarter of each year (winter/early spring) with concentration minima generally noted during mid-year sampling or later (summer), consistent with the current annual sampling being performed in June. The ability to evaluate potential seasonal variations in contaminant concentration is lost with the annual monitoring program. Furthermore, the current annual sampling date of June generally corresponds with historic concentration minima. The EPA is concerned that the annual monitoring program, as currently performed, produces data that is not representative of water quality conditions throughout the year. This observation casts considerable uncertainty on the statement that "*VOC concentrations in 12WW24 have shown a decreasing trend in concentrations over the past several years...*" on page 3-1. Consistent with comments provided by the TCEQ, quarterly monitoring is recommended to evaluate if contaminant concentrations continue to fluctuate during the year and to assess the causation of this variation. If the Army continues to defer the consideration of additional sampling until the next five-year review, then the EPA recommends that the annual data be collected during the first calendar quarter of each year.

3) Figure 2-2: Please show other existing (i.e. not plugged/abandoned) shallow monitoring wells on Figure 2-2, if any. A different symbol or color can be used to indicate that they are not part of the current monitoring program.

4) Figure 2-5: Groundwater Potentiometric Map (Based on August 25, 2003 Measurements): Monitoring well 12WW10 had a water level of 186.34 and monitoring well 12WW01 had a water level of 186.21. Are these levels correct? The monitoring wells to the east and west of these wells had water levels of 180.+ or 181.+.

5) Section 2.0: The Land Use Controls narrative does not mention that there is a deed restriction/notice prohibiting groundwater use and a restriction on the installation of water production wells for this site. This information should be mentioned or noted in the Report.

6) Section 2.2.1: As written, the discussion regarding gradient and flow direction is confusing. The text seems to imply that the direction of groundwater flow in the plume area (i.e. 12WW24) is to the north-northeast and northwest based on historical water level measurements from an expanded well network

and that the east-southeast flow direction observed in 2010/2011 data (as shown on Figure 2-2) is a function of the more limited group of monitoring wells and not an actual change in groundwater flow direction. However, the last sentence of this section (on page 2-3) affirmatively states that the downgradient flow direction from 12WW24 is to the east-southeast. Please modify this section to better explain what the EPA believes you are attempting to describe. That being said, the configuration of the water table and groundwater flow directions can and do change over time (seasonal to longer-term fluctuations) and the current monitoring well network used for water level measurements appears insufficient. The EPA agrees with the Army's recommendation to collect water level data from the eight monitoring wells during future sampling; however, it is unclear if these eight wells will provide sufficient coverage to accurately portray the true potentiometric surface. Are there other monitoring wells available, in addition to the eight shown on Figure 2-2, from which water levels can be measured?

7) Section 3.1: EPA recommends that a more robust statistical evaluation of VOC concentration trends is warranted beyond simple concentration-time plots (i.e. Figures 2-3 and 2-4) to substantiate the statement on page 3-1 that "*VOC concentrations in 12WW24 have shown a decreasing trend in concentrations over the past several years...*" Statistically-based trend evaluations, such as linear regression methods, the Mann-Kendall Trend Test and/or the Theil-Sen Trend Line, are potentially appropriate statistical methods. One potential statistical reference to consider is "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities-Unified Guidance" (EPA, 2009), which is also appropriate for application at CERCLA sites.

8) Section 3.2: EPA agrees with the Army that all eight wells shown on Figure 2-2, Groundwater Gradient Map, should be gauged for water levels for the next reporting period. The number wells that were gauged (5) for this report is inadequate. Also, EPA recommends that groundwater monitoring wells 12WW01 and 12WW02 be sampled in the future and analyzed (at a minimum) for VOCs. What value are these wells in monitoring the landfill's performance if they are not sampled? Furthermore, EPA recommends that an additional well be installed approximately 100 to 200 feet east of monitoring well 12WW24 and the samples analyzed for VOCs (and water level gauged). This should aid in plume uncertainty and groundwater flow direction.

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

From: "Fay Duke" <Fay.Duke@tceq.texas.gov>

To: "Praveen Srivastav" <praveen.srivastav@shawgrp.com>, "Rose Ms CIV USA OSA Zeiler" <rose.zeiler@us.army.mil>
Cc: Terry Burton/R6/USEPA/US@EPA, Barry Forsythe/R6/USEPA/US@EPA, Richard Mayer/R6/USEPA/US@EPA, Paul Torcoletti/R6/USEPA/US@EPA, Stephen Tzhone/R6/USEPA/US@EPA, "John R SWT Lambert" <John.R.Lambert@SWT03.usace.army.mil>, "Marilyn A CIV USA IMCOM AEC Plitnik" <marilyn.a.plitnik@us.army.mil>, "Aaron K SWT Williams" <Aaron.K.Williams@usace.army.mil>, <kdbecher@usgs.gov>

Date: 01/10/2012 05:56 PM

Subject: TCEQ Comments on LHAAP-12 RA(O) Reports: RTC to Year 1 and 2 Report and Draft Years 3 and 4 Report

---

Rose/Praveen,

The TCEQ has completed its review of the Draft Remedial Action Operation (RA(O) Summary Report for Years 3 and 4 as well as Army's responses to comments (RTCs) on the Year 1 and Year 2 of the RA(O) report. We generally disagree with the conclusion of the reports because we believe there exist data gaps which prohibits a sound evaluation. Specifically, we have the following comments:

1. Our concerns regarding the possibility that seasonal effect on the groundwater concentrations remains. We noted that samples collected during the winter/spring months appear to be much higher than the samples collected during the summer months. The difference in concentration can be as high as 100 ppb. Yet, we note that samples for Year 3 and Year 4 were collected only during the summer months. We again believe that quarterly samples must be reinitiated to evaluate the possibility of seasonal variations on the results of the groundwater data. We disagree with and don't quite understand the rationale for waiting until after the completion of the 2012 five-year review. The objective of the Five-Year review is to evaluate whether the remedy is effective and will continue to be protective. Without sufficient data, the five-year review will likely be inconclusive.
2. Similar to the above comment, we disagree with Army's response regarding the waiting for the completion of the Five Year review to determine whether additional well is needed to complete the data gap down gradient of well 12WW24. Furthermore, as stated in Army's response, the change in groundwater flow was a factor of a reduction in the number of wells in the monitoring network. This is a good indicator that the current monitoring network is insufficient for the fate and transport evaluation at this site due to the complex hydrogeology. We again, recommend installing additional wells.
3. Based on Army's response to TCEQ comment No. 3, it appears that there's a deficiency in the current sampling design plan. A modifications to the sampling design plan will be necessary to ensure that ROD objective are met.
4. Finally, please explain why Army completed three years of samples before the first report is submitted?

Please let me know if you should have any questions or wish to discuss these comments.

From: "Srivastav, Praveen" <Praveen.Srivastav@shawgrp.com>

To: Stephen Tzhone/R6/USEPA/US@EPA, Fay Duke <Fay.Duke@tceq.texas.gov>
Cc: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>, "Lambert, John R SWT" <John.R.Lambert@SWT03.usace.army.mil>, "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Watson, Susan" <Susan.Watson@shawgrp.com>, "Everett, Kay" <Kay.Everett@shawgrp.com>

Date: 11/28/2011 02:48 PM

Subject: FW: RTCs to TCEQ and EPA Comments - LHAAP-12 Annual RA(O) Rpt Years 1 and 2

Steve:

Please see attached response to regulatory comments on LHAAP-12 Year 1 and 2 RAO report.

Thank you,

Praveen Srivastav, PhD, PG, PMP

Project Manager
Federal Division/Project Management
Shaw Environmental & Infrastructure

1401 Enclave Parkway, Suite 250
Houston, TX 77077

281.531.3188 direct
281.639.8743 cell

praveen.srivastav@shawgrp.com

Shaw™ a world of Solutions™

www.shawgrp.com

Please consider the environment before printing this e-mail.

From: Watson, Susan
Sent: Monday, November 28, 2011 12:25 PM
To: Srivastav, Praveen
Cc: Everett, Kay
Subject: RTCs to TCEQ and EPA Comments - LHAAP-12 Annual RA(O) Rpt Years 1 and 2

Praveen,

Attached are the responses to TCEQ's and EPA's comments on the LHAAP-12 Remedial Action Operation (RA[O]) Report for Years 1 and 2.

The tracked changes have been accepted and these are ready to go to the regulators for their review.

Thanks,

Susan

****Internet Email Confidentiality Footer**** Privileged/Confidential Information may be contained in this message. If you are not the addressee indicated in this message (or responsible for delivery of the message to such person), you may not copy or deliver this message to anyone. In such case, you should destroy this message and notify the sender by reply email. Please advise immediately if you or your employer do not consent to Internet email for messages of this kind. Opinions, conclusions and other information in this message that do not relate to the official business of The Shaw Group Inc. or its subsidiaries shall be understood as neither given nor endorsed by it. _____ The Shaw Group Inc. http://www.shawgrp.com

Comments on Draft LHAAP-12 RA(O) Year 1 and 2 Report
Longhorn Army Ammunition Plant, Karnack, Texas
Dated February 2011

Reviewer: Fay Duke, TCEQ, Stephen Tzhone, EPA
Respondent: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E)
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
TCEQ – Original Set of Comments						
1.			Based on the quarterly samples of well 12WW24, the concentrations of TCE appear to have decreased since the installation of this well. The amount of decrease appears to fluctuate (±100 ppb) depending on the time the samples were collected. Based on the limited data, we wonder whether there is a seasonal variation. However, we acknowledged that it may be premature to definitively conclude a seasonal variation based on the limited date collected to date. To that end, we recommend that quarterly sample be continued so evaluation can be made.	C	The concentrations in 12WW24 have decreased. The results for annual sampling completed in 2009 and 2010 are included in the Draft LHAAP-12 RA(O) Year 3 and 4 Report (table attached) which will be forwarded to the regulators after Army review. Recommend considering these additional results in forming a recommendation, which could be addressed in the upcoming 2012 five-year review or the 2012 RA(O)/LTM Report.	
2.			Based on recent groundwater flow direction, there are no wells down gradient of well 12WW24. Additionally, we believe that the analysis of the natural attenuation process at this site can be strengthen with the installation of additional wells down gradient of well 12WW24. We recommend installing a couple of wells east of well 12WW24, one within the suspected groundwater plume and one outside the edge of the groundwater plume.	C	Elevation results from older wells that have since been abandoned were used to establish the groundwater gradient model presented in the Remedial Design. With the removal of these wells, an appearance of a slight variance in groundwater gradient direction is now indicated, from the north-northeast to east-northeast and no well is down gradient of 12WW24. Groundwater elevations can be modified in the future to collect readings from the eight remaining wells. Currently there is only one well located within the plume due to reducing concentrations, well abandonments, and a shrinking plume. Sampling results from 12WW01 and 12WW02 have been non-detect for TCE through 2006 (last sampling date). The former well location of 12WW10 is approximately 100 feet downgradient of 12WW24. Prior to its abandonment due to stainless steel screen degradation, concentrations of TCE fluctuated from less than detection to a maximum of 14.5 μg/L with the last result of 6.96 μg/L in December 2004. Data will be evaluated at the next 5-year review 2012 (year). If at the 5-year review stage, the data indicates	

Comments on Draft LHAAP-12 RA(O) Year 1 and 2 Report
Longhorn Army Ammunition Plant, Karnack, Texas
Dated February 2011

Reviewer: Fay Duke, TCEQ, Stephen Tzhone, EPA
Respondent: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E)
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
					additional wells are needed for remedy performance, a proposed well location within the plume is suggested at less than 100 feet due east from 12WW24. Likewise a proposed well location outside the plume is suggested at approximately 350 feet from 12WW24 to the east-northeast.	
3.			Please clarify why samples are not being collected from wells 12WW01, 12WW02 and 12WW05 to monitor the performance of the landfill cap.	C	According to the Remedial Design document, these wells were not part of the sampling design plan (Appendix A of the Remedial Design).	
TCEQ – Comments from January 10, 2012						
1.			The TCEQ has completed its review of the Draft Remedial Action Operation (RA(O) Summary Report for Years 3 and 4 as well as Army's responses to comments (RTCs) on the Year 1 and Year 2 of the RA(O) report. We generally disagree with the conclusion of the reports because we believe there exist data gaps which prohibits a sound evaluation.	E	We propose re-evaluation of sampling frequency with the Five-Year review; however, we also propose alternating the quarter for collection of annual samples until that re-evaluation.	
			Our concerns regarding the possibility that seasonal effect on the groundwater concentrations remains. We noted that samples collected during the winter/spring months appear to be much higher than the samples collected during the summer months. The difference in concentration can be as high as 100 ppb. Yet, we note that samples for Year 3 and Year 4 were collected only during the summer months. We again believe that quarterly samples must be reinitiated to evaluate the possibility of seasonal variations on the results of the groundwater data. We disagree with and don't quite understand the rationale for waiting until after the completion of the 2012 five-year review. The objective of the Five-Year review is to evaluate whether the remedy is effective and will continue to			

Comments on Draft LHAAP-12 RA(O) Year 1 and 2 Report
Longhorn Army Ammunition Plant, Karnack, Texas
Dated February 2011

Reviewer: Fay Duke, TCEQ, Stephen Tzhone, EPA
Respondent: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E)
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
			be protective. Without sufficient data, the five-year review will likely be inconclusive.			
2.			Similar to the above comment, we disagree with Army's response regarding the waiting for the completion of the Five Year review to determine whether additional well is needed to complete the data gap down gradient of well 12WW24. Furthermore, as stated in Army's response, the change in groundwater flow was a factor of a reduction in the number of wells in the monitoring network. This is a good indicator that the current monitoring network is insufficient for the fate and transport evaluation at this site due to the complex hydrogeology. We again, recommend installing additional wells.	E	We propose re-evaluating the data at the Five-Year review; however, we also propose collecting groundwater elevation readings from the eight remaining wells during the next sampling event to modify groundwater elevations.	
3.			Based on Army's response to TCEQ comment No. 3 [from the Original Set of Comments], it appears that there's a deficiency in the current sampling design plan. A modifications to the sampling design plan will be necessary to ensure that ROD objective are met.	E	We propose re-evaluating the current sampling design plan at the Five-Year review.	
4.			Finally, please explain why Army completed three years of samples before the first report is submitted?	C	The lengthy delay in submitting the first report to regulators was not intentional. The Army and contractor went through several iterations of Army comments prior to preparing a draft version for regulators and other priorities led to lengthy delays in addressing responses and comments for the first report.	
EPA – Original Set of Comments						
1.		Figure 1-1 and 1-2	Based on the groundwater gradient maps, the groundwater flow is towards the east-northeast. Even though the plume appears to be on the eastern edge of the landfill, there really isn't an up gradient well to help define flow direction and general background concentrations. Well 12WW07 is shown in the ROD, but it has been abandoned. In addition, the ROD showed that there was potential groundwater flow towards Central Creek (north) from the northern tip of the	C	See response to TCEQ Comment #2. The change in groundwater flow was a factor of a reduction in the number of wells in the monitoring network used to define the current gradient. Established groundwater gradients with the former (now abandoned) wells at the site indicated that there was a northwest groundwater gradient as well as a northeast. The current compliance well 12WW22 is located near Central Creek to monitor and confirm that no plume migration to the northwest of the landfill, toward Central Creek, is occurring.	

Comments on Draft LHAAP-12 RA(O) Year 1 and 2 Report
Longhorn Army Ammunition Plant, Karnack, Texas
Dated February 2011

Reviewer: Fay Duke, TCEQ, Stephen Tzhone, EPA
Respondent: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E)
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
			landfill, but in September 2008 and April 2009 flow is now towards the east-northeast. Was the ROD incorrect or is this just a factor of a different number of wells being used to define gradient?			
2.	2-2	4th para	Page 2-2 4rth paragraph states that well 12WW23 is down gradient of 12WW24. If you follow potential flow paths in figure 1-1 agree that the well is down gradient. However, based on the contours from figure 1-2 the flow path would be more easterly and well 12WW24 would most likely not indicate contamination if it reached this far (unless the plume expanded laterally). Appears to be a data gap to the east of 12WW24.	C	See response to TCEQ Comment #2 and EPA Comment #1.	
3.		Figures 1-1, 1-2, 3-1, 3-2	The groundwater gradients shown on Figures 1-1 and 1-2 are from water levels collected in September 2008 and April 2009. The contamination maps are from samples collected in June 2008 (December 2006 for 3 of the wells) and from July 2009 (December 2006 for 3 of the wells). Figures should show data collected from the same time period.	C	The wells, 12WW01, 12WW02, and 12WW05, are not part of the design monitoring network according to the Remedial Design. Data from these 3 wells was added to provide historical perspective and clearly noted as such, however in response to EPA comment they will be removed from the figures. Groundwater gradient elevation data from the September 2008 and April 2009 gauging events were used to generate the figures. Groundwater elevations were collected from all 8 wells remaining at the site to provide a better gradient profile. Only 5 of those wells are part of the design monitoring plan. Thus, when developing a groundwater gradient map based on data collected during the sampling event, there are only 5 data points that are used to draw the contour. The groundwater gradient figures will be revised and drawn to depict the gauging data collected on the analytical sample collection date.	
4.		Figure 3-1	Well 12WW02 has a vinyl chloride isopleth around it, but the concentration is reported as 4.3 J. Was the J value used since the reporting level was above the MCL for VC. The reporting level for wells	C	The vinyl chloride data from 12WW02, was added to provide historical perspective and clearly noted as such. However in response to EPA comment, the data and concentration contour will be removed from the figure as	

Comments on Draft LHAAP-12 RA(O) Year 1 and 2 Report
Longhorn Army Ammunition Plant, Karnack, Texas
Dated February 2011

Reviewer: Fay Duke, TCEQ, Stephen Tzhone, EPA
Respondent: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E)
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
			12WW01 and 12WW05 for VC was <10. Both of these wells had samples collected in December 2006 and were not part of the well sampling network in 2008 and 2009. Technically, you can't say that the VC analysis conducted for these wells meets MCL's when the reporting level was < 10 (2 MCL). These wells need to be sampled in the next round of sampling if they are going to be used for delineation of the plume and water levels.		indicated in response to EPA's Comment #3 above. As biodegradation occurs at LHAAP-12, vinyl chloride concentrations are expected to increase as degradation of 1,2-dichloroethene takes place. As the degradation process continues vinyl chloride concentrations are expected to decrease as it degrades into ethene.	
5.			Well 12WW22 located on the north side of Central Creek appears to be up and cross gradient of the plume. The water levels reported for this well in table 2-1 shows that this well is influenced by Central Creek due to several feet of fluctuation in water levels during the 2 years of elevation data collection. The rest of the wells don't indicate' such rapid changes in elevation.	C	Noted.	
6.	3-4	4th para	"Even though some of the values are slightly outside the optimal range for microbial activity, microbial is unlikely to be inhibited at such levels". Add reference for this statement.	C	The statement will be removed.	
7.	3-5	3.3/1st para	"The time to achieve the MCL based on the 12WW24 in-well attenuation rate appears favorable and is at the lower end of the previously indicated range (Shaw, 2007c). Please include the time and the range within the text.	D	In light of TCEQ's comment #1, seasonal variation may account for the observed fluctuations in attenuation and with limited data it is too early to report an estimated cleanup time. The language will be revised as follows to account for TCEQ comment #1: The time to achieve the MCL based on the 12WW24 in-well attenuation rate appears favorable and is at the lower end of the previous range (Shaw, 2007c). However, seasonal variation could account for an apparent fluctuation in the attenuation rate which may result in a longer estimated time to achieve the MCL.	

Final

Remedial Action Operation Summary Report, Years 1 and 2 Landfill 12 (LHAAP-12) Longhorn Army Ammunition Plant Karnack, Texas

Prepared for U.S. Army Corps of Engineers – Tulsa District
1645 South 101st, East Avenue
Tulsa, Oklahoma 74128

Prepared by Shaw Environmental, Inc.
1401 Enclave Parkway, Suite 250
Houston, Texas 77077

Contract No. W912QR-04-D-0027, Task Order No. DS02
Shaw Project No. 117591
Rev 0
July 2012

Shaw® a world of Solutions™

Table of Contents

List of Tables ii
List of Figures ii
List of Appendices ii
Acronyms and Abbreviations iii

1.0 Introduction **1-1**
1.1 Remedial Action Objectives 1-1
1.2 Performance Objectives 1-2
1.3 Site Description 1-2
1.4 Conceptual Site Model 1-2
1.5 Groundwater Gradient 1-3
2.0 Site Activities at LHAAP-12 ..... **2-1**
2.1 Physical Inspection Summary 2-1
2.2 Groundwater Monitoring and Analytical Results 2-2
3.0 Natural Attenuation Evaluation **3-1**
3.1 First Line of Evidence: Change in COC Concentrations over Time and with Distance 3-1
3.2 Second Line of Evidence: Geochemical Indicators 3-2
3.3 Third Line of Evidence: Predictive Modeling and Microbial Analysis 3-5
3.4 Natural Attenuation Summary and Conclusions 3-6
4.0 Conclusions **4-1**
5.0 References **5-1**

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • July 2012

List of Tables

Table 1-1 Drinking Water Maximum Contaminant Levels for Trichloroethene, cis-1,2-Dichloroethene, and Vinyl Chloride 1-4
Table 2-1 Groundwater Elevation Data, LHAAP-12.....2-4
Table 3-1 Analytical Results of Monitored Natural Attenuation Parameters, LHAAP-12.....3-7
Table 3-2 LHAAP-12, Attenuation Rate Constant Based on First Order Kinetics and Estimated Cleanup Time for 12WW24 3-8

List of Figures

Figure 1-1 Groundwater Gradient Map, LHAAP-12, June 2008
Figure 1-2 Groundwater Gradient Map, LHAAP-12, July 2009
Figure 1-3 Groundwater Gradient Map, LHAAP-12, February 2003
Figure 1-4 Groundwater Gradient Map, LHAAP-12, February 2004
Figure 1-5 Groundwater Gradient Map, LHAAP-12, December 2004
Figure 3-1 2008 Groundwater Contamination Plume Map, LHAAP-12
Figure 3-2 2009 Groundwater Contamination Plume Map, LHAAP-12
Figure 3-3 Chlorinated Ethene Trends at 12WW24, LHAAP-12
Figure 3-4 Chlorinated Ethene Trends at 12WW20, LHAAP-12

List of Appendices

Appendix A Site Inspection Checklist
Appendix B Monitoring Well Sampling and Purging Forms
Appendix C Laboratory Analytical Results

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • July 2012

Acronyms and Abbreviations

cells/mL	cells per milliliter
cis-1,2-DCE	cis-1,2-dichloroethene
COC	contaminant of concern
CSM	conceptual site model
DO	dissolved oxygen
Fe^{+2}	ferrous iron
Fe^{+3}	ferric iron
IRA	interim remedial action
LHAAP	Longhorn Army Ammunition Plant
LUC	land use control
MARC	Multiple Award Remediation Contract
MCL	maximum contaminant level
µg/L	micrograms per liter
mg/L	milligrams per liter
MNA	monitored natural attenuation
mV	milli-volts
NO_3^-	nitrate
ORP	oxygen reduction potential
RA(O)	Remedial Action (Operation)
RAO	Remedial Action Objectives
RD	Remedial Design
ROD	Record of Decision
Shaw	Shaw Environmental, Inc.
SO_4^{-2}	sulfate
TCE	trichloroethene
TOC	total organic carbon
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • July 2012

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Tulsa District, contracted Shaw Environmental, Inc. (Shaw), to perform closure of multiple sites at the former Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, under the Louisville District's Multiple Award Remediation Contract (MARC) No. W912QR-04-D-0027, Task Order DS02. As part of this contract, Shaw is performing site monitoring activities at the inactive landfill known as Landfill 12 (also known as LHAAP-12) located at LHAAP as part of the Remedial Action (Operation) [RA(O)]. A Record of Decision (ROD) was executed for LHAAP-12 in August, 2006 (U.S. Army, 2006). Groundwater monitoring and site inspection activities at LHAAP-12 are ongoing as described in the Final Remedial Design (RD) Addendum (Shaw, 2007a). This report summarizes the results of site activities conducted in Years 1 and 2 of the RA(O).

LHAAP is located in east-central Texas in the northeastern corner of Harrison County between State Highway 43 in Karnack, Texas, and the western shore of Caddo Lake. The nearest cities are Marshall, Texas, approximately 14 miles to the southwest, and Shreveport, Louisiana, approximately 40 miles to the east. Caddo Lake is a large freshwater lake that bounds LHAAP to the north and east. The eastern fence of the LHAAP installation is 3.5 miles from the Texas-Louisiana state border.

1.1 Remedial Action Objectives

The remedial action objectives (RAOs) developed for LHAAP-12 include:

- Protection of human health by preventing human exposure to trichloroethene (TCE) contaminated groundwater
- Protection of human health and the environment by reducing the leaching and migration of landfill hazardous substances into the groundwater
- Protection of human health and the environment by preventing TCE-contaminated groundwater from migrating into nearby surface water

Although there is no current or anticipated future us of the groundwater as drinking water, monitored natural attenuation (MNA) will return the contaminated groundwater at LHAAP-12 to its potential beneficial use as drinking water wherever practicable.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • July 2012

1.2 Performance Objectives

The performance objectives at LHAAP-12 consist of two components: physical inspections and groundwater monitoring. Physical inspections are conducted annually to confirm compliance with Land Use Control (LUC) objectives, which include the following:

- Ensure the integrity of the existing landfill cover
- Ensure no consumption of TCE-contaminated groundwater

The objectives of groundwater monitoring at LHAAP-12 are to:

- Ensure that TCE-contaminated groundwater does not impact nearby surface water
- Ensure that the Safe Drinking Water Act maximum contaminant levels (MCLs) are achieved for groundwater contaminants TCE, cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride (VC).

Specifically, monitoring will be used to evaluate the effectiveness of the landfill cap and the effectiveness of MNA in reducing contaminant concentrations over time, and to detect plume migration. See **Table 1-1** for the MCLs.

1.3 Site Description

LHAAP-12 was established in 1963 and was used for the disposal of industrial solid wastes, possibly containing small quantities of hazardous constituents generated at LHAAP. From 1978 until its closure in April 1994, the landfill was used continuously for the disposal of non-hazardous industrial solid waste. The construction of a landfill cap over the site was completed in 1998 as part of an Interim Remedial Action (IRA). The IRA is consistent with U.S. Environmental Protection Agency (USEPA) presumptive remedy guidance. The final remedy for LHAAP-12 is protective of human health and the environment and consists of LUCs in conjunction with MNA. LUCs include those set in place by the ROD (U.S. Army, 2006) for landfill cap maintenance and restriction of groundwater use.

1.4 Conceptual Site Model

A detailed conceptual site model (CSM) of LHAAP-12 was previously presented in the ROD (U.S. Army, 2006). Based on earlier investigations, the CSM identified the landfill as the source of contamination. The CSM for the source area includes release mechanisms such as spills, runoff, and ultimately leaching into the groundwater. Exposure pathways include ingestion, inhalation, and dermal contact for the human receptor. Other receptors that may be impacted via creek contact include freshwater life and animals that utilize the creeks. The potential pathways of LHAAP-12 groundwater include Central Creek and Harrison Bayou.

Streambed survey data indicate that groundwater underlying LHAAP-12 is at a lower elevation than Central Creek during the dry season and may not discharge into the creek. However, groundwater may potentially discharge to Central Creek during the wet season (Shaw, 2007b). Historically, the highest contaminant of concern (COC) concentrations in groundwater were detected within the landfill footprint at monitoring well 12WW12, which was abandoned due to landfill cap construction. 12WW24 currently has the highest COC concentrations; it is located directly downgradient of the former location of 12WW12.

The remedial action has eliminated exposure pathways. First, with the addition of the landfill cap, the direct exposure pathways for contaminants to come into contact with receptors have been cut off. Second, land use controls have cut off the pathway to human ingestion of groundwater. Third, natural attenuation will prevent the potential release of contaminants into the surface water. Also, the source area is hydraulically isolated from the groundwater as confirmed by sampling results collected from monitoring wells downgradient and cross gradient from the landfill.

1.5 Groundwater Gradient

The established groundwater gradient trends toward the east-northeast (Shaw, 2007b; USACE, 2007) and current data collected in June 2008 and July 2009 confirms the same east-northeast trend as shown in **Figures 1-1** and **1-2**. Historical data from Spring 2003 and Spring and Winter 2004 (**Figures 1-3**, **1-4**, and **1-5**) shows that the groundwater gradient can vary in this part of the site. Generally, flow is to the east, but flow is also observed to occur in the northeast and southeast directions. Changes in the groundwater flow direction can occur both seasonally and in the longer term.

Table 1-1
Drinking Water Maximum Contaminant Levels
for Trichloroethene, cis-1,2,-Dichloroethene, and Vinyl Chlroride
LHAAP-12

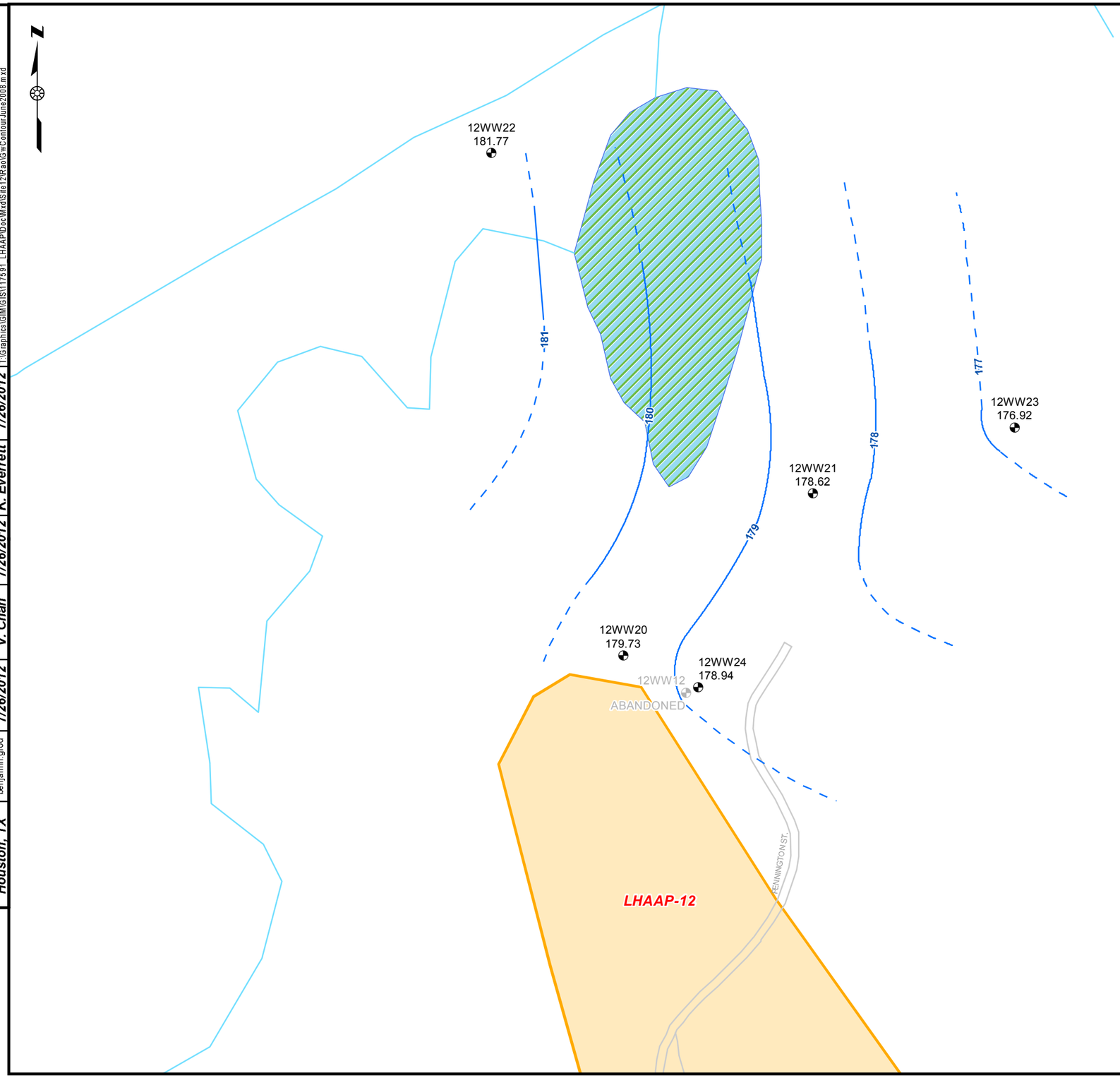
Parameter	MCL	Units
Trichloroethene	5	µg/L
cis-1,2-Dichloroethene	70	µg/L
Vinyl Chloride	2	µg/L

Note:

µg/L - micrograms per liter

MCL - maximum contaminant levels from the June 2007 *Final Remedial Design Addendum, Landfill 12 (LHAAP-12), Longhorn Army Ammunition Plant, Karnack, Texas*

FILE PATH	T:\Graphics\GIM\GIS\117591 LHAAP\Doc\Mxd\Site12\Rao\GwContourJune2008.mxd
APPROVED BY	K. Everrett 7/26/2012
CHECKED BY	V. Chan 7/26/2012
DRAWN BY	benjamin.grod 7/26/2012
OFFICE	Houston, TX



LEGEND

- Shallow Monitoring Well
- Groundwater Elevation Contour (06/2008) *Dashed where inferred*
- Stream
- Road
- Site (Boundary of Landfill Cap)
- Drainage Feature

Note:

12WW22 and 12WW23 are compliance wells.

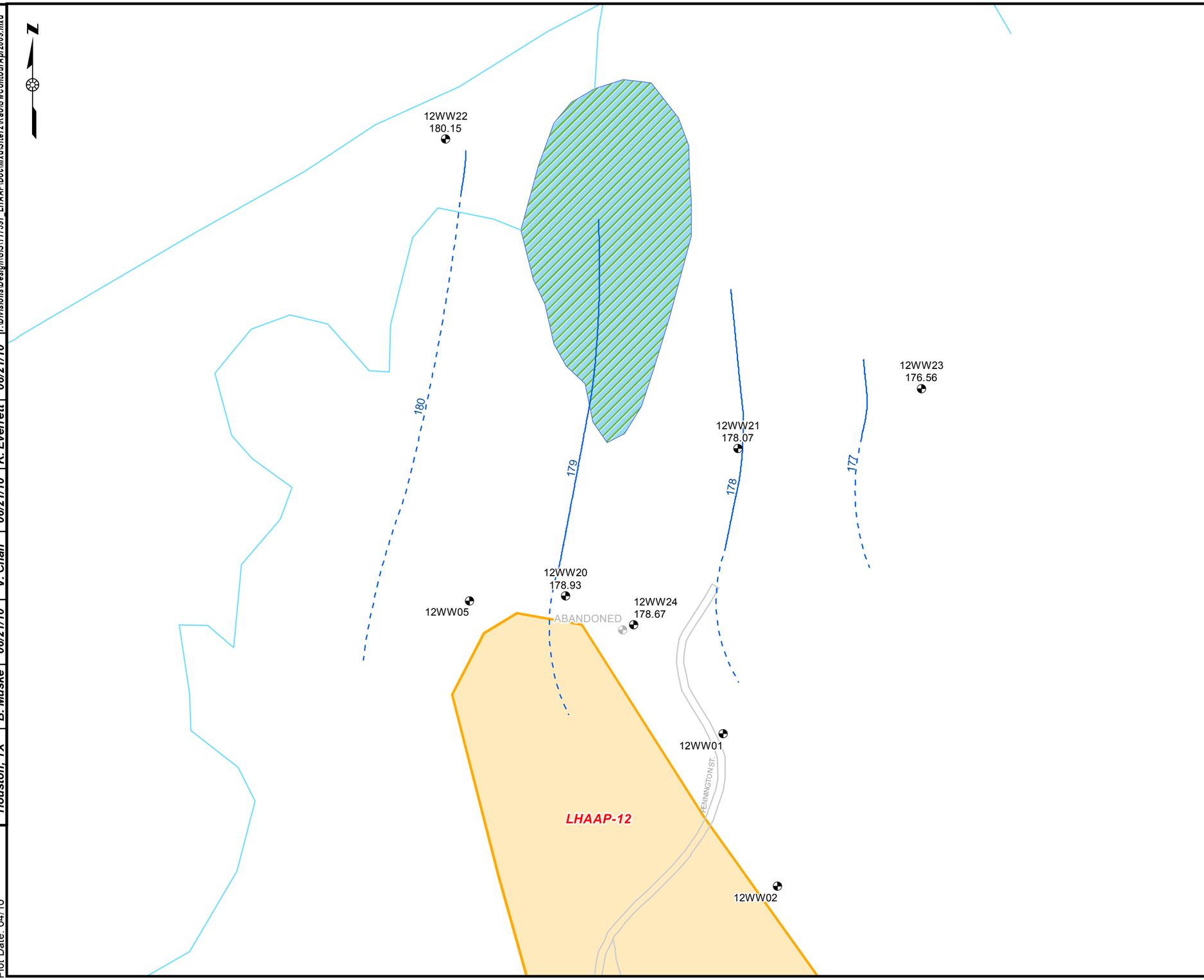
0 75 150 300 Feet

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-1

GROUNDWATER GRADIENT MAP
LHAAP-12
JUNE 2008

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS



LEGEND

- Shallow Monitoring Well
- Groundwater Elevation Contour (07/2009) *Dashed where inferred.*
- Stream
- Road
- Site (Boundary of Landfill Cap)
- Drainage Feature

Note:

12WW22 and 12WW23 are compliance wells.

0 75 150 300 Feet

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-2

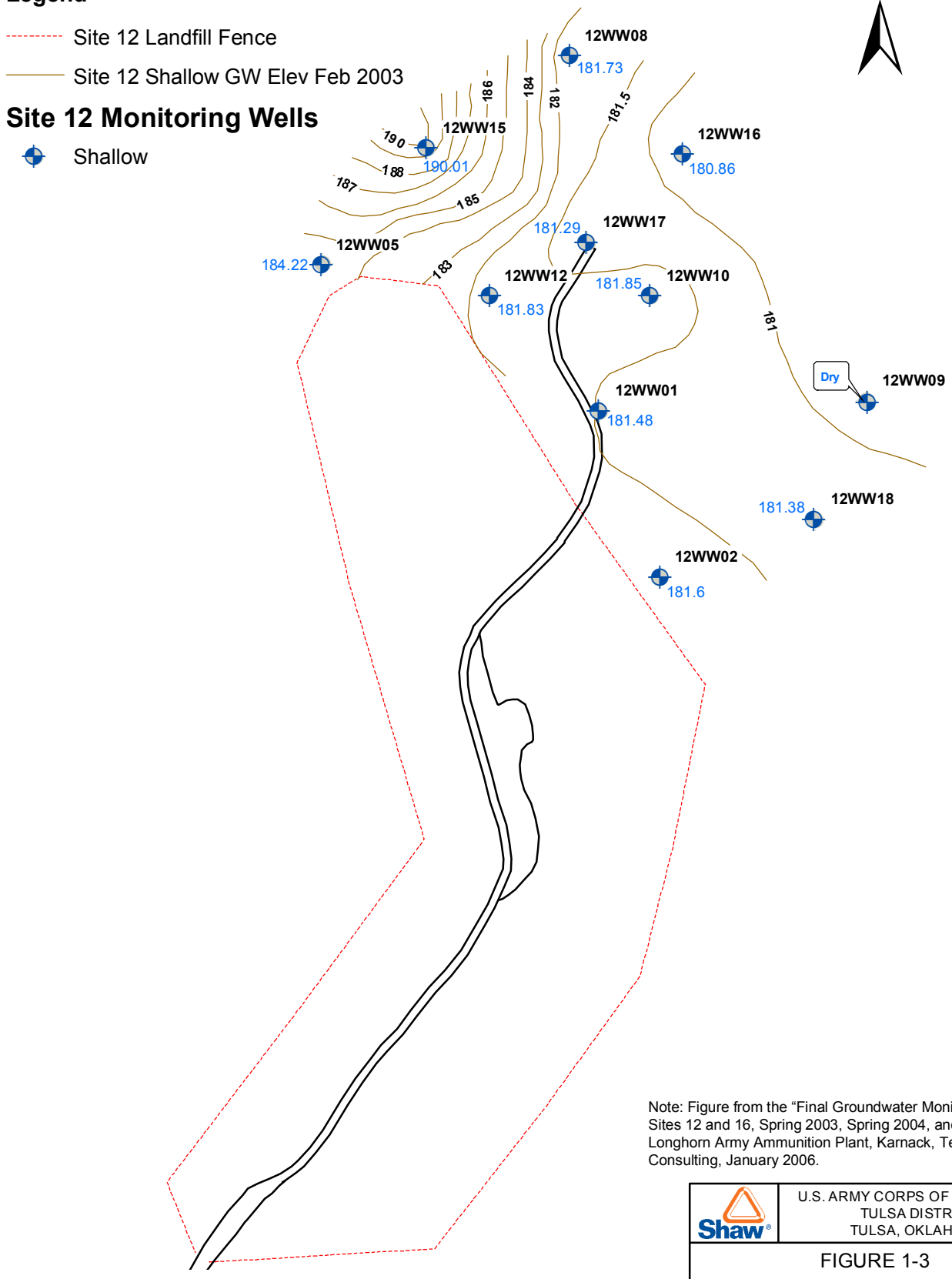
GROUNDWATER GRADIENT MAP
LHAAP-12
JULY 2009

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
Houston, TX	B. Muske 06/21/10	V. Chan 06/21/10	K. Everrett 06/21/10	T:\Divisions\Design\GIS\117591_LHAAP\Docs\Mxd\Site12\Rao\GwContourApr2009.mxd

Plot Date: 04/10

T:\Graphics\GIMG\S\117591_LHAAP\Doc\Mxd\Site12\RaoGW_Elevations.mxd



Note: Figure from the "Final Groundwater Monitoring Report Sites 12 and 16, Spring 2003, Spring 2004, and Winter 2004, Longhorn Army Ammunition Plant, Karnack, Texas," ALL Consulting, January 2006.

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

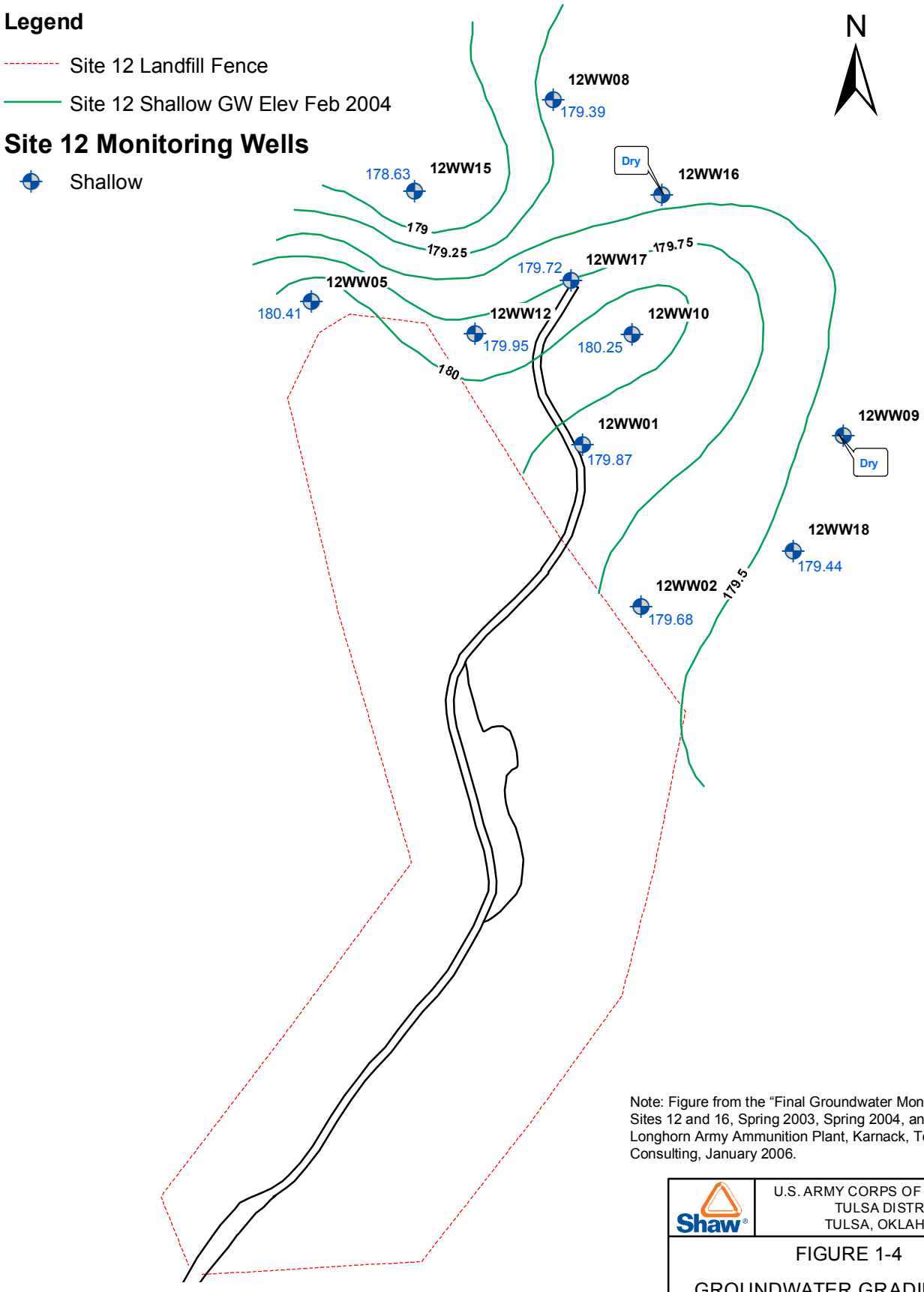
FIGURE 1-3

GROUNDWATER GRADIENT MAP
LHAAP-12
FEBRUARY 2003

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

MRM - HOU - 3/15/2012

T:\Graphics\GIMG\S\117591_LHAAP\Doc\Mxd\Site12\RaoGW_Elevations.mxd



Note: Figure from the "Final Groundwater Monitoring Report Sites 12 and 16, Spring 2003, Spring 2004, and Winter 2004, Longhorn Army Ammunition Plant, Karnack, Texas," ALL Consulting, January 2006.

Shaw

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

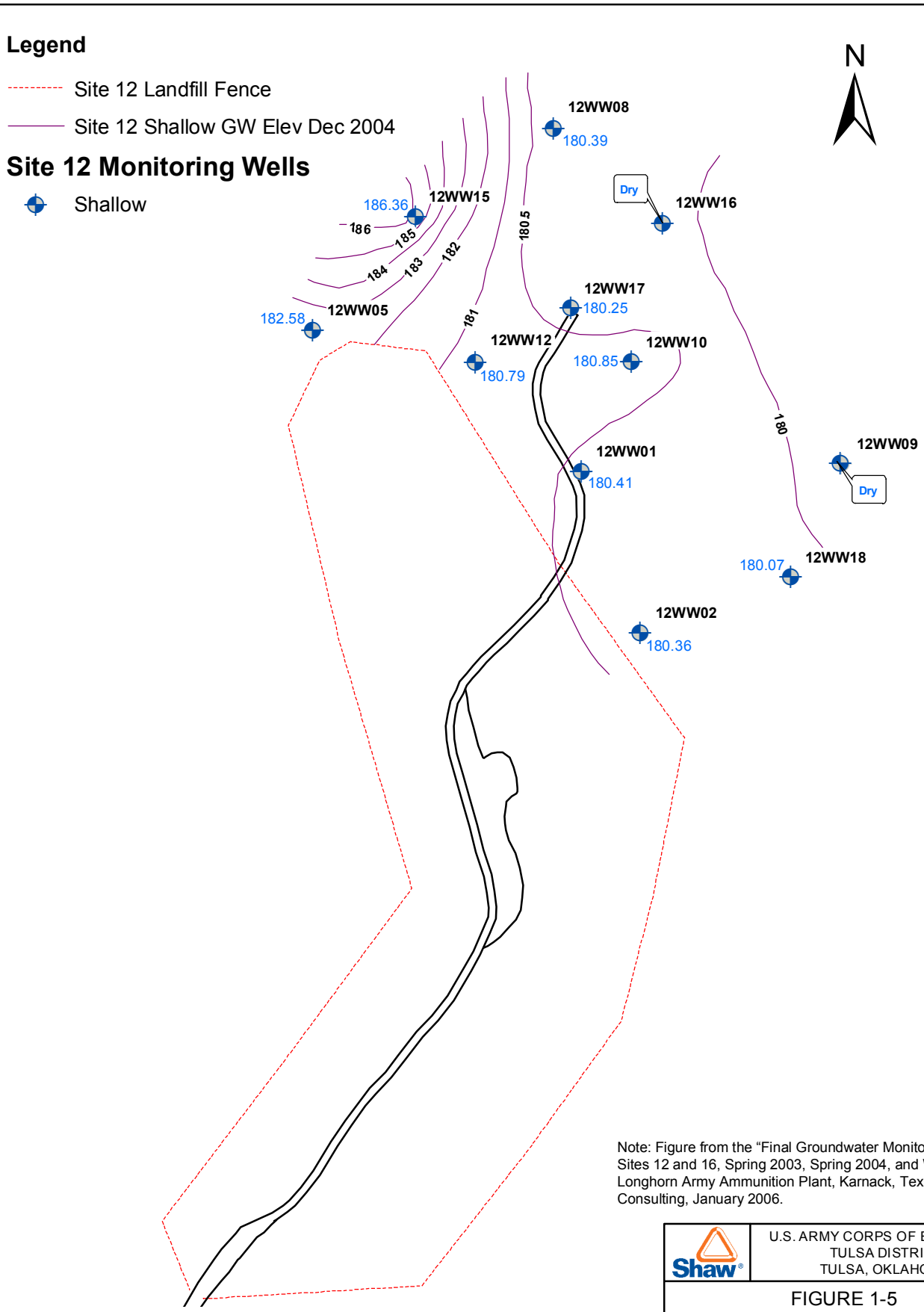
FIGURE 1-4

GROUNDWATER GRADIENT MAP
LHAAP-12
FEBRUARY 2004

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

MRM - HOU - 3/15/2012

T:\Graphics\GIMG\S\117591_LHAAP\Doc\Mxd\Site12\RaoGW_Elevations.mxd



Note: Figure from the "Final Groundwater Monitoring Report Sites 12 and 16, Spring 2003, Spring 2004, and Winter 2004, Longhorn Army Ammunition Plant, Karnack, Texas," ALL Consulting, January 2006.

Shaw

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-5

GROUNDWATER GRADIENT MAP
LHAAP-12
DECEMBER 2004

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

MRM - HOU - 3/15/2012

2.0 SITE ACTIVITIES AT LHAAP-12

The LUCs to be implemented by the Army or its representatives for LHAAP-12 include:

- Maintenance of the integrity of the landfill cap, including, at a minimum, repairs to desiccation cracks, erosion, or gullying upon observance.
- Maintenance of a vegetative cover on the landfill cap including regular mowing.
- Maintenance of fence line and signage around landfill cap.
- Prohibition of any activities that would affect the integrity of the cap.
- Prohibition of any activities that would cause exposure to the contaminated groundwater.

The RD Addendum stipulated physical inspections to be conducted annually to ensure compliance with the above requirements and groundwater sampling to monitor the effectiveness of MNA in reducing contaminant concentrations over time. Although groundwater monitoring is not a LUC, it was included as a component of the remedy for LHAAP-12 identified in the ROD (U.S. Army, 2006). This report summarizes the results of site activities.

All site activities were conducted according to the Installation-Wide Work Plan (Shaw, 2006). Field activities at LHAAP-12 were documented on activity-specific forms such as the annual site inspection checklist or groundwater sampling forms and in the hard-bound project log book in accordance with Shaw's standard operating procedures (Shaw, 2006). Safety protocols and requirements including daily tailgate safety meetings were conducted in accordance with the Site Health and Safety Plan (Shaw, 2006).

2.1 Physical Inspection Summary

Shaw conducted a physical inspection of the LHAAP-12 landfill cap on June 23, 2008 and October 14, 2009. The Landfill Inspection Checklist and LUC Inspection and Maintenance Log are provided in **Appendix A**. The 2008 inspection found that the integrity of the landfill cap remains intact, although slight erosion and the presence of tree seedlings were observed requiring monitoring and eradication, respectively. The 2009 inspection found total eradication of the tree seedlings from the herbicide application in 2008 and the landfill cap continued to show signs of slight erosion.

The 2008 and 2009 inspections also confirmed that no change in land use or groundwater use has occurred over the past two years, the site use is still consistent with that mandated by the

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • July 2012

Final ROD: monitoring wells are in fair condition, no new wells have been installed, and fencing and signage in the area are intact and in place.

As part of the landfill inspections, wells are visually inspected during sampling activities and mowing, weeding, and brush clearing activities. Damage or irregularities to the wellheads are reported at the time they are identified and recorded in field notes or on sampling forms, and are repaired when needed. For this reporting period, wellhead locks were in place and no damage or irregularities were reported, indicating that the wells were secure and in good condition.

2.2 Groundwater Monitoring and Analytical Results

As described by the Groundwater Sampling Plan included in the RD Addendum (Shaw, 2007a), groundwater sampling of monitoring wells, 12WW20, 12WW21, and 12WW24 and two compliance monitoring wells, 12WW22 and 12WW23, was conducted quarterly to document any migration of the groundwater contamination, to monitor natural attenuation, and to ensure that the target contaminants (TCE and metabolic daughter products) did not discharge to nearby surface water bodies. The location of these monitoring wells is shown in **Figure 1-1**.

Quarterly samples were collected from the five monitoring wells (12WW20, 12WW21, 12WW22, 12WW23, 12WW24) and were analyzed for volatile organic compounds (VOCs). For the four quarterly sampling events of Year 1, groundwater samples collected from 12WW20 and 12WW21 were also analyzed for MNA parameters including nitrates, nitrites, sulfate, pH, Eh (redox potential), conductivity, temperature, dissolved oxygen, ferrous iron, chloride, methane, ethane, ethene, inorganic and organic carbon, and *Dehalococcoides sp*. The sampling results were evaluated to assess the effectiveness of MNA in reducing contaminant concentrations over time.

Groundwater elevation data collected during sampling events are shown in **Table 2-1**. The groundwater gradient trends toward the east-northeast. The groundwater gradient contours for June 2008 and July 2009 are shown in **Figures 1-1** and **1-2**, respectively. Historical data and the 2008 and 2009 data indicate that 12WW23 is downgradient from 12WW24 as shown in **Figures 1-3**, **1-4**, and **1-5**.

Water samples were collected using the low-flow method (Shaw, 2006). The objective of this method was to collect representative samples of the groundwater in the formation adjacent to the well screen, eliminating the mixing of stagnant water above and below the well screen. The flow rate of water discharge from the down hole bladder pump should be equal to or less than the flow rate of groundwater entering the well from the water-bearing zone. After water quality parameters stabilized and were within acceptable ranges, samples

were collected at the same low flow rate. Groundwater sampling and purging forms were completed for each monitoring well sampled and are attached in **Appendix B**. Laboratory analytical reports and an expanded summary table of the analytical results are attached in **Appendix C**.

Table 2-1
Groundwater Elevation Data
LHAAP-12

RA(O) Year	Date of Sampling	Top of Casing Elevation in Feet MSL	Depth to Water in Feet	Groundwater Elevation in Feet MSL
Well 12WW20				
Year 1	9/5/2007	199.15	19.52	179.63
	12/18/2007	199.15	19.77	179.38
	3/6/2008	199.15	20.16	178.99
	6/4/2008	199.15	19.42	179.73
Year 2	9/8/2008	199.15	20.82	178.33
	2/4/2009	199.15	20.95	178.20
	4/29/2009	199.15	19.81	179.34
	7/15/2009	199.15	20.22	178.93
Well 12WW21				
Year 1	9/5/2007	202.07	23.25	178.82
	12/18/2007	202.07	24.30	177.77
	3/6/2008	202.07	24.19	177.88
	6/4/2008	202.07	23.45	178.62
Year 2	9/11/2008	202.07	24.38	177.69
	2/4/2009	202.07	24.68	177.39
	4/29/2009	202.07	23.95	178.12
	7/15/2009	202.07	24.00	178.07
Well 12WW22				
Year 1	9/4/2007	190.20	9.37	180.83
	12/18/2007	190.20	11.65	178.55
	3/5/2008	190.20	9.81	180.39
	6/3/2008	190.20	8.43	181.77
Year 2	9/8/2008	190.20	11.11	179.09
	2/4/2009	190.20	10.88	179.32
	4/29/2009	190.20	8.90	181.30
	7/15/2009	190.20	10.05	180.15
Well 12WW23				
Year 1	9/4/2007	196.97	19.73	177.24
	12/19/2007	196.97	20.15	176.82
	3/5/2008	196.97	20.20	176.77
	6/3/2008	196.97	20.05	176.92
Year 2	9/11/2008	196.97	20.40	176.57
	2/4/2009	196.97	20.76	176.21
	4/29/2009	196.97	19.58	177.39
	7/15/2009	196.97	20.41	176.56
Well 12WW24				
Year 1	9/5/2007	203.17	23.91	179.26
	12/19/2007	203.17	24.92	178.25
	3/5/2008	203.17	24.90	178.27
	6/4/2008	203.17	24.23	178.94
Year 2	9/11/2008	203.17	25.03	178.14
	2/4/2009	203.17	25.37	177.80
	4/29/2009	203.17	24.66	178.51
	7/14/2009	203.17	24.50	178.67

Table 2-1
Groundwater Elevation Data
LHAAP-12

RA(O) Year	Date of Sampling	Top of Casing Elevation in Feet MSL	Depth to Water in Feet	Groundwater Elevation in Feet MSL
Well 12WW01				
Year 2	9/8/2008	204.19	26.20	177.99
	4/29/2009	204.19	25.85	178.34
Well 12WW02				
Year 2	9/8/2008	202.45	24.60	177.85
	4/29/2009	202.45	24.10	178.35
Well 12WW05				
Year 2	9/9/2008	190.52	12.02	178.50
	4/29/2009	190.52	10.05	180.47

3.0 NATURAL ATTENUATION EVALUATION

The following sections present the results of the natural attenuation evaluation in accordance with the three lines of evidence described in the Groundwater Monitoring Plan, Appendix A of the RD Addendum (Shaw, 2007a). The following five wells were sampled: 12WW20, 12WW21, 12WW22, 12WW23, and 12WW24. The Year 1 sampling events were conducted in September 2007, December 2007, March 2008, and June 2008. The Year 2 sampling events were conducted in September 2008, February 2009, April 2009, and July 2009. All samples were analyzed for VOCs, and the samples from 12WW20 and 12WW21 for Year 1 were also analyzed for MNA parameters. Results are summarized in **Table 3-1**. The tiered evaluation of MNA lines of evidence consists of first, second, and third lines of evidence, which are presented below with respect to the natural attenuation of the site COCs – TCE and its metabolic daughter products.

3.1 First Line of Evidence: Change in COC Concentrations over Time and with Distance

The change in groundwater COC concentrations over time and with distance was evaluated at LHAAP-12. There are three groundwater zones at LHAAP-12: shallow, intermediate, and deep. The three groundwater zones are each separated by a clay layer acting as an aquitard to prevent COCs from migrating along the vertical gradient. According to previous investigations (Shaw, 2007c and USACE, 2007), COCs were not detected or were significantly below MCLs in the monitoring wells located within the intermediate and deep groundwater zones. Thus, the intermediate and deep zones are not impacted by the contaminants on site, and the MNA evaluation was conducted for the shallow zone only.

Concentration isopleths for COCs in the shallow groundwater for June 2008 and July 2009 are shown in **Figures 3-1** and **3-2**, respectively. Natural attenuation is the combination of multiple mechanisms, including biodegradation, dilution, advection, and absorption that reduce contaminant concentrations. The decrease of COC concentrations over time and distance is evidence of natural attenuation occurrence.

A review of data at LHAAP-12 shows no net increase in concentrations over time. Concentrations of COCs were below their respective Safe Drinking Water Act MCL in all wells except at monitoring well 12WW24. At 12WW24, TCE levels decreased, and the analytical results from September 2007 (first sampling event of the RA[O]), June 2008 (sampling event at the end of Year 1), and July 2009 (sampling event at the end of Year 2) are 272 micrograms per liter (µg/L), 237 µg/L, and 204 µg/L, respectively (**Figure 3-3**). This is a net decrease from 396 µg/L observed in December 2006. At monitoring well

12WW20, TCE concentrations have also decreased from 1.34 µg/L in September 2007 to 1.04 µg/L in June 2008 to 0.931J µg/L in July 2009 (**Figure 3-4**). This data suggest that MNA is reducing and controlling the TCE plume at LHAAP-12.

Concentrations of cis-1,2-DCE, the reductive dechlorination daughter product of TCE, were observed above its MCL (70 µg/L) at 12WW24 (**Table 3-1**). Levels of cis-1,2-DCE at 12WW24 showed a net decrease. Results from this well in September 2007, June 2008, and July 2009 are: 82.5 µg/L, 59.0 µg/L, and 50.4 µg/L (**Figure 3-3**). The decrease observed in cis-1,2-DCE at his well further suggests that natural attenuation is occurring at LHAAP-12. At 12WW20, cis-1,2-DCE concentrations continue to be well below the MCL. Results from 12WW20 in September 2007, June 2008, and July 2009 are: 0.898J µg/L, 0.656J µg/L, and 0.71J µg/L.

VC, the reductive dechlorination product of cis-1,2-DCE, was not observed at LHAAP-12 above the MCL of 2 µg/L during the June 2008 sampling event (**Table 3-1**). Throughout the last four quarters of sampling, only one well, 12WW24, had VC concentrations above the detection limit. The VC concentrations at 12WW24 fluctuated during the year with an overall decrease from 2.33 µg/L in September 2007 to 1.75J µg/L in June 2008 to 0.681J µg/L in July 2009.

Ethene, the reductive dechlorination product of VC, was observed in 12WW24 which also had a detection of VC. In December 2007, ethene was detected at an estimated concentration of 0.323J µg/L, and was not observed above the detection limit in June 2008 (**Table 3-1**). The decrease in TCE and the fluctuations in daughter products during the quarterly sampling events are indicative of reductive dechlorination and are strong indicators supporting the occurrence of natural attenuation under the first line of evidence.

At LHAAP-12 an evaluation of changes in COC concentrations with respect to distance was also conducted. The historical and current VOC data indicate a decreasing trend in COC concentrations with distance away from 12WW24. The COCs in monitoring wells 12WW21, 12WW22 and 12WW23 have not been detected during the last eight quarters of sampling (**Table 3-1**). The lack of detections in these monitoring wells indicates that the plume is not migrating, most likely due to the influence of natural attenuation mechanisms.

3.2 Second Line of Evidence: Geochemical Indicators

Table 3-1 presents geochemical indicators that are useful MNA evaluation parameters. Some geochemical indicators are collected in the field, and are recorded for all sampling events for all wells. The field parameters include: dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, and temperature. Other geochemical indicators require additional sampling and laboratory analysis, specifically: gases (methane, ethane, and

ethene), anions (sulfate, nitrate, nitrite, and chloride), total organic carbon (TOC), and total inorganic carbon. In accordance with the RD Addendum (Shaw, 2007a), these additional analyses were conducted for samples taken from monitoring wells 12WW20 and 12WW21 for the four quarterly sampling events of Year 1.

The preferred terminal electron acceptor during microbial respiration is oxygen. DO concentrations below 1.0 milligram per liter (mg/L) are favorable for the anaerobic microbial degradation of the COCs. The DO concentrations observed within the shallow groundwater zone during the June 2008 sampling event ranged from 1.99 mg/L (12WW22) to 6.05 mg/L (12WW24) (**Table 3-1**). The DO measurements indicate that aerobic conditions prevail at LHAAP-12; however, most of the site does not contain any COCs, which may explain the lack of anaerobic conditions. In contrast to the DO results of Year 1 at 12WW24, DO concentrations were below 1 mg/L in three out of four quarters in Year 2 with the last DO result in Year 2 at 0.73 mg/L (July 2009).

The ORP levels indicate how oxidative or reductive the groundwater is in the aquifer matrix. ORP values less than 50 milli-volts (mV) are indicative of anaerobic conditions and are favorable for the biological reductive dechlorination of chlorinated ethenes. The ORP measurements at LHAAP-12 in June 2008 ranged from -35.2 mV to 445 mV at 12WW22 and 12WW20, respectively (**Table 3-1**), and ORP levels near or below 50 mV were observed at 12WW21, 12WW22, and 12WW23. The ORP results at 12WW24 have fluctuated with a low of 25.5 mV in September 2007 and a high of 285 mV in September 2008. Given the presence of biodegradation products at 12WW24, the ORP values indicate that the conditions in the vicinity of 12WW24 can be favorable for reductive dechlorination, but are not necessarily favorable on a consistent basis.

Following oxygen, microorganisms preferentially use nitrate (NO_3^-) as a terminal electron acceptor. **Table 3-1** indicates that NO_3^- concentrations were below the detection limit across LHAAP-12. Concentrations of NO_3^- less than 1 mg/L are not expected to interfere with reductive dechlorination (USEPA, 1998). Therefore, NO_3^- reduction is not a likely mode of microbial respiration at the site, and the lack of NO_3^- is favorable for achieving the highly reducing conditions ideal for anaerobic reductive dechlorination.

Once nitrate has been depleted, ferric iron (Fe^{+3}) is reduced to ferrous iron (Fe^{+2}). A significant increase in ferrous iron is an indication of current biological activity. During the sampling event in June 2008, Fe^{+2} concentrations ranged from 0.02 mg/L (12WW24) to 0.42 mg/L (12WW23). Although significantly elevated levels of Fe^{+2} were not observed at this time, it is likely Fe^{+2} reduction has previously occurred at this site. The previous reduction of Fe^{+3} is evident by the detections of cis-1,2-DCE and VC, which require a more highly reducing environment.

Reductive dechlorination of highly chlorinated compounds such as TCE occurs under sulfate-reducing conditions, but the reductive dechlorination of cis-1,2-DCE and VC is unlikely to occur under the same conditions. Sulfate-reducing conditions are favored when other electron acceptors such as oxygen, NO_3^-, and bioavailable Fe^{+3} are depleted, leaving sulfate (SO_4^{-2}) as the primary acceptor. Active SO_4^{-2} reduction is often indicated by a depletion of SO_4^{-2} in groundwater. Concentrations of SO_4^{-2} greater than 20 mg/L may cause competitive exclusion of reductive dechlorination (USEPA, 1998). **Table 3-1** indicates that the SO_4^{-2} concentrations ranged from 133 mg/L in 12WW20 to 411 mg/L in 12WW21 during the June 2008 sampling event. Even though the SO_4^{-2} concentrations are greater than the USEPA threshold of 20 mg/L, there is evidence of cis-1,2-DCE dechlorination as indicated by the production of VC, which underwent further reductive dechlorination to ethene.

Methanogenesis occurs in highly reducing conditions and an accumulation of methane above 500 µg/L is considered to indicate methanogenic conditions (USEPA, 1998). During the June 2008 sampling event, methane concentrations above 500 µg/L were not observed in the shallow groundwater zone (**Table 3-1**). However, elevated methane was observed in 12WW21 at 743 µg/L in March 2008 and in 12WW23 at 3,700 µg/L in December 2007, indicating that methanogenic conditions were established in a localized area.

Regardless of the electron acceptor being used, organic carbon is a required source of reduced carbon and energy to sustain microbial activity. TOC is utilized as a carbon and energy source to support the reductive dechlorination of the chlorinated COCs. TOC concentrations greater than 20 mg/L are considered adequate to support microbial activity (USEPA, 1998). In wells sampled during the June 2008 event, the concentration of TOC ranged from 5.4 mg/L in 12WW20 to 13.2 mg/L in 12WW24. The highest level of TOC was observed at 12WW24 and is the only well with elevated levels of TCE. Although the TOC concentration is below 20 mg/L, the levels observed at 12WW24 will not prevent reductive dechlorination.

An optimum pH level is important for microbial populations to sustain life. Most living organisms live within a pH range of 6 to 8. In June 2008, the pH within the shallow groundwater zone ranged from 5.12 at 12WW24 to 7.55 at 12WW22, and in July 2009, pH ranged from 5.26 at 12WW24 to 7.2 at 12WW22.

The qualitative assessment of the geochemical indicators in the shallow groundwater zone at LHAAP-12 presents evidence that geochemical conditions are adequate for reductive dechlorination of TCE. The low ORP and NO_3^- levels indicate that the aquifer is reducing which favors reductive dechlorination. The TOC concentrations along with the detection of cis-1,2-DCE, VC, and ethene in 12WW24 indicate that adequate conditions exist within the impacted area to sustain complete reductive dechlorination of the VC to innocuous ethene.

Therefore, evaluation of the second line of evidence demonstrates that MNA is a feasible sole remedy for the remaining COCs in the shallow zone at LHAAP-12.

3.3 Third Line of Evidence: Predictive Modeling and Microbial Analysis

Predictive modeling and microbial analysis were evaluated as part of the third line of evidence for demonstrating MNA at LHAAP-12. Modeling was performed to calculate the time required for the maximum TCE concentration at LHAAP-12 in June 2008 to naturally attenuate to the MCL level of 5 µg/L. The predictive modeling is based on rates that were calculated and evaluated in accordance with the USEPA publication on the use of first-order rate constants for MNA (USEPA, 2002). A time dependent attenuation rate constant was determined for TCE concentrations over time for 12WW24 (**Table 3-2**) assuming first order degradation kinetics. The data used for rate calculations include the nine sampling events conducted between December 2006 and July 2009. The in-well trend calculation is based on a limited number of sampling points and contaminant concentrations found at 12WW24. The time to achieve the MCL based on the 12WW24 in-well attenuation rate appears favorable and is at the lower end of the previous range (Shaw, 2007c). However, seasonal variation could account for an apparent fluctuation in the attenuation rate, which may result in a longer estimated time to achieve MCL.

Representative samples from selected wells were collected at LHAAP-12 for microbial analysis of the dechlorinating microorganisms *Dehalococcoides sp.*, which are the only known bacterial species capable of complete dechlorination of TCE and its daughter products to innocuous ethene via reductive dechlorination and are an important indicator for the dechlorination of TCE to cis-1,2-DCE. *Dehalococcoides sp.* are not ubiquitous at sites contaminated with chlorinated ethenes. The results of the analysis conducted at LHAAP-12 are provided on **Table 3-1**, and indicate that *Dehalococcoides sp.* is present with concentrations ranging from below the detection limit of 10 to 16,000 cells per milliliter (cells/mL) of groundwater at 12WW21. The elevated levels above 100 cells/mL of the dechlorinating microorganisms observed at 12WW21, 12WW22, and 12WW23 coupled with lower DO and ORP values throughout the past year provide evidence that groundwater conditions are able to support *Dehalococcoides sp.* populations and degradation can occur. At monitoring well 12WW24, *Dehalococcoides sp*. were not observed above the detection limit; however, the presence of daughter products, including ethene suggest that levels of *Dehalococcoides sp.* exist in the vicinity of this well. The *Dehalococcoides sp.* data collected from LHAAP-12 provides further evidence that site conditions are conducive for the complete dechlorination of site COCs via natural attenuation as the sole remedy.

3.4 Natural Attenuation Summary and Conclusions

VOC data and geochemical indicators were evaluated at LHAAP-12 to demonstrate the occurrence of natural attenuation process of groundwater COCs, in support of using MNA as a site remedy. A tiered approach investigating three lines of evidence was used to demonstrate the occurrence of natural attenuation in site groundwater. The first line of evidence evaluated reductions in COC concentrations over time and with distance, the second line of evidence evaluated geochemical indicators, while the third line of evidence entailed predictive modeling and microbial analysis. The results of the tiered evaluation and the conclusions are summarized below.

The COCs at LHAAP-12 are TCE, cis-1,2-DCE, and VC in the shallow groundwater zone. Based on the July 2009 sampling event, the TCE level at 12WW24 is the only COC that currently exceeds its MCL at LHAAP-12.

- **First line of evidence:** Historical VOC trends indicate the occurrence of biodegradation via anaerobic reductive dechlorination, as evidenced by the detection of TCE daughter products cis-1,2-DCE and VC, and the harmless end product ethene. The lack of detections downgradient also supports this line of evidence indicating that natural attenuation processes have limited plume migration.

- **Second line of evidence:** The qualitative assessment of the geochemical indicators in the shallow groundwater zone at LHAAP-12 presents evidence that geochemical conditions are adequate for the complete reductive dechlorination of TCE, cis-1,2-DCE, and VC. The low ORP and NO_3^- levels indicate that the conditions are favorable for reductive dechlorination. The SO_4^{-2} levels, TOC concentrations, and the detection of ethene in 12WW24 indicate that adequate conditions exist in the vicinity of that well to sustain complete reductive dechlorination of the VC to innocuous ethene.

- **Third line of evidence:** According to the evaluation of first order degradation kinetics, the estimated cleanup time between 23 and 261 years (Shaw, 2007d) is plausible given the site evidence for the occurrence of reductive dechlorination. The elevated levels of dechlorinating microorganisms coupled with the production of ethene is further corroborating evidence that site conditions are conducive for the complete dechlorination of site COCs via natural attenuation as the sole remedy.

In conclusion of the natural attenuation evaluation, MNA is a feasible remedy for the remaining COCs in the shallow groundwater at LHAAP-12. Contaminants are restrained in the shallow groundwater. Natural attenuation is effectively controlling plume migration and is diminishing the COC concentrations.

Table 3-1
Analytical Results of Monitored Natural Attenuation Parameters
LHAAP-12

	Location Code	12WW20		12WW20		12WW20		12WW20	
	Sample Date	5-Sep-07		18-Dec-07		6-Mar-08		4-Jun-08	
	Sample No.	12WW20-070905		12WW20-121807		12WW20-030608		12WW20-060408	
	Sample Purpose	REG		REG		REG		REG	
Parameter	Units	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual
General Chemistry									
Dissolved Oxygen	mg/L	5.21		2.27		4.65		4.4	
Ferrous iron	mg/L	0.1		0.12		0		0.1	
Oxidation-Reduction Potential	mV	23.5		197.9		235.1		445	
pH	PH UNITS	5.54		5.54		5.72		5.3	
Specific Conductivity	uS/cm	1.23		1.307		1.167		1.224	
Temperature	Deg C	20.58		19.14		18.2		20.67	
Turbidity	NTU	0.2		-0.9		-1.2		4	
Chloride	mg/L	249		285		241		261	
Nitrate	mg/L	1	U	3	U	0.2	U	0.2	U
Nitrite	mg/L	1	U	3	U	0.2	U	0.2	U
Sulfate	mg/L	141		174		137		133	
Total Inorganic Carbon	mg/L	0.5	U	29.4		15.9		30	
Total Organic Carbon	mg/L	1.96		3.54	J	2.78		5.4	
Gases									
Ethane	µg/L	2.5	U	0.25	U	0.25	U	0.25	U
Ethene	µg/L	2.5	U	0.25	U	0.25	U	0.25	U
Methane	µg/L	8.7		9.14		2.85		6.74	
VOCs									
1,1,1-Trichloroethane	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethane	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
1,4-Dichlorobenzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Acetone	µg/L	2.5	U	2.5	U	6.54	JB	2.5	U
Benzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chlorobenzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	0.898	J	0.844	J	0.664	J	0.656	J
trans-1,2-Dichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
Trichloroethene	µg/L	1.34		1.19		0.999	J	1.04	
Vinyl chloride	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
DHE									
Dehalococcoides	cells/mL	10	U	810		760		10	U

Notes can be found on last page of table

Table 3-1
Analytical Results of Monitored Natural Attenuation Parameters
LHAAP-12

	Location Code	12WW20		12WW20		12WW20		12WW20	
	Sample Date	8-Sep-08		4-Feb-09		29-Apr-09		15-Jul-09	
	Sample No.	12WW20-090808		12WW20-020409		12WW20-042909		12WW20-071509	
	Sample Purpose	REG		REG		REG		REG	
Parameter	Units	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual
General Chemistry									
Dissolved Oxygen	mg/L	1.08		0.86		4.54		1.51	
Ferrous iron	mg/L								
Oxidation-Reduction Potential	mV	223.8		149.7		148.2		262.5	
pH	PH UNITS	5.6		5.13		5.82		5.64	
Specific Conductivity	uS/cm	1.242		1.184		1.342		1.206	
Temperature	Deg C	21.45		17.22		20.18		20.63	
Turbidity	NTU	-0.3		0		-3.2		1.4	
Chloride	mg/L								
Nitrate	mg/L								
Nitrite	mg/L								
Sulfate	mg/L								
Total Inorganic Carbon	mg/L								
Total Organic Carbon	mg/L								
Gases									
Ethane	µg/L								
Ethene	µg/L								
Methane	µg/L								
VOCs									
1,1,1-Trichloroethane	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethane	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
1,4-Dichlorobenzene	µg/L	0.125	U	0.125	U	0.288	J	0.239	UJ
Acetone	µg/L	2.5	U	2.5	U	2.5	U	2.5	U
Benzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chlorobenzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	0.667	J	0.818	J	0.7	J	0.71	J
trans-1,2-Dichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
Trichloroethene	µg/L	0.985	J	1.18		0.997	J	0.931	J
Vinyl chloride	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
DHE									
Dehalococcoides	cells/mL								

Notes can be found on last page of table

Table 3-1
Analytical Results of Monitored Natural Attenuation Parameters
LHAAP-12

	Location Code	12WW21		12WW21		12WW21		12WW21	
	Sample Date	5-Sep-07		18-Dec-07		6-Mar-08		4-Jun-08	
	Sample No.	12WW21-070905		12WW21-121807		12WW21-030608		12WW21-060408	
	Sample Purpose	REG		REG		REG		REG	
Parameter	Units	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual
General Chemistry									
Dissolved Oxygen	mg/L	4.85		0.36		2.19		3.59	
Ferrous iron	mg/L	1.87		0.9		0.34		0.28	
Oxidation-Reduction Potential	mV	6.9		-3.9		-31.2		48.9	
pH	PH UNITS	6.17		5.97		5.96		6.03	
Specific Conductivity	uS/cm	5.51		5.56		5.485		5.464	
Temperature	Deg C	19.2		18.11		17.66		18.89	
Turbidity	NTU	-1.1		-5.4		-2.8		5	
Chloride	mg/L	1560		1660		1540		1530	
Nitrate	mg/L	1	U	1	U	0.5	U	1	U
Nitrite	mg/L	1	U	1	U	0.5	U	1	U
Sulfate	mg/L	370		407		419		411	
Total Inorganic Carbon	mg/L	0.5	U	39.6		27.8		30.3	
Total Organic Carbon	mg/L	2.4		3.22	J	2.37		5.9	
Gases									
Ethane	µg/L	2.5	U	0.25	U	0.25	U	0.25	U
Ethene	µg/L	2.5	U	0.25	U	0.25	U	0.25	U
Methane	µg/L	7.3		196		743		14.8	
VOCs									
1,1,1-Trichloroethane	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethane	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
1,4-Dichlorobenzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Acetone	µg/L	2.5	U	2.5	U	4.86	JB	2.5	U
Benzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chlorobenzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	0.25	U	0.25	UJ	0.25	U	0.25	U
trans-1,2-Dichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
Trichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
Vinyl chloride	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
DHE									
Dehalococcoides	cells/mL	10	U	16,000		10,000		9,700	

Notes can be found on last page of table

Table 3-1
Analytical Results of Monitored Natural Attenuation Parameters
LHAAP-12

	Location Code	12WW21		12WW21		12WW21		12WW21	
	Sample Date	11-Sep-08		4-Feb-09		29-Apr-09		15-Jul-09	
	Sample No.	12WW21-091108		12WW21-020409		12WW21-042909		12WW21-071509	
	Sample Purpose	REG		REG		REG		REG	
Parameter	Units	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual
General Chemistry									
Dissolved Oxygen	mg/L	0.41		0.92		19.39		1.78	
Ferrous iron	mg/L								
Oxidation-Reduction Potential	mV	75.2		-11.3		120.4		151	
pH	PH UNITS	6		5.45		6.16		6.11	
Specific Conductivity	uS/cm	5.468		5.497		6.034		5.292	
Temperature	Deg C	19.7		16.59		20		19.31	
Turbidity	NTU	-6		0		-2.8		1	
Chloride	mg/L								
Nitrate	mg/L								
Nitrite	mg/L								
Sulfate	mg/L								
Total Inorganic Carbon	mg/L								
Total Organic Carbon	mg/L								
Gases									
Ethane	µg/L								
Ethene	µg/L								
Methane	µg/L								
VOCs									
1,1,1-Trichloroethane	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethane	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
1,4-Dichlorobenzene	µg/L	0.125	U	0.125	U	0.125	U	0.293	UJ
Acetone	µg/L	4.25	J	2.5	U	2.5	U	2.5	U
Benzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chlorobenzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
Trichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
Vinyl chloride	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
DHE									
Dehalococcoides	cells/mL								

Notes can be found on last page of table

Table 3-1
Analytical Results of Monitored Natural Attenuation Parameters
LHAAP-12

	Location Code	12WW22		12WW22		12WW22		12WW22	
	Sample Date	4-Sep-07		18-Dec-07		5-Mar-08		3-Jun-08	
	Sample No.	12WW22-070904		12WW22-121807		12WW22-030508		12WW22-060308	
	Sample Purpose	REG		REG		REG		REG	
Parameter	Units	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual
General Chemistry									
Dissolved Oxygen	mg/L	3.29		0.36		3.37		1.99	
Ferrous iron	mg/L	0.08		0.26		0.33		0.14	
Oxidation-Reduction Potential	mV	-29.3		-69.5		-44.8		-35.2	
pH	PH UNITS	8.37		6.9		7.29		7.55	
Specific Conductivity	uS/cm	1.05		1.16		1.085		1.137	
Temperature	Deg C	19.95		18.51		17.08		18.56	
Turbidity	NTU	21		-2.4		-0.4		6.5	
Chloride	mg/L			85.7					
Nitrate	mg/L			1.5	U				
Nitrite	mg/L			1.5	U				
Sulfate	mg/L			67.2					
Total Inorganic Carbon	mg/L			46.9					
Total Organic Carbon	mg/L			1.14	J				
Gases									
Ethane	µg/L			0.25	U				
Ethene	µg/L			0.25	U				
Methane	µg/L			291					
VOCs									
1,1,1-Trichloroethane	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethane	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
1,4-Dichlorobenzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Acetone	µg/L	2.5	U	2.5	U	6.57	JB	2.5	U
Benzene	µg/L	0.319	J	0.125	U	0.125	U	0.125	U
Chlorobenzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	0.25	U	0.25	UJ	0.25	U	0.25	U
trans-1,2-Dichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
Trichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
Vinyl chloride	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
DCE									
Dehalococcoides	cells/mL			15,000					

Notes can be found on last page of table

Table 3-1
Analytical Results of Monitored Natural Attenuation Parameters
LHAAP-12

	Location Code	12WW22		12WW22		12WW22		12WW22	
	Sample Date	8-Sep-08		4-Feb-09		29-Apr-09		15-Jul-09	
	Sample No.	12WW22-090808		12WW22-020409		12WW22-042909		12WW22-071509	
	Sample Purpose	REG		REG		REG		REG	
Parameter	Units	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual
General Chemistry									
Dissolved Oxygen	mg/L	0.23		1.66		1.6		0.65	
Ferrous iron	mg/L								
Oxidation-Reduction Potential	mV	-135.8		-92.4		14.4		-140	
pH	PH UNITS	7.14		6.85		7.64		7.2	
Specific Conductivity	uS/cm	1.264		1.297		1.522		1.328	
Temperature	Deg C	19.9		12		17.97		19.88	
Turbidity	NTU	-5		0		-4		-0.7	
Chloride	mg/L								
Nitrate	mg/L								
Nitrite	mg/L								
Sulfate	mg/L								
Total Inorganic Carbon	mg/L								
Total Organic Carbon	mg/L								
Gases									
Ethane	µg/L								
Ethene	µg/L								
Methane	µg/L								
VOCs									
1,1,1-Trichloroethane	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethane	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
1,4-Dichlorobenzene	µg/L	0.125	U	0.125	U	0.291	J	0.294	UJ
Acetone	µg/L	2.5	U	2.5	U	2.5	U	2.5	U
Benzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chlorobenzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
Trichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
Vinyl chloride	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
DCE									
Dehalococcoides	cells/mL								

Notes can be found on last page of table

Table 3-1
Analytical Results of Monitored Natural Attenuation Parameters
LHAAP-12

	Location Code	12WW23		12WW23		12WW23		12WW23	
	Sample Date	4-Sep-07		19-Dec-07		5-Mar-08		3-Jun-08	
	Sample No.	12WW23-070904		12WW23-121907		12WW23-030508		12WW23-060308	
	Sample Purpose	REG		REG		REG		REG	
Parameter	Units	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual
General Chemistry									
Dissolved Oxygen	mg/L	2.91		0.67		0.6		2.04	
Ferrous iron	mg/L	3.01		0.19		0.25		0.42	
Oxidation-Reduction Potential	mV	-14.3		-33		108.1		59.5	
pH	PH UNITS	6.06		5.9		5.86		5.85	
Specific Conductivity	uS/cm	0.504		0.479		0.428		0.451	
Temperature	Deg C	20.25		18.36		17.5		18.38	
Turbidity	NTU	5.7		1.2		8.1		10	
Chloride	mg/L			70.5					
Nitrate	mg/L			1	U				
Nitrite	mg/L			1	U				
Sulfate	mg/L			8.35	J				
Total Inorganic Carbon	mg/L			13.3					
Total Organic Carbon	mg/L			2.17					
Gases									
Ethane	µg/L			0.25	U				
Ethene	µg/L			0.342	J				
Methane	µg/L			3700					
VOCs									
1,1,1-Trichloroethane	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethane	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
1,4-Dichlorobenzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Acetone	µg/L	2.5	U	2.5	U	7.3	JB	2.5	U
Benzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chlorobenzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
Trichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
Vinyl chloride	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
DCE									
Dehalococcoides	cells/mL			9,200					

Notes can be found on last page of table

Table 3-1
Analytical Results of Monitored Natural Attenuation Parameters
LHAAP-12

	Location Code	12WW23		12WW23		12WW23		12WW23	
	Sample Date	11-Sep-08		4-Feb-09		29-Apr-09		15-Jul-09	
	Sample No.	12WW23-091108		12WW23-020409		12WW23-042909		12WW23-071509	
	Sample Purpose	REG		REG		REG		REG	
Parameter	Units	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual
General Chemistry									
Dissolved Oxygen	mg/L	0.31		0.36		0.28		0.67	
Ferrous iron	mg/L								
Oxidation-Reduction Potential	mV	3		-63.2		109.9		99.9	
pH	PH UNITS	5.94		5.57		5.97		5.63	
Specific Conductivity	uS/cm	0.543		0.498		0.58		0.517	
Temperature	Deg C	20.32		16.84		18.6		19.8	
Turbidity	NTU	-5.1		0		13.2		3.9	
Chloride	mg/L								
Nitrate	mg/L								
Nitrite	mg/L								
Sulfate	mg/L								
Total Inorganic Carbon	mg/L								
Total Organic Carbon	mg/L								
Gases									
Ethane	µg/L								
Ethene	µg/L								
Methane	µg/L								
VOCs									
1,1,1-Trichloroethane	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
1,1-Dichloroethane	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
1,4-Dichlorobenzene	µg/L	0.125	U	0.125	U	0.125	U	0.277	UJ
Acetone	µg/L	2.5	U	2.5	U	6.65	UJ,TB	2.5	U
Benzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chlorobenzene	µg/L	0.125	U	0.125	U	0.125	U	0.125	U
Chloroethane	µg/L	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
Trichloroethene	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
Vinyl chloride	µg/L	0.25	U	0.25	U	0.25	U	0.25	U
DCE									
Dehalococcoides	cells/mL								

Notes can be found on last page of table

Table 3-1
Analytical Results of Monitored Natural Attenuation Parameters
LHAAP-12

	Location Code	12WW24		12WW24		12WW24		12WW24	
	Sample Date	5-Sep-07		19-Dec-07		5-Mar-08		4-Jun-08	
	Sample No.	12WW24-070905		12WW24-121907		12WW24-030508		12WW24-060408	
	Sample Purpose	REG		REG		REG		REG	
Parameter	Units	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual
General Chemistry									
Dissolved Oxygen	mg/L	7.81		5.1		3.69		6.05	
Ferrous iron	mg/L	0.1		0.58		0.19		0.02	
Oxidation-Reduction Potential	mV	25.5		212.1		193		100.2	
pH	PH UNITS	5.27		5.09		5.02		5.12	
Specific Conductivity	uS/cm	1.5		1.474		1.484		1.503	
Temperature	Deg C	21.25		19.7		21.89		20.71	
Turbidity	NTU	-2		-5		-2.2		0.1	
Chloride	mg/L			328				313	
Nitrate	mg/L			1	U			0.21	J
Nitrite	mg/L			1	U			0.2	U
Sulfate	mg/L			176				168	
Total Inorganic Carbon	mg/L			23.7				23.3	
Total Organic Carbon	mg/L			7.61				13.2	
Gases									
Ethane	µg/L			0.25	U			0.25	U
Ethene	µg/L			0.323	J			0.25	U
Methane	µg/L			6.03				1.56	
VOCs									
1,1,1-Trichloroethane	µg/L	0.5	U	0.25	U	0.5	U	0.625	U
1,1-Dichloroethane	µg/L	1.05	J	1.18		1.05	J	0.681	J
1,4-Dichlorobenzene	µg/L	3.29		4.5		2.98		3.94	
Acetone	µg/L	5	U	2.5	U	5	U	6.25	U
Benzene	µg/L	0.87	J	1.04		0.878	J	0.624	J
Chlorobenzene	µg/L	11.3		14		11.2		10.5	
Chloroethane	µg/L	1	U	0.5	U	1	U	1.25	U
cis-1,2-Dichloroethene	µg/L	82.5		103		89.3		59.0	
trans-1,2-Dichloroethene	µg/L	0.5	U	0.404	J	0.5	U	0.625	U
Trichloroethene	µg/L	272		313		301		237	
Vinyl chloride	µg/L	2.33		3.26		3.84		1.75	J
DCE									
Dehalococcoides	cells/mL			10	U			10	U

Notes can be found on last page of table

Table 3-1
Analytical Results of Monitored Natural Attenuation Parameters
LHAAP-12

	Location Code	12WW24		12WW24		12WW24		12WW24	
	Sample Date	11-Sep-08		4-Feb-09		29-Apr-09		14-Jul-09	
	Sample No.	12WW24-091108		12WW24-020409		12WW24-042909		12WW24-071409	
	Sample Purpose	REG		REG		REG		REG	
Parameter	Units	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual
General Chemistry									
Dissolved Oxygen	mg/L	0.75		0.6		5.65		0.73	
Ferrous iron	mg/L								
Oxidation-Reduction Potential	mV	285		158.5		163.9		205.7	
pH	PH UNITS	4.75		4.57		5.31		5.26	
Specific Conductivity	uS/cm	1.492		1.473		1.679		1.477	
Temperature	Deg C	20.74		16.23		20.1		21.91	
Turbidity	NTU	-5.7		0		-7.2		-0.5	
Chloride	mg/L								
Nitrate	mg/L								
Nitrite	mg/L								
Sulfate	mg/L								
Total Inorganic Carbon	mg/L								
Total Organic Carbon	mg/L								
Gases									
Ethane	µg/L								
Ethene	µg/L								
Methane	µg/L								
VOCs									
1,1,1-Trichloroethane	µg/L	0.5	U	0.5	U	0.25	U	0.5	U
1,1-Dichloroethane	µg/L	0.25	U	1.09	J	0.819	J	0.41	J
1,4-Dichlorobenzene	µg/L	3.2		5.3		3.8		4.01	J
Acetone	µg/L	5	U	5	U	7.5	UJ,TB	5	U
Benzene	µg/L	0.756	J	1.08	J	0.761	J	0.684	J
Chlorobenzene	µg/L	9.79		14.4		10.2		9.74	
Chloroethane	µg/L	1	U	1	U	0.5	U	1	U
cis-1,2-Dichloroethene	µg/L	54.3		96.2		56.5		50.4	
trans-1,2-Dichloroethene	µg/L	0.5	U	0.5	U	1.12		0.5	U
Trichloroethene	µg/L	185		334		197		204	
Vinyl chloride	µg/L	1.45	J	3.6		1.46		0.681	J
DCE									
Dehalococcoides	cells/mL								

Notes can be found on last page of table

Table 3-1
Analytical Results of Monitored Natural Attenuation Parameters
LHAAP-12

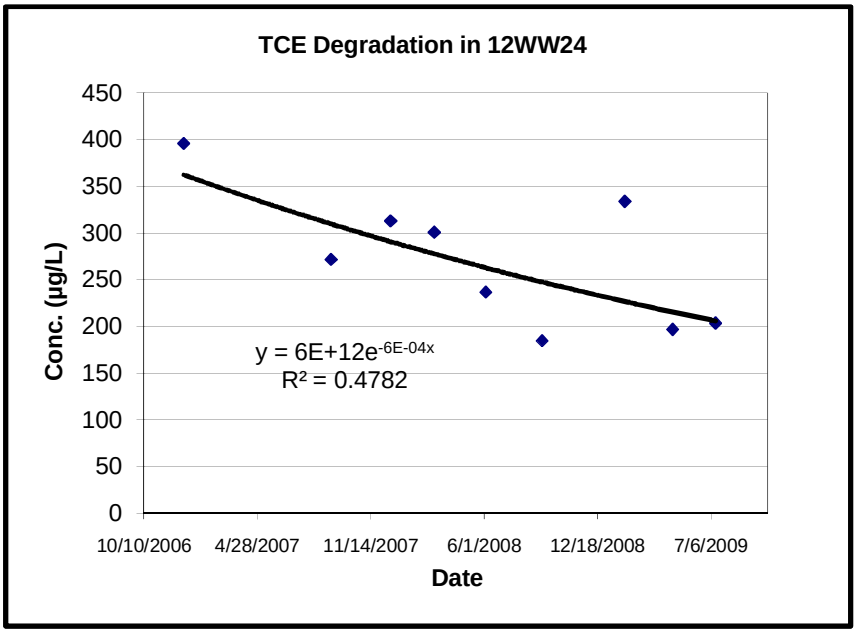
Notes and Abbreviations:

Bold indicates concentration above their respective MCLS (TCE = 5 ug/L; DCE = 70 ug/L; VC = 2 ug/L).

B - The concentration reported was detected in the associated method blank, trip blank, or equipment blank within 5X/10X the blank concentration.
J - The analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.
ug/L - micrograms per liter
uS/cm - microSiemens per centimeter
mg/L - milligrams per liter
mL - milliliter
mV - milli-volts
NTU - nephelometric trubidty unit
RC - reason codes
U - not detected

Table 3-2
Attenuation Rate Constant Based on First Order Kinetics and Estimated Cleanup Time for 12WW24
LHAAP-12

Sampling Date	TCE in 12WW24 (µg/L)
Date	TCE conc
19-Dec-06	396
5-Sep-07	272
19-Dec-07	313
5-Mar-08	301
4-Jun-08	237
11-Sep-08	185
4-Feb-09	334
29-Apr-09	197
14-Jul-09	204



Chemical: TCE Well ID	Attenuation Rate Constant (day^{-1})	Attenuation Half-life (days)	Attenuation Half-life (years)	Current Conc. (µg/L)	MCL for TCE (µg/L)	Estimated Cleanup Time (years)
12WW24	0.0006	1155.2	3.2	204	5	16.9

Notes:
1) The estimated cleanup time was calculated as the time it would take the most recent detected TCE concentration to reach the MCL using the site-specific attenuation rate, and assuming first order degradation kinetics.
2) Method reference: USEPA, 2002, *Ground Water Issue, Calculation and Use of First Order Rate for Monitoring Natural Attenuation Studies,* EPA/540/S-02/500, November.

µg/L - micrograms per liter
MCL - maximum contaminant limit
TCE - trichloroethene

00114211

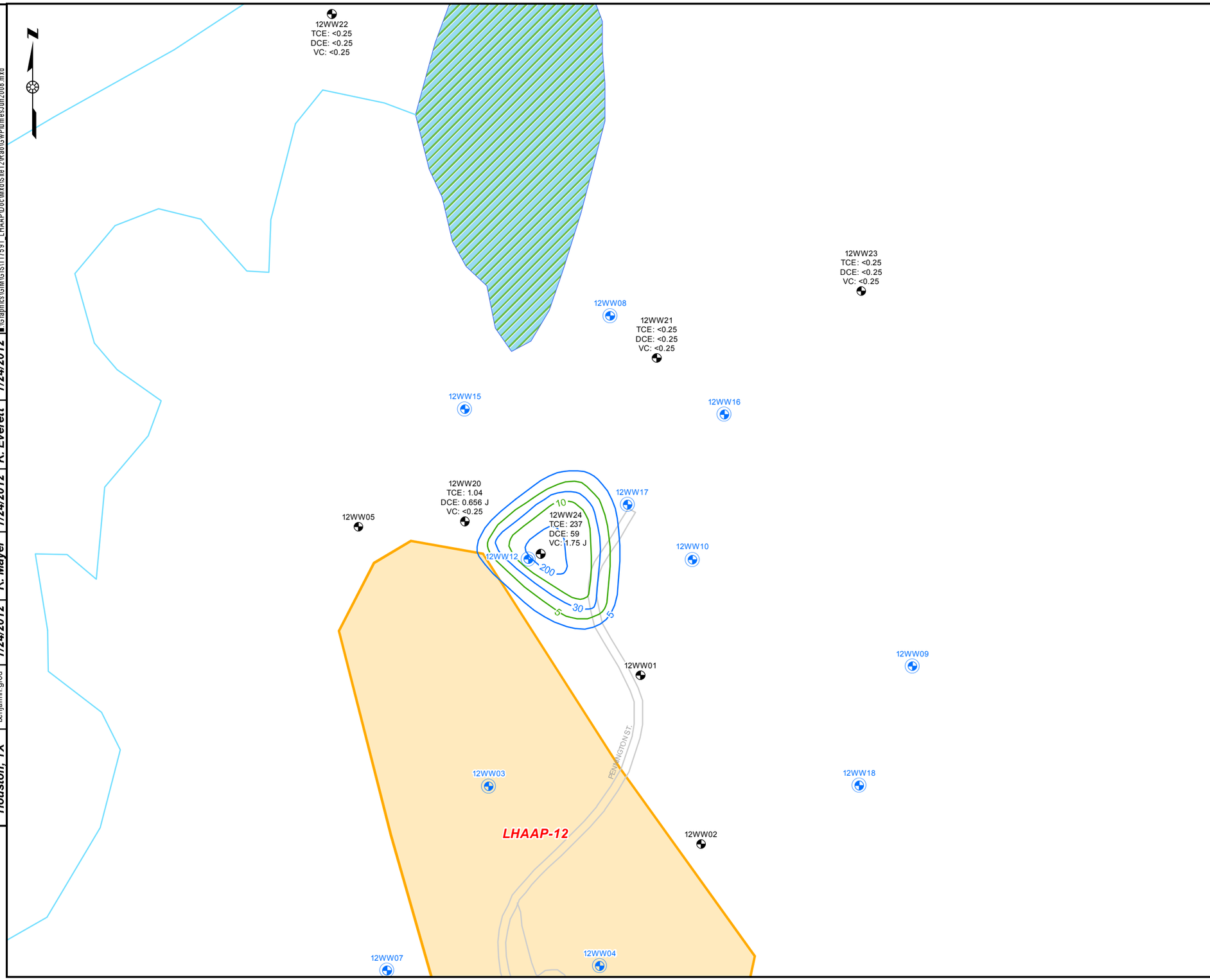
FILE PATH	
\\Graphics\GIM\GIS\117591_LHAAP\Doc\Mxd\Site12\Rao\GwPlumes\Jun2008.mxd	

	APPROVED BY	
7/24/2012	K. Everett	7/24/2012

	CHECKED BY	
7/24/2012	R. Mayer	7/24/2012

	DRAWN BY	
7/24/2012	benjamin.god	7/24/2012

OFFICE	
Houston, TX	



LEGEND

- Existing Shallow Monitoring Well
- Abandoned Shallow Monitoring Well
- cis-1,2-DCE (Dichloroethene) Concentration Isopleth
- TCE (Trichloroethene) Concentration Isopleth
- Stream
- Road
- Drainage Feature
- Site (Boundary of Landfill Cap)

Notes:

1. Concentrations reported in µg/L.
2. Concentrations shown at 12WW20, 12WW21, 12WW22, 12WW23, and 12WW24 are from the June 2008 sampling event.
3. MCL (Maximum Contaminant Level) for TCE is 5 µg/L, for DCE is 70 µg/L, and for VC is 2 µg/L.
4. 12WW24 replaced shallow well 12WW12
5. "DCE" Concentrations indicated are cis-1,2-DCE.

0 60 120 240 Feet

Shaw®

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 3-1

2008 GROUNDWATER
CONTAMINATION PLUME MAP
LHAAP-12

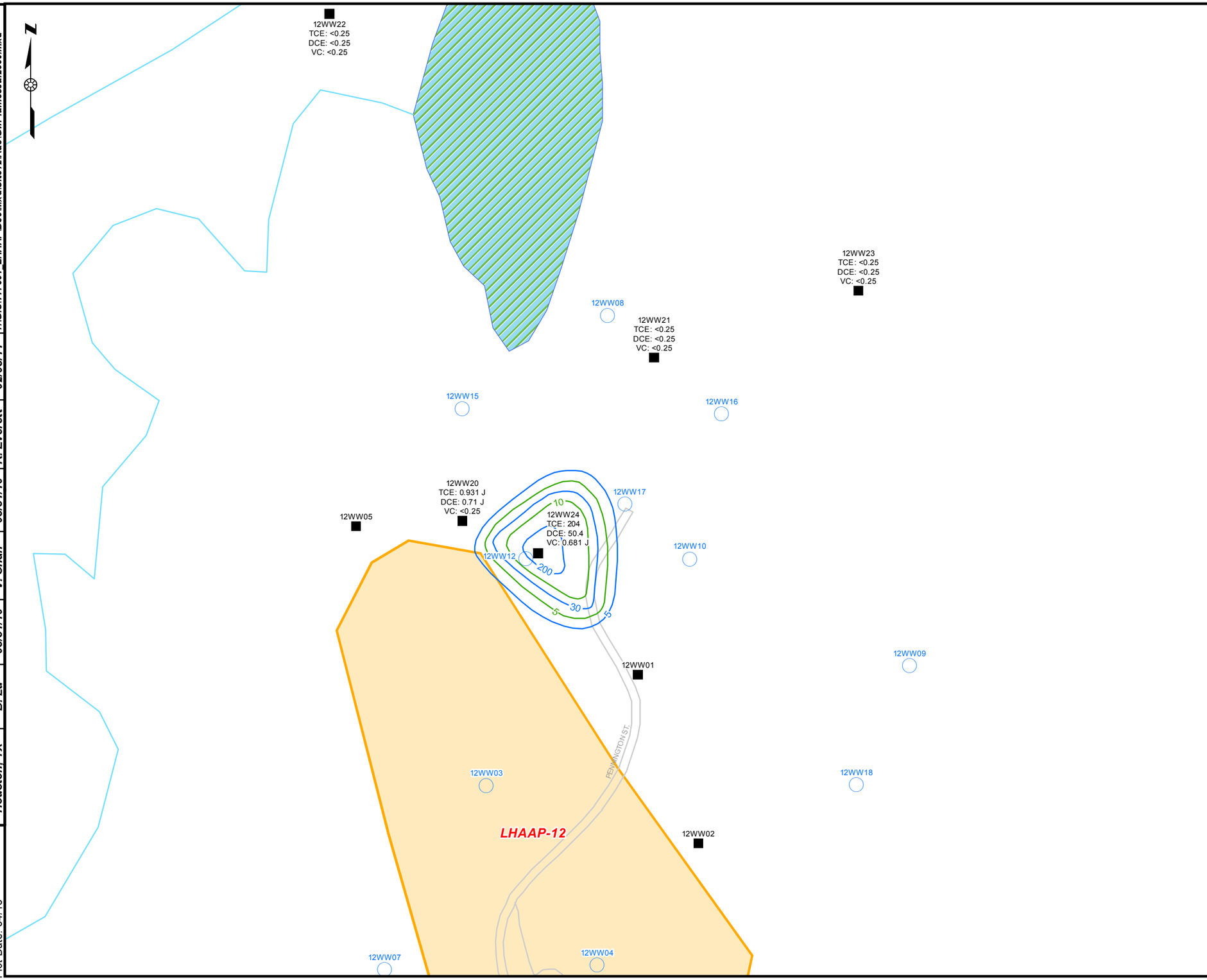
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00114212

FILE PATH	
T:\GIS\117591_LHAAP\Docl\Mxd\Site12\RaolGwPlumesJul2009.mxd	

OFFICE	DRAWN BY		CHECKED BY		APPROVED BY	
Houston, TX	B. Lu	03/31/10	V. Chan	03/31/10	K. Everett	02/03/11

Plot Date: 04/10



LEGEND

- Existing Shallow Monitoring Well
- Abandoned Shallow Monitoring Well
- cis-1,2-DCE (Dichloroethene) Concentration Isopleth
- TCE (Trichloroethene) Concentration Isopleth
- Stream
- Road
- Drainage Feature
- Site (Boundary of Landfill Cap)

Notes:

1. Concentrations reported in µg/L.
2. Concentrations shown at 12WW20, 12WW21, 12WW22, 12WW23, and 12WW24 are from the July 2009 sampling event.
3. MCL (Maximum Contaminant Level) for TCE is 5 µg/L, for DCE is 70 µg/L, and for VC is 2 µg/L.
4. 12WW24 replaced shallow well 12WW12
5. "DCE" Concentrations indicated are cis-1,2-DCE.

0 60 120 240
Feet

Shaw®

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 3-2

2009 GROUNDWATER
CONTAMINATION PLUME MAP
LHAAP-12

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Figure 3-3
Chlorinated Ethene Trends at 12WW24
LHAAP-12

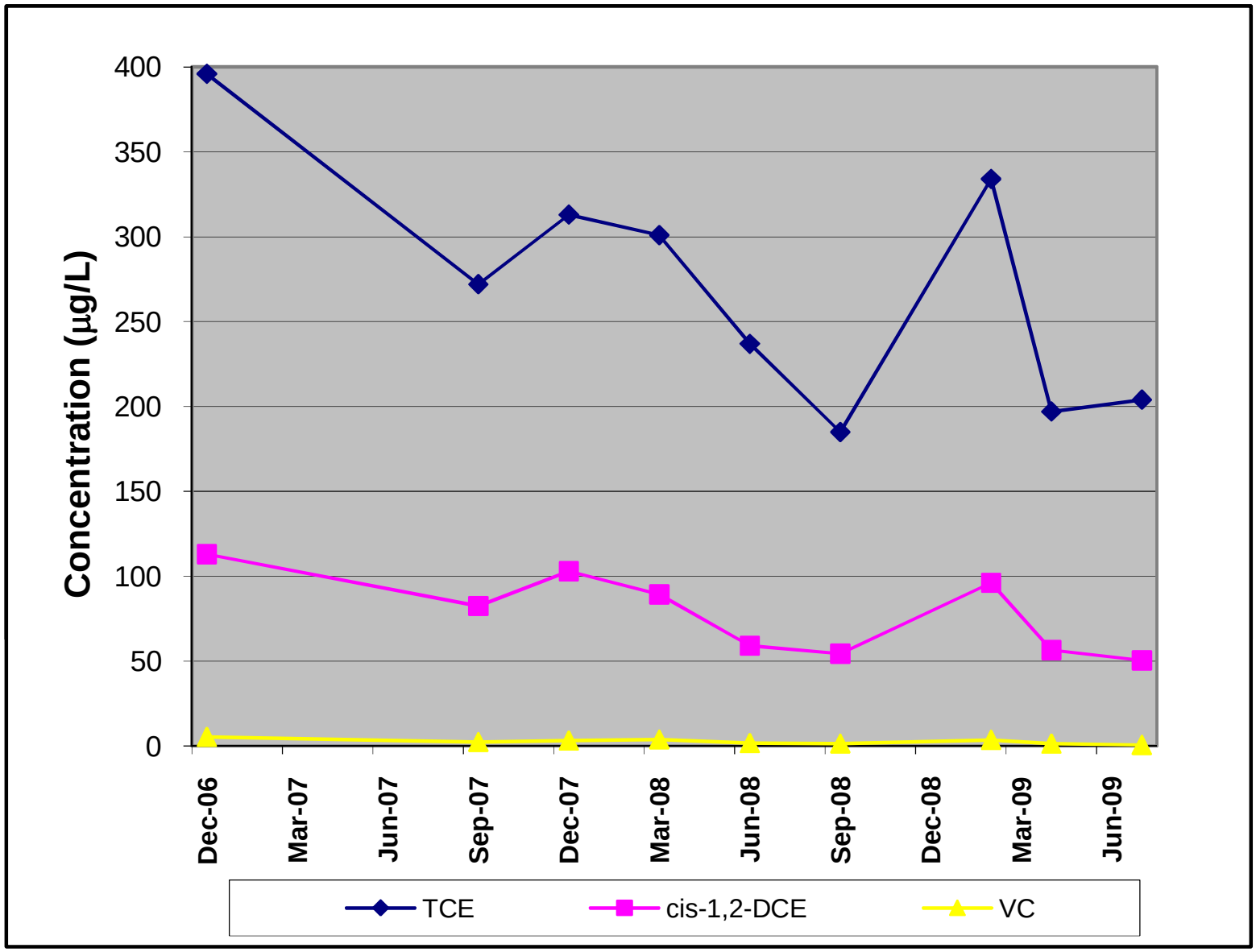
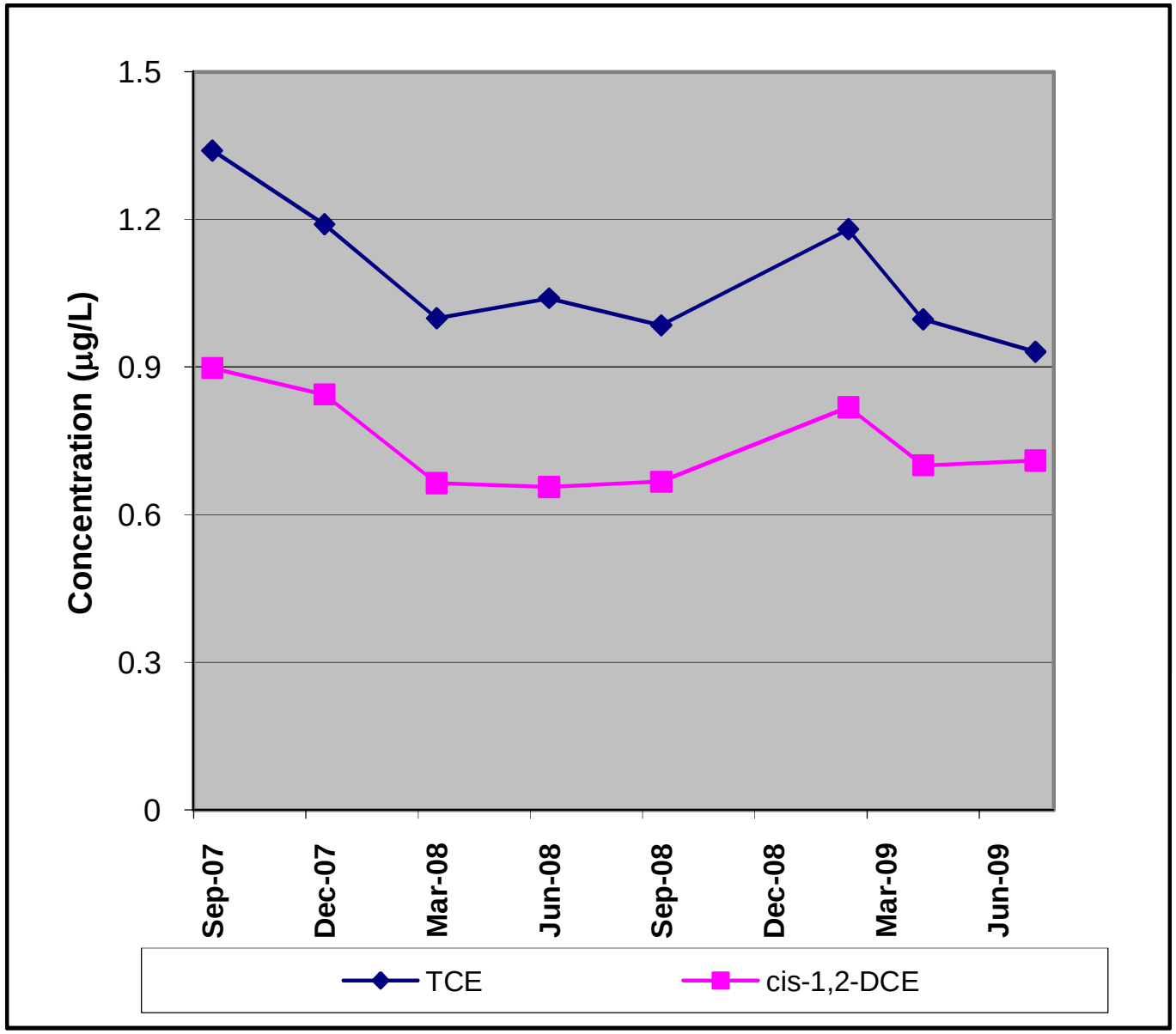


Figure 3-4
Chlorinated Ethene Trends at 12WW20
LHAAP-12



4.0 CONCLUSIONS

In conclusion, the RD Addendum stipulated that physical inspections are to be conducted annually to ensure compliance with the above requirements and to conduct groundwater sampling to monitor the effectiveness of MNA in reducing contaminant concentrations over time.

As indicated by periodic inspections of LHAAP-12, no repairs are needed at this time to maintain the integrity of the landfill cap. No desiccation cracks or gullying have been observed. Maintenance of the vegetative cover on the landfill cap is performed by periodic mowing. Tree seedlings were noted growing on the landfill cover and steps to eradicate the seedlings have been completed and were successful. Some minor erosion has been observed and does not currently impact the integrity of the landfill cap. The minor erosion will continue to be monitored. General well conditions have been monitored and wells are in good condition. No new wells have been installed. Land use controls were verified. Fencing and signage at LHAAP-12 remain intact and legible. No change in land or groundwater use has occurred at the site and the use of the site is still consistent with that mandated by the Final ROD (U.S. Army, 2006).

The results of the eight quarters of groundwater monitoring well sampling indicated that MNA is occurring at the site, is effectively controlling plume migration, is diminishing the size of the area exhibiting COC concentrations exceeding MCL values at LHAAP-12, and that contaminants have not impacted nearby surface water. Based on the in-well trend of 12WW24 and using results from the sampling events of Years 1 and 2, the degradation rates for COCs by natural attenuation have been satisfactory.

In accordance with the RD Addendum, the sampling frequency for Years 1 and 2 was quarterly and for subsequent years it will be conducted annually until the next Five-Year Review. In Year 1, the list of analytes included laboratory analysis for geochemical parameters. Based on this data, the geochemical conditions at LHAAP-12 are considered to have been established, and so analyses of those parameters were discontinued in Year 2. The wells, 12WW20, 12WW21, 12WW22, 12WW23, and 12WW24, will continue to be sampled and analyzed only for VOCs. Subsequent RA(O) reports will focus on the first line of evidence or trend analysis for the COCs. As evidenced during this reporting period, chlorinated ethene trends for 12WW20 and 12WW24 document that concentrations continue to be stable or are decreasing over time. TCE in 12WW24 also showed decreasing concentrations over time.

5.0 REFERENCES

Shaw Environmental & Infrastructure, Inc. (Shaw), 2006, *Final Installation-Wide Work Plan, Longhorn Army Ammunition Plant, Karnack, Texas*, January.

Shaw, 2007a, *Final Remedial Design Addendum Landfill 12 (LHAAP-12), Longhorn Army Ammunition Plant, Karnack, Texas*, June.

Shaw, 2007b, *Final Modeling Report Derivation of Soil and Groundwater Concentrations Protective of Surface Water and Sediment, Revision 1, Longhorn Army Ammunition Plant, Karnack, Texas*, February.

Shaw, 2007c, *Final Natural Attenuation Evaluation, LHAAP-12, LHAAP-35B(37), and LHAAP-67, Longhorn Army Ammunition Plant, Karnack, Texas*, June.

Shaw, 2007d, *Final Results of Modeling for Natural Attenuation of Trichloroethene at LHAAP-12, Longhorn Army Ammunition Plant, Karnack, Texas*, June.

U.S. Army, 2006, *Final Record of Decision, Landfill 12 (LHAAP-12)*, Longhorn Army Ammunition Plant, Karnack, Texas, August.

U.S. Army Corps of Engineers (USACE), 2007, *Groundwater Report Sites 12 and 16, Longhorn Army Ammunition Plant, Karnack, Texas*, January.

U.S. Environmental Protection Agency (USEPA), 1998, *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water*, U.S. EPA/600/R-98/128, September.

USEPA, 2002, *Ground Water Issue, Calculation and Use of First Order Rate Constants for Monitoring Natural Attenuation Studies*, U.S. EPA/540/S-02/500, November.

Appendix A

Site Inspection Checklist

LUC and Landfill Cap Inspection and Maintenance Log – LHAAP-12

Inspection/maintenance activities to be conducted yearly at a minimum

Date	Inspected By	Protect Landfill Cover Integrity				Prevent Human Exposure to Groundwater	Action or Repairs?	Repairs/Actions Taken
		Vegetative Cover Maintained (e.g. grass mowed at least annually)	Fence and Signage Maintained	Observance of Landfill Cover Degradation (e.g., dessication cracks, erosion, or gullying)	Compliance Verified for No Digging or Disturbance of Landfill Cover or Contents	Verified no Withdrawal or Use of Groundwater (other than environmental testing)		
12/5/2006	Van Vangala	Yes	Yes	Slight erosion	Yes	Yes	No	None
2/2/2007	Van Vangala	Yes	Yes	Slight erosion	Yes	Yes	No	None
6/13/2007	Van Vangala	Yes	Yes	Slight erosion	Yes	Yes	No	None
6/23/2008	Van Vangala	Yes	Yes	Slight erosion	Presence of seedlings	Yes	Yes	Eradicate seedlings, monitor erosion
10/14/2009	Van Vangala	Yes	Yes	Slight erosion	Yes	Yes	Yes	Monitor erosion

Landfill Inspection Check List
Landfill 12
Longhorn Army Ammunition Plant, Karnack, Texas

Sl. No.	Item	Findings/Existing Conditions	Action Needed?	Action Performed (Duration)
1	Condition of Access Road	Good	None	None
2	Site Fencing and Signage	Good	None	None
3	Evidence of Trespassers?	No	None	None
4	Inspection of Vegetative Landfill Cover	Satisfactory	None	None
5	Inspection of Erosion Control Measures	Satisfactory	None	None
6	Inspection of Drainage Culverts and Pipes	Not Applicable	None	None
7	Drainage Channel/Ditches	Not Applicable	None	None
8	Erosion Damage	Slight	Yes	None
9	Status of Cover Vegetation? Bare Spots, Dead Grass, etc.	Satisfactory	None	None
10	Presence of Tree Seedlings, Kudzu, etc.?	No	None	None
11	Height of Vegetation	4 to 18 inches	Yes	None
12	Evidence of Burrowing Animals?	No	None	None
13	Excessive Cracking or Desiccation?	No	None	None
14	Any Evidence of Settlement/Subsidence?	No	None	None
15	Inspect Monitoring Wells Surrounding Site	Not Applicable	None	None
16	Note Any Changes to Land Use	No	None	None

Landfill Inspected: Former Sanitary Landfill
Signature:

Date of Inspection: 12/5/2006
Name/Organization: Shaw Environmental

Landfill Inspection Check List
Landfill 12
Longhorn Army Ammunition Plant, Karnack, Texas

Sl. No.	Item	Findings/Existing Conditions	Action Needed?	Action Performed (Duration)
1	Condition of Access Road	Good	None	None
2	Site Fencing and Signage	Good	None	None
3	Evidence of Trespassers?	No	None	None
4	Inspection of Vegetative Landfill Cover	Satisfactory	None	None
5	Inspection of Erosion Control Measures	Satisfactory	None	None
6	Inspection of Drainage Culverts and Pipes	Not Applicable	None	None
7	Drainage Channel/Ditches	Not Applicable	None	None
8	Erosion Damage	Slight	Yes	None
9	Status of Cover Vegetation? Bare Spots, Dead Grass, etc.	Satisfactory	None	None
10	Presence of Tree Seedlings, Kudzu, etc.?	No	None	None
11	Height of Vegetation	6 to 18 inches	Yes	None
12	Evidence of Burrowing Animals?	No	None	None
13	Excessive Cracking or Desiccation?	No	None	None
14	Any Evidence of Settlement/Subsidence?	No	None	None
15	Inspect Monitoring Wells Surrounding Site	Not Applicable	None	None
16	Note Any Changes to Land Use	No	None	None

Landfill Inspected: Former Sanitary Landfill
Signature:

Date of Inspection: 2/2/2007
Name/Organization: Shaw Environmental

Landfill Inspection Check List
Landfill 12
Longhorn Army Ammunition Plant, Karnack, Texas

Sl. No.	Item	Findings/Existing Conditions	Action Needed?	Action Performed (Duration)
1	Condition of Access Road	Good	None	None
2	Site Fencing and Signage	Good	None	None
3	Evidence of Trespassers?	No	None	None
4	Inspection of Vegetative Landfill Cover	Satisfactory	None	None
5	Inspection of Erosion Control Measures	Satisfactory	None	None
6	Inspection of Drainage Culverts and Pipes	Not Applicable	None	None
7	Drainage Channel/Ditches	Not Applicable	None	None
8	Erosion Damage	Slight	Yes	None
9	Status of Cover Vegetation? Bare Spots, Dead Grass, etc.	Satisfactory	None	None
10	Presence of Tree Seedlings, Kudzu, etc.?	No	None	None
11	Height of Vegetation	8 to 24 inches	Yes	None
12	Evidence of Burrowing Animals?	No	None	None
13	Excessive Cracking or Desiccation?	No	None	None
14	Any Evidence of Settlement/Subsidence?	No	None	None
15	Inspect Monitoring Wells Surrounding Site	Not Applicable	None	None
16	Note Any Changes to Land Use	No	None	None

Landfill Inspected: Former Sanitary Landfill
Signature:

Date of Inspection: 6/13/2007
Name/Organization: Shaw Environmental

Landfill Inspection Checklist
Landfill 12
LHAAP, Texas

Sl. No.	Item	Findings/Existing Conditions	Action Needed?	Action Performed (Duration)
1	Condition of Access Road	Good		
2	Site Fencing and Signage	Good		
3	Evidence of Trespassers?	No		
4	Inspection of Vegetative Landfill Cover	Fair		
5	Inspection of Erosion Control Measures	Fair		
6	Inspection of Drainage Culverts and Pipes	Not Applicable		
7	Drainage Channel/Ditches	Not Applicable		
8	Erosion Damage	Slight Erosion	Yes	Monitor
9	Status of Cover Vegetation? Bare Spots, Dead Grass, etc.	No		
10	Presence of Tree Seedlings, Kudzu, etc.?	Yes	Yes	Eradicate
11	Height of Vegetation	4 to 6 inches		
12	Evidence of Burrowing Animals?	No		
13	Excessive Cracking or Desiccation?	No		
14	Any Evidence of Settlement/Subsidence?	No		
15	Inspect Monitoring Wells Surrounding Site	Fair		
16	Note Any Changes to Land or Groundwater Use	No		

Landfill Inspected: 12
Weather Conditions: Warm, Clear **Date of Inspection:** 23-Jun-08
Inspected By: Van Vangala **Name/Organization:** Shaw E&I

Landfill Inspection Checklist
Landfill 12
LHAAP, Texas

Sl. No.	Item	Findings/Existing Conditions	Action Needed?	Action Performed (Duration)
1	Condition of Access Road	Good		
2	Site Fencing and Signage	Good		
3	Evidence of Trespassers?	No		
4	Inspection of Vegetative Landfill Cover	Fair		
5	Inspection of Erosion Control Measures	Fair		
6	Inspection of Drainage Culverts and Pipes	Not Applicable		
7	Drainage Channel/Ditches	Not Applicable		
8	Erosion Damage	Slight Erosion	Yes	Monitor
9	Status of Cover Vegetation? Bare Spots, Dead Grass, etc.	No		
10	Presence of Tree Seedlings, Kudzu, etc.?	No		
11	Height of Vegetation	4 to 6 inches		
12	Evidence of Burrowing Animals?	No		
13	Excessive Cracking or Desiccation?	No		
14	Any Evidence of Settlement/Subsidence?	No		
15	Inspect Monitoring Wells Surrounding Site	Fair		
16	Note Any Changes to Land or Groundwater Use	No		

Landfill Inspected: 12
Weather Conditions: Warm, Clear
Signature: Van Vangala

Date of Inspection: 14-Oct-09
Name/Organization: Shaw E&I

Appendix B

Monitoring Well Sampling and Purging Forms

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: 12WW20
Project Name/#: 117591.0008A105
Weather: Cloudy/Rainy 80°F

Sampling location ID: Site 12
Sample ID: 12WW20
Collection Time/Date: 9/5/07 10:15

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): _____
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 39.00
Initial (pre-installation) DTW/time: 19.52
Final (after pump priming) DTW/time: _____
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): _____
Discharge tube length (ft.): _____

Installation date/beginning time: 9/5/07 9:15
Installation date/completion time: 9/5/07 9:30
Screen Interval (ft. BTOC): 29.00 to 39.00
Pump intake depth (ft BTOC): 34.00
Post-installation DTW/time: 19.48
Max. sustainable pump rate (mL/min): _____
Appearance of product: _____
Discharge tube diameter (3/8" or 1/4"): _____
Inlet reducer used (Y/N): _____

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/5/07 9:30
Initial (pre-purging) DTW (ft. BTOC): 19.48
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): _____
Purge date/completion time: 9/5/07 10:15
Final (post-purging) DTW (ft. BTOC): 20.39
No. of tubing + pump volumes purged: _____

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	40								
Refill Setting	40								
Discharge Setting	37								
Flow rate (mL/min)	150								

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:35	19.69	150	150	21.44	1.22	5.61	17.1	9.00	1.0
9:40	19.88	150	300	21.09	1.23	5.56	15.5	6.05	0.5
9:45	19.97	150	450	20.81	1.23	5.55	15.9	5.15	0.0
9:50	20.05	150	600	20.69	1.23	5.54	19.2	4.53	0.0
9:55	20.12	150	750	20.60	1.23	5.54	21.7	5.54	1.0
10:00	20.19	150	900	20.53	1.22	5.52	23.4	5.36	0.9
10:05	20.26	150	1050	20.59	1.22	5.55	24.2	5.29	0.6
10:10	20.33	150	1200	20.57	1.23	5.54	23.9	5.25	0.5

FERROUS IRON – 0.10 mg/L

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%
10:15	20.39	150	1350	20.58	1.23	5.54	23.5	5.21	0.2

10/20

Sampling

Sampling beginning time: 10:15 Sampling completion time: 10:55

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 12WW20 Sample collection date/time: 9/5/07 / 10:15

Duplicate sample collected (Y/N): Yes Duplicate sample ID: 12WW20-FD

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		6-40ml glass	Dehalococcoides		4-1L Amber
Gases		6-40ml glass			
TOC		2-250 ml glass			
Anions		2-250 ml plastic			
Alkalinity		2-250 ml plastic			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Shaw®

Operable Unit/Site ID: 12 WW 21
Project Name/#: 117591.0008A105
Weather: Rainy / 82°F

Sampling location ID: ~~LANDFILL~~ site 12
Sample ID: 12 WW21
Collection Time/Date: 9/5/07 12:20

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 41.55
Initial (pre-installation) DTW/time: 23.25
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):

Installation date/beginning time: 9/5/07 11:15
Installation date/completion time: 9/5/07
Screen Interval (ft. BTOC): 31.55 to 41.55
Pump intake depth (ft BTOC): 36.50
Post-installation DTW/time: 23.10
Max. sustainable pump rate (mL/min):
Appearance of product:
Discharge tube diameter (3/8" or 1/4"):
Inlet reducer used (Y/N):

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/5/07 11:30
Initial (pre-purging) DTW (ft. BTOC): 23.10
Calculated tubing + pump volume: NA

PID/FID reading (well head/background):
Purge date/completion time: 9/5/07 12:20
Final (post-purging) DTW (ft. BTOC): 23.84
No. of tubing + pump volumes purged:

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	40								
Refill Setting	40								
Discharge Setting	37								
Flow rate (mL/min)	150								

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
11:35	23.20	150	150	20.28	5.48	6.18	+2.1	2.52	70.9
11:40	23.29	150	300	19.68	5.50	6.11	-1.9	6.13	-2.1
11:45	23.35	150	450	19.44	5.50	6.13	0.2	5.74	-2.3
11:50	23.41	150	600	19.33	5.50	6.14	3.5	5.56	-2.3
11:55	23.48	150	750	19.27	5.50	6.16	3-4	5.12	-2.2
12:00	23.55	150	900	19.23	5.50	6.16	5.4	5.23	-1.9
12:05	23.62	150	1050	19.20	5.50	6.17	6.5	4.96	-1.3
12:10	23.70	150	1200	19.19	5.51	6.17	6.8	4.90	-1.0

Ferrous Iron - 1.97 mg/L

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10% 10/20
12:15	23.77	~~150~~	1830	19.20	5.57	6.17	6.9	4.87	-1.2
12:20	23.84	~~150~~	1860	19.20	5.51	6.17	6.9	4.85	-1.1

Sampling

Sampling beginning time: 12:20 Sampling completion time: 12:40

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 12WW21 Sample collection date/time: 9/5/07 12:20

Duplicate sample collected (Y/N): Duplicate sample ID:

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		3-40ml glass	Dehalococcoides		2-1L Amber
Gases		3-40ml glass			
TOC		1-250 ml glass			
Anions		1-250 ml plastic			
Alkalinity		1-250 ml plastic			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Shaw®

Site

Operable Unit/Site ID: 12WW22
Project Name/#: 117591.0008A105
Weather:

Sampling location ID: ~~LANDFILL~~ 12
Sample ID: 12WW22
Collection Time/Date: 11:35 9/4/07

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 38.42
Initial (pre-installation) DTW/time: 9.37
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):

Installation date/beginning time: 9/4/07 10:30
Installation date/completion time: 9/4/07 10:50
Screen Interval (ft. BTOC): 28.42 to 38.42
Pump intake depth (ft BTOC): 33.50
Post-installation DTW/time: ~~9.45~~ 9.30
Max. sustainable pump rate (mL/min):
Appearance of product:
Discharge tube diameter (3/8" or 1/4"):
Inlet reducer used (Y/N):

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/4/07 10:55
Initial (pre-purging) DTW (ft. BTOC): ~~9.45~~ 9.30
Calculated tubing + pump volume: NA

PID/FID reading (well head/background):
Purge date/completion time: 9/4/07 11:35
Final (post-purging) DTW (ft. BTOC):
No. of tubing + pump volumes purged:

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	40								
Refill Setting	40								
Discharge Setting	37								
Flow rate (mL/min)	125								

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:55	9.30	125	125	20.86	1.04	8.87	-50.9	3.16	15.9
11:00	9.35	125	250	20.30	1.08	8.28	-69.8	3.56	16.8
11:05	9.42	125	375	19.81	1.12	7.63	-90.8	4.27	25.7
11:10	9.50	125	500	19.78	1.10	7.73	-88.6	3.93	24.7
11:15	9.57	125	625	19.73	1.08	7.99	-49.8	3.60	22.1
11:20	9.64	125	750	19.89	1.06	8.33	-32.8	3.98	24.3
11:26	9.70	125	875	19.91	1.05	8.37	-30.3	3.35	21.1
11:30	9:75	125	1000	19.93	1.05	8.39	-29.7	3.33	22.7

Ferrous IRON - 0.08 mg/L

00114230

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%
11:35	9.82	125	1125	19.95	1.05	8.37	-29.3	3.79	21.0

10/20

Sampling

Sampling beginning time: 11:35 Sampling completion time: 11:37

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 12wwz2 Sample collection date/time: 9/4/07 11:35

Duplicate sample collected (Y/N): Duplicate sample ID:

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		3 glass 40 mL vials			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: 12WW23
Project Name/#: 117591-0008A/05
Weather: SUNNY 85°F
Sampling location ID: ~~LANDFILL~~ Site 12
Sample ID: 12WW23
Collection Time/Date: 9/4/07 2:00

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 25.15
Initial (pre-installation) DTW/time: 19.73
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):
Installation date/beginning time: 9/4/07 12:50
Installation date/completion time: 9/4/07 1:10
Screen Interval (ft. BTOC): 15.15 to 25.15
Pump intake depth (ft BTOC): 22.00
Post-installation DTW/time: 19.68
Max. sustainable pump rate (mL/min):
Appearance of product:
Discharge tube diameter (3/8" or 1/4"):
Inlet reducer used (Y/N):

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/4/07 1:10
Initial (pre-purging) DTW (ft. BTOC): 19.68
Calculated tubing + pump volume: NA
PID/FID reading (well head/background):
Purge date/completion time:
Final (post-purging) DTW (ft. BTOC):
No. of tubing + pump volumes purged:

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	30								
Refill Setting	26								
Discharge Setting	30								
Flow rate (mL/min)	50								

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1:20	19.77	50	50	21.38	.531	5.79	-33.0	3.68	7.5
1:25	19.92	50	100	21.05	.526	5.77	-30.3	3.14	6.5
1:30	19.95	50	150	21.04	.524	5.76	-28.6	3.14	5.1
1:35	19.99	50	200	21.01	.522	5.76	-25.1	3.19	8.0
1:40	20.08	50	250	20.33	.514	6.06	-19.4	2.92	5.7
1:45	20.15	50	300	20.22	.510	6.05	-17.7	3.00	6.7
1:50	20.23	50	350	20.23	.509	6.05	-16.3	2.92	4.9
1:55	20.30	50	400	20.22	.506	6.06	-14.7	2.96	5.8

FERROUS IRON - 3.01 mg/L

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%
2:00	20.38	50	450	20.25	.504	6.06	-14.3	2.91	5.7

10/20

Sampling

Sampling beginning time: 2:00 Sampling completion time: 2:02

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 12WW23 Sample collection date/time: 9/4/07 2:00

Duplicate sample collected (Y/N): Duplicate sample ID:

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		3 - 40mL glass			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00114233

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Site

Operable Unit/Site ID: 12nw24
Project Name/#: 117591-0008A105
Weather: Rainy / 75°F

Sampling location ID: ~~LANDFILL~~ 12
Sample ID: 12nw24
Collection Time/Date: 9/5/07 9:50

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 27.91
Initial (pre-installation) DTW/time: 23.91
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):

Installation date/beginning time: 9/5/07 0745
Installation date/completion time: 9/5/07 8:55
Screen Interval (ft. BTOC): 17.91 to 27.91
Pump intake depth (ft BTOC): 26.00
Post-installation DTW/time: 23.80
Max. sustainable pump rate (mL/min):
Appearance of product:
Discharge tube diameter (3/8" or 1/4"):
Inlet reducer used (Y/N):

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/5/07 8:00
Initial (pre-purging) DTW (ft. BTOC): 23.80
Calculated tubing + pump volume: NA

PID/FID reading (well head/background):
Purge date/completion time: 9/5/07 8:50
Final (post-purging) DTW (ft. BTOC): 24.52
No. of tubing + pump volumes purged:

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20								
Refill Setting	20								
Discharge Setting	17								
Flow rate (mL/min)	50								

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:10	24.05	50	50	22.24	1.50	5.38	28.0	11.62	-2.3
8:15	24.11	50	100	22.12	1.50	5.28	22.8	12.93	-1.9
8:20	24.15	50	150	22.00	1.50	5.26	22.4	12.82	-2.2
8:25	24.20	50	200	21.72	1.51	5.26	25.3	9.98	-2.1
8:30	24.27	50	250	21.41	1.51	5.26	26.1	10.31	-2.2
8:35	24.35	50	300	21.26	1.51	5.26	26.4	7.95	-2.0
8:40	24.41	50	350	21.26	1.51	5.27	25.7	7.84	-2.2
8:45	24.46	50	400	21.25	1.50	5.27	25.3	7.80	-1.9

Ferrous Iron - 0.10 mg/L

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%
8:50	24.52	50	450	21.25	1.50	5.27	25.5	7.81	~2.0

10/20

Sampling

Sampling beginning time: 8:50 Sampling completion time: 8:52

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 12WW24 Sample collection date/time: 9/5/07 8:50

Duplicate sample collected (Y/N): Duplicate sample ID:

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		3-40ml glass			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Shaw®

Operable Unit/Site ID: LHAAP Site 12
Project Name/#: 117591.0008A105
Weather: Clear 48°F

Sampling location ID: Site 12
Sample ID: 12MW20-121807
Collection Time/Date: 12/18/07 10:05

Pump Installation

Pump installation crew: Beasinger
PID/FID reading (well head/background):
Casing diameter (inches): 4
Total well Depth (ft. BTOC): 39.05
Initial (pre-installation) DTW/time: 19.77
Final (after pump priming) DTW/time: 21.15
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):

Installation date/beginning time: 12/18/07 09:05
Installation date/completion time: 12/18/07
Screen Interval (ft. BTOC): 29.05 to 39.05
Pump intake depth (ft BTOC): 34.00
Post-installation DTW/time: 20.02 9:20
Max. sustainable pump rate (mL/min):
Appearance of product:
Discharge tube diameter (3/8" or 1/4"):
Inlet reducer used (Y/N):

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	30								
Refill Setting	30								
Discharge Setting	22								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Bel Singer
Purge date/beginning time: 9:20 12/18/07
Initial (pre-purging) DTW (ft. BTOC): 21.15
Calculated tubing + pump volume: NA

PID/FID reading (well head/background):
Purge date/completion time: 12/18/07 10:05
Final (post-purging) DTW (ft. BTOC): 21.20
No. of tubing + pump volumes purged:

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	30								
Refill Setting	30								
Discharge Setting	22								
Flow rate (mL/min)	100								

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:20	21.15	100	500	18.30	1.326	5.65	223.0	3.65	0.5
9:25	21.18	100	1000	18.41	1.324	5.59	228.8	3.33	0.4
9:30	21.20	100	1500	18.65	1.317	5.61	229.7	2.95	0.3
9:35	21.20	100	2000	18.77	1.312	5.55	224.2	2.50	-0.6
9:40	21.20	100	2500	18.79	1.311	5.55	215.5	2.40	-0.2
9:45	21.20	100	3000	19.01	1.306	5.54	208.8	2.31	-0.7
9:50	21.20	100	3500	19.20	1.305	5.54	203.7	2.19	-1.0
9:55	21.20	100	4000	19.24	1.306	5.54	199.2	2.21	-1.3

FERROUS IRON - 0.12 mg/L

00114236

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12WW20

Shaw

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%
10:00	21.20	100	4500	19.19	1.309	5.54	198.8	2.26	-0.6
10:05	21.20	100	5000	19.15	1.307	5.54	198.4	2.24	-0.8

10 20

Sampling

Sampling beginning time: 10:05

Sampling completion time: 10:40

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:15	21.20	100	~~5000~~	19.15	1.308	5.54	198.2	2.25	-0.7
10:25	21.20	100	~~5000~~	19.15	1.307	5.54	198.0	2.27	-0.6
10:35	21.20	100		19.14	1.307	5.54	197.9	2.27	-0.9

Sample Information

Sample ID: 12WW20-121807

Sample collection date/time: 12/18/07 10:05

Duplicate sample collected (Y/N): YES

Duplicate sample ID: 12WW20-121807-FD

Split sample collected (Y/N): _____

Split sample ID: _____

COC No(s): _____

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
GASES		~~3~~ 40ml glass			
VOC's		~~3~~ 40ml glass			
TOC		2 - 250 ml plastic			
ANIONS		2 - 250 ml plastic			
Dehalococcoides		2 - 1000 ml Amber			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Shaw®

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008A105
Weather: Cloudy 58°F

Sampling location ID: Site 12
Sample ID: 12GW21
Collection Time/Date: 3:05 12/18/07

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 41.45
Initial (pre-installation) DTW/time: 24.30
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = psi

Installation date/beginning time: 12/18/07 2:00
Installation date/completion time: 12/18/07 2:15
Screen Interval (ft. BTOC): 31.45 to 41.45
Pump intake depth (ft BTOC): 36.50
Post-installation DTW/time: 24.17
Max. sustainable pump rate (mL/min):
Appearance of product:
Discharge tube diameter (3/8" or 1/4"):
Inlet reducer used (Y/N):

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 12/18/07 2:15
Initial (pre-purging) DTW (ft. BTOC): 24.17
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = psi

PID/FID reading (well head/background):
Purge date/completion time: 12/18/07 3:05
Final (post-purging) DTW (ft. BTOC):
No. of tubing + pump volumes purged:

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	30								
Refill Setting	30								
Discharge Setting	22								
Flow rate (mL/min)	100								

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
2:20	24.55	100	500	18.09	5.480	6.01	35.3	2.02	-4.9
2:25	24.60	100	1000	18.20	5.514	5.98	23.5	.98	-5.1
2:30	24.62	100	1500	18.22	5.533	5.97	16.8	.69	-5.3
2:35	24.63	100	2000	18.20	5.531	5.97	14.1	.61	-5.4
2:40	24.64	100	2500	18.16	5.539	5.97	10.0	.51	-5.2
2:45	24.65	100	3000	18.15	5.543	5.97	5.7	.43	-5.5
2:50	24.65	100	3500	18.14	5.549	5.97	1.5	.38	-5.4
2:55	24.65	100	4000	18.10	5.553	5.97	<2.0	.36	-5.4

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12WW21

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%
3:00	24.65	100	4500	18.10	5.555	5.97	-3.2	.35	-5.3
3:05	24.65	100	5000	18.11	5.560	5.97	-3.8	.37	-5.3

Sampling

Sampling beginning time: 3:05 Sampling completion time: 3:20

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
3:15	24.65	100		18.11	5.560	5.97	-3.9	.36	-5.4

Sample Information

Sample ID: 12WW21-121807 Sample collection date/time: 12/18/07 3:05

Duplicate sample collected (Y/N): ND Duplicate sample ID:

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers
VOC's		3-40 ml glass
GASES		3-40 ml glass
TOC		1-250 ml plastic
Anions		1-250 ml plastic
Dehalococcoides		1-1000 ml Amber

Requested Analysis	Method	Containers

Comments:

Ferrous IRON - 0.90 mg/L

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008A105
Weather: Cloudy 58DF

Sampling location ID: Site 12
Sample ID: 12WW22-121807
Collection Time/Date: 1:35 12/18/07

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): ____
Casing diameter (inches): 4
Total well Depth (ft. BTOC): 39.41
Initial (pre-installation) DTW/time: 11.65
Final (after pump priming) DTW/time: ____
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): ____
Discharge tube length (ft.): ____

Installation date/beginning time: 12/18/07 12:35
Installation date/completion time: 12/18/07
Screen Interval (ft. BTOC): 29.41 to 39.41
Pump intake depth (ft BTOC): 34.50
Post-installation DTW/time: 11.40
Max. sustainable pump rate (mL/min): ____
Appearance of product: ____
Discharge tube diameter (3/8" or 1/4"): ____
Inlet reducer used (Y/N): ____

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = ____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 12/18/07 12:45
Initial (pre-purging) DTW (ft. BTOC): 11.40
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): ____
Purge date/completion time: 12/18/07 1:35
Final (post-purging) DTW (ft. BTOC): ____
No. of tubing + pump volumes purged: ____

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = ____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	30								
Refill Setting	30								
Discharge Setting	22								
Flow rate (mL/min)	100								

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
12:50	11.90	100	500	18.04	1.122	7.16	-38.4	2.37	-1.7
12:55	11.91	100	1000	18.29	1.203	6.94	-47.7	1.17	-1.8
1:00	11.92	100	1500	18.39	1.208	6.89	-51.1	.77	-1.6
1:05	11.92	100	2000	18.48	1.204	6.88	-54.4	.52	-1.8
1:10	11.92	100	2500	18.52	1.201	6.88	-56.1	.46	-1.9
1:15	11.92	100	3000	18.47	1.191	6.88	-58.7	.41	-2.2
1:20	11.92	100	3500	18.53	1.177	6.90	-63.7	.40	-2.4
1:25	11.92	100	4000	18.55	1.164	6.90	-67.6	.39	-2.5

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12WW22

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%
1:30	11.92	100	4500	18.50	1.162	6.90	-68.2	.36	-2.6
1:35	11.92	100	5000	18.51	1.161	6.90	-69.1	.36	-2.5

10 20

Sampling

Sampling beginning time: 1:35 Sampling completion time: 1:50

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1140	11.92	100		18.51	1.160	6.90	-69.5	.36	-2.4

Sample Information

Sample ID: 12WW22-121807
Duplicate sample collected (Y/N): NO
Split sample collected (Y/N):
COC No(s):

Sample collection date/time: 12/18/07 1:35
Duplicate sample ID:
Split sample ID:

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC's		3-40ml glass			
Gases		3-40ml glass			
TOC		1-250 ml plastic			
Anions		1-250ml plastic			
Dehalococcoides		1-1000ml Amber			

Comments:

FERROUS IRON - 0.26 mg/L

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00114241

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008A105
Weather: Cloudy 60°F

Sampling location ID: Site 12
Sample ID: 12WW23-121907
Collection Time/Date: 9:25 12/19/07

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background):
Casing diameter (inches): 4
Total well Depth (ft. BTOC): 25.15
Initial (pre-installation) DTW/time: 20.15
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = psi

Installation date/beginning time: 12/19/07 8:15
Installation date/completion time: 12/19/07 8:30
Screen Interval (ft. BTOC): 15.15 to 25.15
Pump intake depth (ft BTOC): 23.00
Post-installation DTW/time: 20.09
Max. sustainable pump rate (mL/min):
Appearance of product:
Discharge tube diameter (3/8" or 1/4"):
Inlet reducer used (Y/N):

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 12/19/07 8:30
Initial (pre-purging) DTW (ft. BTOC): 20.09
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = psi

PID/FID reading (well head/background):
Purge date/completion time: 12/19/07 9:25
Final (post-purging) DTW (ft. BTOC): 20.35
No. of tubing + pump volumes purged:

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20								
Refill Setting	20								
Discharge Setting	13								
Flow rate (mL/min)	80								

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:35	20.20	80	400	18.23	0.298	6.32	-27.2	4.39	-3.2
8:40	20.25	80	800	18.21	0.543	6.08	-34.0	2.16	-3.0
8:45	20.27	80	1200	18.24	0.536	6.03	-38.1	1.73	-3.2
8:50	20.29	80	1600	18.28	0.520	6.00	-40.4	1.24	-2.9
8:55	20.30	80	2000	18.31	0.507	5.97	-40.0	1.04	-2.6
9:00	20.31	80	2400	18.30	0.499	5.95	-39.6	0.93	-2.4
9:05	20.32	80	2800	18.33	0.491	5.93	-37.3	0.84	-1.8
9:10	20.33	80	3200	18.34	0.484	5.92	-35.2	0.78	-1.6

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12WW23

Water Quality Parameter Measurements (continued)

Time	DTW (ft BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%
9:15	20.34	80	3600	18.36	0.482	5.92	-34.9	0.76	-0.7
9:20	20.34	80	4000	18.37	0.480	5.91	-34.5	0.71	0.7
9:25	20.35	80	4400	18.37	0.479	5.90	-33.9	0.67	1.4

Sampling

Sampling beginning time: 9:25 Sampling completion time: 9:45

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:30	20.35	80	[redacted]	18.36	0.479	5.90	-33.0	0.67	1.2

Sample Information

Sample ID: 12WW23-121907

Duplicate sample collected (Y/N): NO

Split sample collected (Y/N):

COC No(s):

Sample collection date/time: 12/19/07 9:25

Duplicate sample ID:

Split sample ID:

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC's		3-40 ml glass			
GASES		3-40 ml glass			
TOC		1-250 ml plastic			
ANIONS		1-250 ml plastic			
Dehalococcoides		1-1000 ml Amber			

Comments:

FERROUS IRON - 0.19 mg/L

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Shaw

Operable Unit/Site ID: LHAAP — Sampling location ID: SS Site 12
Project Name/#: 117591.0008A105 — Sample ID: 12WW24-121907
Weather: Cloudy 65°F — Collection Time/Date: 11:30 12/19/07

Pump Installation

Pump installation crew: Bellenger — Installation date/beginning time: 12/19/07 10:20
PID/FID reading (well head/background) — Installation date/completion time: 12/19/07 10:35
Casing diameter (inches): 4" — Screen Interval (ft. BTOC): 17.90 to 27.90
Total well Depth (ft. BTOC): 27.90 — Pump intake depth (ft BTOC): 26.00
Initial (pre-installation) DTW/time: 24.92 — Post-installation DTW/time: 24.80
Final (after pump priming) DTW/time: — Max. sustainable pump rate (mL/min):
Free product (circle): LNAPL / DNAPL — Appearance of product:
Volume of water removed during priming (mL): — Discharge tube diameter (3/8" or 1/4"):
Discharge tube length (ft.): — Inlet reducer used (Y/N):

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = ___ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Bellenger — PID/FID reading (well head/background):
Purge date/beginning time: 12/19/07 10:35 — Purge date/completion time: 12/19/07 11:30
Initial (pre-purging) DTW (ft. BTOC): 24.80 — Final (post-purging) DTW (ft. BTOC): 25.00
Calculated tubing + pump volume: NA — No. of tubing + pump volumes purged:

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = ___ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20								
Refill Setting	20								
Discharge Setting	13								
Flow rate (mL/min)	75								

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:40	24.90	75	375	18.98	1.426	5.14	170.0	6.99	2.1
10:45	24.92	75	750	19.02	1.499	5.11	174.3	5.73	1.8
10:50	24.94	75	1125	19.17	1.498	5.09	181.2	5.27	-0.2
10:55	24.96	75	1500	19.30	1.496	5.08	186.1	4.87	-1.0
11:00	24.97	75	1875	19.40	1.494	5.08	189.3	4.65	-1.8
11:05	24.98	75	2250	19.47	1.489	5.08	196.0	4.56	-3.2
11:10	24.98	75	2625	19.57	1.488	5.08	197.9	4.60	-3.9
11:15	24.99	75	3000	19.67	1.483	5.08	202.2	4.91	-4.6

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12MW24

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%
11:20	25.00	75	3375	19.70	1.479	5.09	208.8	4.98	-5.1
11:25	25.00	75	3750	19.72	1.475	5.09	210.1	5.00	-5.3
11:30	25.00	75	4125	19.73	1.476	5.09	210.9	5.01	-5.2

Sampling

Sampling beginning time: 11:30 Sampling completion time: 11:50

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
11:35	25.00	75		19.71	1.475	5.09	211.5	5.08	-5.5
11:45	25.00	75		19.70	1.474	5.09	212.1	5.10	-5.0

Sample Information

Sample ID: 12WW24-121907 Sample collection date/time: 12/19/07 11:30

Duplicate sample collected (Y/N): NO Duplicate sample ID:

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		3-40 ml glass			
GASES		3-40ml glass			
TOC		1-250 ml plastic			
ANIONS		1-250 ml plastic			
Dehalococcoides		1-1000 ml Amber			

Comments:

Ferrous IRON - 0.58 mg/L

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00114245

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008A105
Weather: Clear 48°F

Sampling location ID: Site 12
Sample ID: 12WW20-030608
Collection Time/Date: 9:20 3/6/08

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 38.95
Initial (pre-installation) DTW/time: 20.16
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):

Installation date/beginning time: 3/6/08 8:10
Installation date/completion time: 3/6/08 8:23
Screen Interval (ft. BTOC): 28.95 to 38.95
Pump intake depth (ft BTOC): 33.00
Post-installation DTW/time: 28.00
Max. sustainable pump rate (mL/min):
Appearance of product:
Discharge tube diameter (3/8" or 1/4"):
Inlet reducer used (Y/N):

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = ____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 3/6/08 8:23
Initial (pre-purging) DTW (ft. BTOC): 20.00
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = ____ psi

PID/FID reading (well head/background):
Purge date/completion time: 3/6/08 9:45
Final (post-purging) DTW (ft. BTOC): 20.40
No. of tubing + pump volumes purged:

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20								20
Refill Setting	19								19
Discharge Setting	20								20
Flow rate (mL/min)	125								125

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:30	20.40	125	625	17.86	1.179	5.85	216.3	6.29	1.2
8:35	20.40	125	1250	17.91	1.178	5.79	222.5	5.83	0.9
8:40	20.40	125	1875	17.95	1.177	5.78	225.3	5.88	0.6
8:45	20.40	125	2500	17.97	1.177	5.77	227.3	5.98	0.3
8:50	20.40	125	3125	18.04	1.174	5.76	229.4	5.63	-0.2
8:55	20.40	125	3750	18.10	1.173	5.75	230.6	5.27	-0.4
9:00	20.40	125	4375	18.14	1.172	5.75	231.5	4.94	-0.6
9:05	20.40	125	5000	18.11	1.171	5.74	232.7	4.77	-0.7

00114246

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%
9:10	20.40	125	5625	18.14	1.169	5.72	233.8	4.70	-0.9
9:15	20.40	125	6250	18.17	1.168	5.72	234.4	4.70	-0.9
9:20	20.40	125	6875	18.18	1.168	5.72	234.7	4.68	-0.9

Sampling

Sampling beginning time: 9:20 Sampling completion time: 9:45

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:30	20.40	125	8125	18.20	1.167	5.72	235.1	4.65	-1.2

Sample Information

Sample ID: 12ww20-030608
Duplicate sample collected (Y/N): Yes
Split sample collected (Y/N):
COC No(s):

Sample collection date/time: 3/6/08 9:20
Duplicate sample ID: 12ww20-030608-FD
Split sample ID:

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOA	8260	2-40 ml glass			
GASES		3-40 ml glass			
ANIONS		1-250 ml plastic			
TOC/TIC		1-250ml plastic			
Dehalococcoides		1-1 L Amber glass			

Comments:

FERROUS IRON - 0.00 mg/L

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00114247

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008H105
Weather: Clear 55°F

Sampling location ID: SITE 12
Sample ID: 12MW21-E30608
Collection Time/Date: 10:50 3/6/08

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 43.47
Initial (pre-installation) DTW/time: 24.19
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):

Installation date/beginning time: 3/6/08 10:00
Installation date/completion time: 3/6/08 10.10
Screen Interval (ft. BTOC): 33.47 to 43.47
Pump intake depth (ft BTOC): 38.5
Post-installation DTW/time: 24.02
Max. sustainable pump rate (mL/min):
Appearance of product:
Discharge tube diameter (3/8" or 1/4"):
Inlet reducer used (Y/N):

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 3/6/08 10:10
Initial (pre-purging) DTW (ft. BTOC): 24.02
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = psi

PID/FID reading (well head/background):
Purge date/completion time: 3/6/08 10:50
Final (post-purging) DTW (ft. BTOC): 24.30
No. of tubing + pump volumes purged:

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	22								22
Refill Setting	19								19
Discharge Setting	22								22
Flow rate (mL/min)	150								150

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:15	24.25	150	750	17.59	5.481	5.94	1.2	2.82	-2.6
10:20	24.27	150	1500	17.64	5.486	5.96	-17.8	4.68	-2.7
10:25	24.28	150	2250	17.65	5.487	5.96	-25.2	4.05	-2.7
10:30	24.29	150	3000	17.62	5.491	5.96	-28.3	2.95	-2.8
10:35	24.30	150	3750	17.61	5.489	5.96	-29.5	2.39	-2.8
10:40	24.30	150	4500	17.63	5.488	5.96	-30.0	2.28	-2.8
10:45	24.30	150	5250	17.63	5.487	5.96	-30.3	2.23	-2.8
10:50	24.30	150	6000	17.65	5.486	5.96	-30.4	2.20	-2.8

00114248

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Shaw

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%

Sampling

Sampling beginning time: 10:50 Sampling completion time: 11:03

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:57	24.30	150	10.5	17.66	5,485	5.96	-31.2	2.19	-2.8

Sample Information

Sample ID: 12MW21-030608 Sample collection date/time: 3/6/08 10:50

Duplicate sample collected (Y/N): Duplicate sample ID:

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOA	8260	3 - 40 ml glass			
Gases		3 - 40 ml glass			
Anions		1-250 ml plastic			
TOC		1-250 ml plastic			
Dehalococcoides		1- 1 L Amber glass			

Comments:

FERROUS IRON - 0.34 mg/L

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008A105
Weather: Clear/Sunny 47°F

Sampling location ID: Site 12
Sample ID: 12NW22-030508
Collection Time/Date: 9:50 3/5/08

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 38.40
Initial (pre-installation) DTW/time: 9.81
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):

Installation date/beginning time: 3/5/08 08:40
Installation date/completion time: 3/5/08 08:50
Screen Interval (ft. BTOC): 28.40 to 38.40
Pump intake depth (ft BTOC): 33.00
Post-installation DTW/time: 9.55
Max. sustainable pump rate (mL/min):
Appearance of product:
Discharge tube diameter (3/8" or 1/4"):
Inlet reducer used (Y/N):

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = ____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 3/5/08 8:50
Initial (pre-purging) DTW (ft. BTOC): 9.55
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = ____ psi

PID/FID reading (well head/background):
Purge date/completion time: 3/5/08 9:50
Final (post-purging) DTW (ft. BTOC): 10.20
No. of tubing + pump volumes purged:

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	25								25
Refill Setting	20								20
Discharge Setting	25								25
Flow rate (mL/min)	150								150

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:55									
[illegible]	10.15	150	750	16.65	1.158	7.20	148.7	2.31	0.1
9:00	10.15	150	1500	16.72	1.177	6.96	84.4	1.66	0.1
9:05	10.18	150	2250	16.69	1.181	6.86	-22.7	1.39	-0.1
9:10	10.20	150	3000	16.57	1.181	6.85	-37.2	1.41	-0.3
9:15	10.20	150	3750	16.00	1.172	6.90	-50.6	1.52	-0.3
9:20	10.20	150	4500	15.95	1.163	6.94	-54.1	1.68	-0.2
9:25	10.20	150	5250	16.34	1.149	6.96	-56.4	1.90	-0.1
9:30	10.20	150	6000	16.76	1.179	7.08	-59.4	2.27	0.1

00114250

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	Electrical Conductivity (uMhos/cm) ±3%	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%
9:35	10.20	150	6750	16.95	1.093	7.23	-54.2	3.28	0.4
9:40	10.20	150	7500	17.01	1.090	7.25	-46.3	3.31	0.3
9:45	10.20	150	8250	17.06	1.087	7.27	-46.6	3.34	-0.2
9:50	10.20	150	9000	17.07	1.085	7.29	-45.1	3.37	-0.4

10
20

Sampling

Sampling beginning time: 9:50 Sampling completion time: 9:52

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:52	10.20	150	9300	17.08	1.085	7.29	-44.8	3.37	-0.4

Sample Information

Sample ID: 12wW22-030508 Sample collection date/time: 3/5/08 9:50

Duplicate sample collected (Y/N): Duplicate sample ID:

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC's	8260	2-40ml glass			

Comments:

FERROUS IRON - 0.33 mg/L

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008A105
Weather: Sunny 58°F

Sampling location ID: Site 12
Sample ID: 12WW23-030508
Collection Time/Date: 11:30 3/5/08

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 25.15
Initial (pre-installation) DTW/time: 20.20
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = psi

Installation date/beginning time: 3/5/08 10:05
Installation date/completion time: 3/5/08 10:30
Screen Interval (ft. BTOC): 15.15 to 25.15
Pump intake depth (ft BTOC): 22.50
Post-installation DTW/time: 20.02
Max. sustainable pump rate (mL/min):
Appearance of product:
Discharge tube diameter (3/8" or 1/4"):
Inlet reducer used (Y/N):

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 3/5/08 10:35
Initial (pre-purging) DTW (ft. BTOC):
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = psi

PID/FID reading (well head/background):
Purge date/completion time: 3/5/08 11:30
Final (post-purging) DTW (ft. BTOC): 20.28
No. of tubing + pump volumes purged:

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20								20
Refill Setting	17								17
Discharge Setting	20								20
Flow rate (mL/min)	100								100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:40	20.23	100	500	17.72	0.441	6.01	113.0	1.43	50.5
10:45	20.26	100	1000	17.70	0.438	5.95	101.4	0.76	47.0
10:50	20.27	100	1500	17.61	0.437	5.93	101.7	0.88	45.1
10:55	20.28	100	2000	17.56	0.436	5.92	104.9	0.83	42.7
11:00	20.28	100	2500	17.54	0.434	5.90	109.8	0.73	36.8
11:05	20.28	100	3000	17.50	0.432	5.89	113.3	0.91	35.2
11:10	20.28	100	3500	17.49	0.431	5.88	115.1	0.70	35.4
11:15	20.28	100	4000	17.49	0.432	5.88	116.5	0.67	21.3

00114252

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%
11:20	20.28	1000	4500	17.49	0.432	5.86	112.6	0.65	19.3
11:25	20.28	~~100~~ 100	5000	17.50	0.429	5.86	110.3	0.62	12.1
11:30	20.28	100	5500	17.50	0.429	5.86	109.5	0.61	9.2

Sampling

Sampling beginning time: 11:30 Sampling completion time: 11:32

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1132	20.28	1000	5700	17.50	0.428	5.86	108.1	0.60	8.1

Sample Information

Sample ID: 12WW23-030508 Sample collection date/time: 3/5/08 11:30

Duplicate sample collected (Y/N): Duplicate sample ID:

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC's		2-40 ml glass			

Comments:

FERROUS IRON - 0.25 mg/L

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP | Sampling location ID: Site 12
Project Name/# 117591.0008A105 | Sample ID: 12MW24-030508
Weather: Sunny 70°F | Collection Time/Date: 2:40 3/5/08

Pump Installation

Pump installation crew: Baesman
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 26.65
Initial (pre-installation) DTW/time: 24.90
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = psi

Installation date/beginning time: 3/5/08 1:25
Installation date/completion time: 3/5/08 1:40
Screen Interval (ft. BTOC): 16.65 to 26.65
Pump intake depth (ft BTOC): 25.5
Post-installation DTW/time: 24.71
Max. sustainable pump rate (mL/min):
Appearance of product:
Discharge tube diameter (3/8" or 1/4"):
Inlet reducer used (Y/N):

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18								
Refill Setting	15								
Discharge Setting	18								
Flow rate (mL/min)									

Purging

Purging/sampling crew: Baesman
Purge date/beginning time: 3/5/08 1:40
Initial (pre-purging) DTW (ft. BTOC): 24.71
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = psi

PID/FID reading (well head/background):
Purge date/completion time: 3/5/08 2:40
Final (post-purging) DTW (ft. BTOC): 25.03
No. of tubing + pump volumes purged:

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18								18
Refill Setting	15								15
Discharge Setting	18								18
Flow rate (mL/min)	~~50~~ 50								50

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
		50							
1:50	24.93	~~50~~	500	24.18	0.805	5.26	168.1	3.87	-0.4
1:55	24.95	50	750	22.29	1.518	5.12	172.2	2.98	-0.8
2:00	24.97	50	1000	21.89	1.513	5.04	177.7	3.18	-1.3
2:05	24.99	50	1250	21.77	1.508	5.02	181.3	3.07	-1.6
2:10	25.02	50	1500	21.75	1.502	5.01	184.6	3.07	-1.7
2:15	25.03	50	1750	21.75	1.499	5.00	186.5	3.20	-1.7
2:20	25.03	50	2000	21.73	1.495	5.01	188.3	3.50	-1.9
2:25	2503	50	2250	21.81	1.490	5.01	190.5	3.71	-2.0

00114254

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%
2:30	25.03	50	2500	21.86	1.487	5.02	191.2	3.73	-2.2
2:35	25.03	50	3000	21.88	1.485	5.02	192.5	3.68	-2.1
2:40	25.03	50	3250	21.89	1.484	5.02	192.7	3.70	-2.1

Sampling

Sampling beginning time: 2:40 Sampling completion time: 2:42

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
2:42	25.03	50	3350	21.89	1.484	5.02	193.0	3.69	-2.2

Sample Information

Sample ID: 12WW24-030508 Sample collection date/time: 3/5/08 2:40

Duplicate sample collected (Y/N): Duplicate sample ID:

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOA	8260	2-40ml glass			

Comments:

FERROUS IRON - 0.19 mg/L

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008A105
Weather: Sunny 92°F

Sampling location ID: SHE12
Sample ID: 12WW20-060408
Collection Time/Date: 1:45 6/4/08

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 39.50
Initial (pre-installation) DTW/time: 19.42
Final (after pump priming) DTW/time: 19.32
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.):

Installation date/beginning time: 6/4/08 12:30
Installation date/completion time: 6/4/08 12:40
Screen Interval (ft. BTOC): 29.50 to 39.50
Pump intake depth (ft BTOC): 34.50
Post-installation DTW/time: 19.30
Max. sustainable pump rate (mL/min):
Appearance of product: NA
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 6/4/08 12:40
Initial (pre-purging) DTW (ft. BTOC): 19.32
Calculated tubing + pump volume: NA

PID/FID reading (well head/background):
Purge date/completion time: 6/4/08 1:45
Final (post-purging) DTW (ft. BTOC): 19.45
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	25								25
Refill Setting	25								25
Discharge Setting	21								21
Flow rate (mL/min)	100								100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
12:45	19.35	100	0.5	23.19	1.290	5.54	347.5	11.14	6.6
12:50	19.37	100	1.0	21.79	1.245	5.43	346.0	8.19	3.4
12:55	19.40	100	1.5	21.45	1.236	5.35	411.9	6.74	2.1
1:00	19.42	100	2.0	21.23	1.236	5.31	434.9	6.18	2.5
1:05	19.43	100	2.5	20.77	1.233	5.28	455.9	5.76	2.1
1:10	19.44	100	3.0	20.78	1.230	5.27	460.5	5.45	2.0
1:15	19.45	100	3.5	20.70	1.223	5.28	465.3	5.36	2.7
1:20	19.45	100	4.0	20.66	1.226	5.28	462.4	4.65	3.6

00114256

GROUNDWATER SAMPLING FORM

12WW20

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1:25	19.45	100	4.5	20.62	1,226	5.29	457.3	4.79	2.9
1:30	19.45	100	5.0	20.68	1,223	5.30	452.3	4.25	3.8
1:35	19.45	100	5.5	20.62	1,224	5.30	450.1	4.40	3.4
1:40	19.45	100	6.0	20.64	1,223	5.30	448.3	4.44	4.4
1:45	19.45	100	6.5	20.66	1,224	5.30	447.9	4.41	4.3

Sampling

Sampling beginning time: 1:45 Sampling completion time: 2:15

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1:50	19.45	100	7.0	20.67	1,224	5.30	445.0	4.40	4.0

Sample Information

Sample ID: 12ww20-060408

Duplicate sample collected (Y/N): Yes

Split sample collected (Y/N): No

COC No(s): 10255 + 10254

Sample collection date/time: 6/4/08 1:45

Duplicate sample ID: 12ww20-060408-FD

Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOA		4 - 40 ml glass			
Gases		3 - 40 ml glass			
TIC/TOC		2 - 250 ml plastic			
Anions		2 - 250 ml plastic			
Dehalococcoides		2 - 1 L Amber			

Comments:

Ferrous Iron - 0.10 mg/L

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008A105
Weather: Sunny 80°F

Sampling location ID: Site 12
Sample ID: 12WW21-060408
Collection Time/Date: 9:05 6/4/08

Pump Installation

Pump installation crew: Bressinger
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 41.55
Initial (pre-installation) DTW/time: 23.45
Final (after pump priming) DTW/time: 23.33
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.):

Installation date/beginning time: 6/4/08 7:50
Installation date/completion time: 6/4/08 8:05
Screen Interval (ft. BTOC): 31.55 to 41.55
Pump intake depth (ft BTOC): 36.50
Post-installation DTW/time:
Max. sustainable pump rate (mL/min): 100
Appearance of product: NA
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Bressinger
Purge date/beginning time: 6/4/08 8:05
Initial (pre-purging) DTW (ft. BTOC): 23.33
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

PID/FID reading (well head/background):
Purge date/completion time: 6/4/08 9:05
Final (post-purging) DTW (ft. BTOC): 23.50
No. of tubing + pump volumes purged:

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	25								25
Refill Setting	25								25
Discharge Setting	21								21
Flow rate (mL/min)	100								100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:10	23.38	100	500	19.85	5.649	6.05	48.0	8.66	13.2
8:15	23.42	100	1000	19.03	5.598	6.02	49.6	6.07	14.8
8:20	23.45	100	1500	18.86	5.530	6.02	49.7	5.27	15.0
8:25	23.47	100	2000	18.84	5.513	6.02	49.4	4.85	15.7
8:30	23.49	100	2500	18.83	5.499	6.03	49.2	4.48	12.4
8:35	23.50	100	3000	18.79	5.488	6.03	48.9	4.22	11.0
8:40	23.50	100	3500	18.81	5.478	6.03	48.8	4.11	7.8
8:45	23.50	100	4000	18.84	5.472	6.03	48.7	3.97	6.9

00114258

12WW21

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:50	23.50	100	4500	18.81	5.473	6.04	48.5	3.87	6.2
8:55	23.50	100	5000	18.88	5.463	6.04	48.6	3.64	4.9
9:00	23.50	100	5500	18.89	5.467	6.03	48.8	3.60	5.5
9:05	23.50	100	6000	18.89	5.465	6.03	48.9	3.60	4.8

Sampling

Sampling beginning time: 9:05 Sampling completion time: 9:25

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:10	23.50	100	6500	18.89	5.464	6.03	48.9	3.59	5.0

Sample Information

Sample ID: 12WW21-060408 Sample collection date/time: 6/4/08 9:05

Duplicate sample collected (Y/N): NO Duplicate sample ID:

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOA		2 - 40 ml glass			
GASES		3 - 40 ml glass			
TOC/TIC		1 - 250 ml plastic			
ANIONS		1 - 250 ml plastic			
Dehalococcoides		1 - 1 L Amber			

Comments:

Ferrous Iron 0.28 mg/L

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: ~~SWMU~~ LHAAD
Project Name/#: 117591.0008A105
Weather: Sunny 80F
Sampling location ID: Site 12
Sample ID: 12MW22-060308
Collection Time/Date: 9:35 6/3/08

Pump Installation

Pump installation crew: Bee Smyer
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 38.45
Initial (pre-installation) DTW/time: 8.43
Final (after pump priming) DTW/time: 8.38
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.):
Installation date/beginning time: 6/3/08 8:20
Installation date/completion time: 6/3/08 8:40
Screen Interval (ft. BTOC): 28.45 to 38.45
Pump intake depth (ft BTOC): 33.50
Post-installation DTW/time:
Max. sustainable pump rate (mL/min): 100
Appearance of product: NA
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): NA

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Bee Smyer
Purge date/beginning time: 6/3/08 8:40
Initial (pre-purging) DTW (ft. BTOC): 8.38
Calculated tubing + pump volume: NA
PID/FID reading (well head/background):
Purge date/completion time: 6/3/08 9:35
Final (post-purging) DTW (ft. BTOC): 8.45
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	25								25
Refill Setting	25								25
Discharge Setting	21								21
Flow rate (mL/min)	100								100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:45	8.40	100	.500	19.78	1.217	7.10	-11.9	5.83	5.9
8:50	8.42	100	1000	18.79	1.164	7.53	-34.0	3.20	4.4
8:55	8.43	100	1500	18.69	1.157	7.54	-35.0	2.84	3.8
9:00	8.44	100	2000	18.65	1.149	7.54	-34.7	2.59	4.7
9:05	8.45	100	2500	18.63	1.144	7.55	-35.6	2.39	5.5
9:10	8.45	100	3000	18.56	1.141	7.56	-35.9	2.29	5.5
9:15	8.45	100	3500	18.58	1.139	7.57	-36.4	2.17	6.2
9:20	8.45	100	4000	18.72	1.139	7.57	-36.5	2.12	5.9

00114260

12WW22

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:25	8.45	100	4.500	18.62	1.137	7.56	-35.8	2.02	6.4
9:30	8.45	100	5.000	18.55	1.137	7.55	-35.4	2.00	6.4
9:35	8.45	100	5.500	18.56	1.137	7.55	-35.2	1.99	6.5

Sampling

Sampling beginning time: 9:35 Sampling completion time: 9:37

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 12WW22-060308 Sample collection date/time: 6/3/08 9:35

Duplicate sample collected (Y/N): NO Duplicate sample ID:

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOA		2-40ml glass			

Comments:

Ferrous Iron - 0.14 mg/L

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP — Sampling location ID: Site 12
Project Name/#: 117591.0008A105 — Sample ID: 12MW23-060308
Weather: Sunny 85°F — Collection Time/Date: 11:00 6/3/08

Pump Installation

Pump installation crew: Bee Smyer — Installation date/beginning time: 6/3/08 9:55
PID/FID reading (well head/background): 0 — Installation date/completion time: 6/3/08 10:05
Casing diameter (inches): 4" — Screen Interval (ft. BTOC): 15.13 to 25.13
Total well Depth (ft. BTOC): 25.13 — Pump intake depth (ft BTOC): 22.5
Initial (pre-installation) DTW/time: 20.05 — Post-installation DTW/time: 19.96
Final (after pump priming) DTW/time: [illegible] — Max. sustainable pump rate (mL/min): 75
Free product (circle): LNAPL / DNAPL — Appearance of product: NA
Volume of water removed during priming (mL): NA — Discharge tube diameter (3/8" or 1/4"): 1/4"
Discharge tube length (ft.): — Inlet reducer used (Y/N): NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Bee Smyer — PID/FID reading (well head/background): _____
Purge date/beginning time: 6/3/08 10:05 — Purge date/completion time: 6/3/08 11:00
Initial (pre-purging) DTW (ft. BTOC): 19.96 — Final (post-purging) DTW (ft. BTOC): 20.25
Calculated tubing + pump volume: NA — No. of tubing + pump volumes purged: _____

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18								18
Refill Setting	18								18
Discharge Setting	15								15
Flow rate (mL/min)	75								75

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:10	20.20	75	.375	19.33	0.488	6.02	50.1	4.54	63.8
10:15	20.22	75	.750	18.62	0.468	5.91	55.8	2.99	49.6
10:20	20.24	75	1.125	18.51	0.464	5.89	56.5	2.63	45.3
10:25	20.25	75	1.500	18.40	0.462	5.88	56.9	2.38	36.3
10:30	20.25	75	1.875	18.42	0.460	5.88	57.3	2.25	30.6
10:35	20.25	75	2.250	18.44	0.458	5.87	57.6	2.17	29.6
10:40	20.25	75	2.625	18.48	0.457	5.87	58.0	2.11	26.3
10:45	20.25	75	3.000	18.43	0.454	5.85	58.7	2.08	21.5

00114262

12WW23

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:50	20.25	75	3375	18.39	0.457	5.85	59.1	2.05	18.2
10:55	20.25	75	3750	18.38	0.451	5.85	59.3	2.06	13.5
11:00	20.25	75	4125	18.38	0.451	5.85	59.5	2.04	10.0

Sampling

Sampling beginning time: 11:00 Sampling completion time: 11:02

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 12WW23-060308 Sample collection date/time: 6/3/08 11:00

Duplicate sample collected (Y/N): NO Duplicate sample ID:

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOA		2-40ml glass			

Comments:

Ferrous Iron - 0.42 mg/L

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008A105
Weather: Sunny 85°F

Sampling location ID: Site 12
Sample ID: 12MW24-060408
Collection Time/Date: 10:40 6/4/08

Pump Installation

Pump installation crew: BeeSunger
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 27.90
Initial (pre-installation) DTW/time: 24.23
Final (after pump priming) DTW/time: 23.15
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.):

Installation date/beginning time: 6/4/08 9:35
Installation date/completion time: 6/4/08 9:45
Screen Interval (ft. BTOC): 17.90 to 27.90
Pump intake depth (ft BTOC): 26.00
Post-installation DTW/time:
Max. sustainable pump rate (mL/min): 75
Appearance of product: NA
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: BeeSunger
Purge date/beginning time: 6/4/08 9:45
Initial (pre-purging) DTW (ft. BTOC): 23.15
Calculated tubing + pump volume: NA

PID/FID reading (well head/background):
Purge date/completion time: 6/4/08 10:40
Final (post-purging) DTW (ft. BTOC): 23.32
No. of tubing + pump volumes purged:

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18								18
Refill Setting	18								18
Discharge Setting	15								15
Flow rate (mL/min)	75								75

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:50	23.20	75	.375	21.57	1.6666	5.33	89.1	11.02	6.0
9:55	23.22	75	.750	20.68	1.561	5.26	92.3	7.42	4.8
10:00	23.24	75	1125	20.59	1.545	5.24	93.2	6.97	4.4
10:05	23.26	75	1500	20.54	1.534	5.22	94.3	6.52	4.1
10:10	23.28	75	1875	20.52	1.526	5.21	94.9	6.31	3.0
10:15	23.30	75	2250	20.57	1.519	5119	96.1	6.22	2.2
10:20	23.31	75	2625	20.60	1.512	5117	97.2	6.19	1.9
10:25	23.31	75	3000	20.59	1.509	5.16	97.9	6.14	1.7

00114264

12WW24

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:30	23.32	75	3375	20.69	1,506	5.14	98.7	6.09	1.2
10:35	23.32	75	3750	20.68	1,506	5.13	99.5	6.05	0.8
10:40	23.32	75	4125	20.70	1,504	5.12	99.9	6.06	0.5

Sampling

Sampling beginning time: 10:40 Sampling completion time: 11:00

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:45	23.32	75	4500	20.71	1,503	5.12	100.2	6.05	0.1

Sample Information

Sample ID: 12WW24-060408 Sample collection date/time: 6/4/08 10:40

Duplicate sample collected (Y/N): NO Duplicate sample ID:

Split sample collected (Y/N): Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOA		2-40ml glass			
GASES		3-40ml glass			
TOC/TIC		1-250mL plastic			
Anions		1-250 ml plastic			
Dehalococcoides		1-1L Amber			

Comments:

Ferrous Iron - 0.02 mg/L

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00114265

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP — Sampling location ID: Site 12
Project Name/#: 117591.0008A105 — Sample ID: 12WW20-090808
Weather: Clear 78°F — Collection Time/Date: 10:30 9/8/08

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 39.00
Initial (pre-installation) DTW/time: 20.82
Final (after pump priming) DTW/time: 20.70 9:~~48~~ 9:45
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 200
Discharge tube length (ft.): NA

Installation date/beginning time: 9/8/08 9:35
Installation date/completion time: 9/8/08 9:~~58~~ 9:45
Screen Interval (ft. BTOC): 29.00 to 39.00
Pump intake depth (ft BTOC): 34.00
Post-installation DTW/time: 20.68
Max. sustainable pump rate (mL/min): 100
Appearance of product: Clear
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20	20							
Refill Setting	17	17							
Discharge Setting	20	20							
Flow rate (mL/min)	100	100							

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/8/08 9:~~48~~
initial (pre-purging) DTW (ft. BTOC): 20.70
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 9/8/08 10:30
Final (post-purging) DTW (ft. BTOC): 20.80
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20	20	20	20	20	20	20	20	20
Refill Setting	17	17	17	17	17	17	17	17	17
Discharge Setting	20	20	20	20	20	20	20	20	20
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:55	20.75	100	.5	21.60	1.251	5.83	169.7	3.08	-4.7
10:00	20.77	100	1.0	21.34	1.247	5.69	189.8	1.81	-5.3
10:05	20.79	100	1.5	21.44	1.243	5.64	205.9	1.35	-5.7
10:10	20.80	100	2.0	21.47	1.242	5.63	214.4	1.22	-0.7
10:15	20.80	100	2.5	21.48	1.242	5.62	220.5	1.18	-5.9
10:20	20.80	100	3.0	21.45	1.243	5.61	224.3	1.12	-5.4
10:25	20.80	100	3.5	21.44	1.242	5.60	223.8	1.08	-2.2
10:30	20.80	100	4.0	21.46	1.242	5.60	223.9	1.08	0.2

00114266

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 10:30 Sampling completion time: 10:34

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:32	20.80	100	4.2	21.45	1.242	5.60	223.8	1.08	~0.3

Sample Information

Sample ID: 12WW20-090808
Duplicate sample collected (Y/N): N
Split sample collected (Y/N): N
COC No(s): 10450

Sample collection date/time: 9/8/08 10:30
Duplicate sample ID: NA
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOA	8260	2-40ml glass			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00114267

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008A105
Weather: Clear 80°F

Sampling location ID: SWMU 12
Sample ID: 12WW21-091108
Collection Time/Date: 10:00 9/11/08

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 41.50
Initial (pre-installation) DTW/time: 24.38
Final (after pump priming) DTW/time: 24.28
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 200
Discharge tube length (ft.): NA

Installation date/beginning time: 9/11/08 9:10
Installation date/completion time: 9/11/08 9:20
Screen Interval (ft. BTOC): 31.50 to 41.50
Pump intake depth (ft BTOC): 36.50
Post-installation DTW/time: 24.25
Max. sustainable pump rate (mL/min): 100
Appearance of product: Clear
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	22	22							
Refill Setting	19	19							
Discharge Setting	22	22							
Flow rate (mL/min)	100	100							

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/11/08 9:20
Initial (pre-purging) DTW (ft. BTOC): 24.28
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 9/11/08 10:00
Final (post-purging) DTW (ft. BTOC): 24.40
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	22	22	22	22	22	22	22	22	22
Refill Setting	19	19	19	19	19	19	19	19	19
Discharge Setting	22	22	22	22	22	22	22	22	22
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:25	24.31	100	.5	20.19	5.397	5.99	93.6	1.81	1.1
9:30	24.33	100	1.0	19.86	5.449	5.99	81.3	0.68	-6.0
9:35	24.35	100	1.5	19.77	5.459	5.99	78.8	0.57	-6.0
9:40	24.37	100	2.0	19.75	5.460	6.00	77.4	0.50	-3.1
9:45	24.38	100	2.5	19.76	5.462	6.00	76.6	0.45	5.5
9:50	24.39	100	3.0	19.72	5.468	6.00	76.1	0.42	-6.0
9:56	24.40	100	3.5	19.70	5.468	6.00	75.6	0.41	-6.0
10:00	24.40	100	4.0	19.70	5.468	6.00	75.0	0.41	-5.7

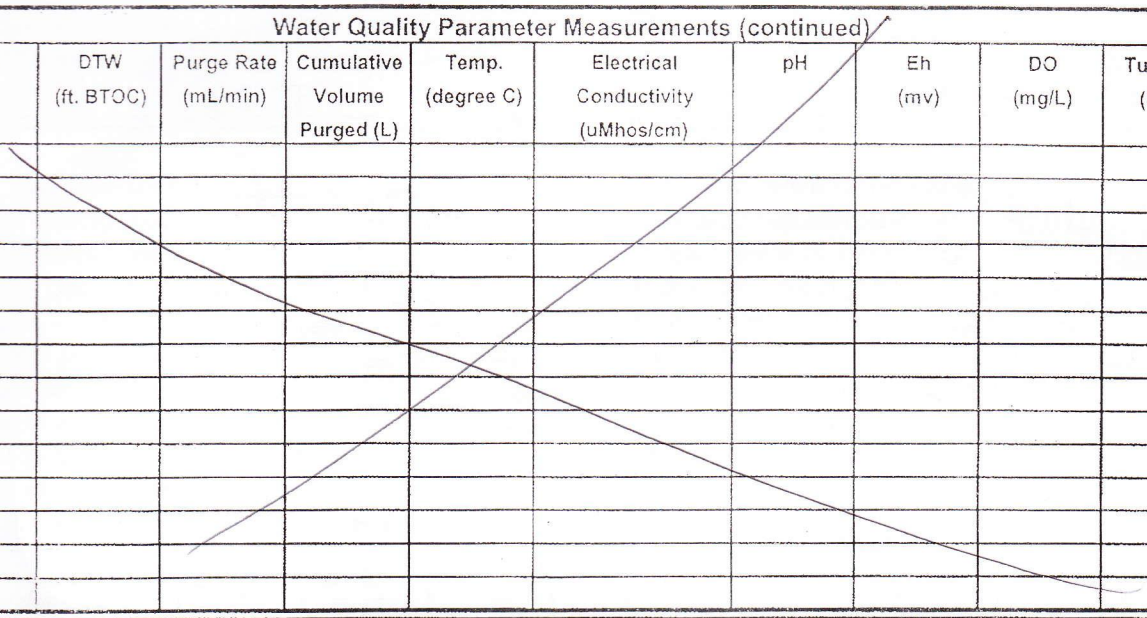
00114268

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)



Sampling

Sampling beginning time: 10:00 Sampling completion time: 10:05

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:02	24.40	100	4.2	19.70	5.468	6.00	75.2	0.41	~6.0

Sample Information

Sample ID: 12ww24-091108 Sample collection date/time: 9/11/08 10:00

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s): 10450

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOA	8260	2-40ml glass			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008A105
Weather: Clear 72°F
Sampling location ID: Site 12
Sample ID: 12WW22-090808
Collection Time/Date: 9:15 9/8/08

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 38.40
Initial (pre-installation) DTW/time: 11.11
Final (after pump priming) DTW/time: 10.85 8:30
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 200
Discharge tube length (ft.): NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

Installation date/beginning time: 9/8/08 8:15
Installation date/completion time: 9/8/08 8:25
Screen Interval (ft. BTOC): 28.40 to 38.40
Pump intake depth (ft BTOC): 33.50
Post-installation DTW/time: 10.83
Max. sustainable pump rate (mL/min): 100
Appearance of product: Clear
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	19	19	19	19	19	19	19		
Refill Setting	16	16	16	16	16	16	16		
Discharge Setting	19	19	19	19	19	19	19		
Flow rate (mL/min)	100	100	100	100	100	100	100		

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/8/08 8:30
Initial (pre-purging) DTW (ft. BTOC): 11.00
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

PID/FID reading (well head/background): NA
Purge date/completion time: 9/8/08 9:15
Final (post-purging) DTW (ft. BTOC):
No. of tubing + pump volumes purged: NA

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	19	19	19	19	19	19	19	19	19
Refill Setting	16	16	16	16	16	16	16	16	16
Discharge Setting	19	19	19	19	19	19	19	19	19
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:40	11.05	100	1.0	20.03	1.276	7.16	-129.3	0.86	-5.8
8:45	11.05	100	1.5	19.92	1.273	7.14	-130.2	0.49	-5.8
8:50	11.05	100	2.0	19.89	1.270	7.14	-132.1	0.37	-5.8
8:55	11.05	100	2.5	19.88	1.269	7.14	-133.0	0.32	-5.5
9:00	11.05	100	3.0	19.87	1.268	7.14	-133.7	0.28	1.0
9:05	11.05	100	3.5	19.88	1.267	7.14	-134.3	0.26	-5.7
9:10	11.05	100	4.0	19.91	1.266	7.14	-135.1	0.23	-5.3
9:15	11.05	100	4.5	19.91	1.265	7.14	-135.5	0.23	-5.2

00114270

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 9:15 Sampling completion time: 9:17

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:16	11.05	100	4.6	19.40	1.264	7.14	-135.8	0.23	-5.0

Sample Information

Sample ID: 12WW22-090808
Duplicate sample collected (Y/N): Y
Split sample collected (Y/N): N
COC No(s): 10450

Sample collection date/time: 9/8/08 9:15
Duplicate sample ID: 12WW22-090808-FD
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC	8260	4-40ml glass			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00114271

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008A105
Weather: Clear 85°F

Sampling location ID: site 12
Sample ID: 12WW23-091108
Collection Time/Date: 11:15 9/11/08

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 25.12
Initial (pre-installation) DTW/time: 20.40
Final (after pump priming) DTW/time: 20.35
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 200
Discharge tube length (ft.): NA

Installation date/beginning time: 9/11/08 10:15
Installation date/completion time: 9/11/08 10:20
Screen Interval (ft. BTOC): 15.12 to 25.12
Pump intake depth (ft BTOC): 22.50
Post-installation DTW/time: 20.30
Max. sustainable pump rate (mL/min): 100
Appearance of product: Clear
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	16	16							
Refill Setting	13	13							
Discharge Setting	16	16							
Flow rate (mL/min)	100	100							

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/11/08
Initial (pre-purging) DTW (ft. BTOC): 20.35
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 9/11/08 11:15
Final (post-purging) DTW (ft. BTOC): 20.50
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	16	16	16	16	16	16	16	16	16
Refill Setting	13	13	13	13	13	13	13	13	13
Discharge Setting	16	16	16	16	16	16	16	16	16
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:30	20.40	100	1.0	21.64	0.813	6.05	2.2	2.79	4.4
10:35	20.42	100	1.5	20.73	0.658	5.98	-3.7	0.79	-5.9
10:40	20.44	100	2.0	20.44	0.618	5.97	-4.4	0.51	-5.9
10:45	20.45	100	2.5	20.41	0.587	5.96	-4.6	0.42	-4.7
10:50	20.46	100	3.0	20.32	0.567	5.95	-4.5	0.36	6.8
10:55	20.47	100	3.5	20.31	0.559	5.95	-3.6	0.34	-5.9
11:00	20.48	100	4.0	20.31	0.546	5.95	-1.6	0.32	-5.9
11:05	20.49	100	4.5	20.33	0.545	5.94	4.7	0.30	-5.2

00114272

Shaw®

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
11:10	20.50	100	5.0	20.33	0.544	5.94	3.2	0.30	-5.0
11:15	20.50	100	5.5	20.32	0.543	5.94	2.9	0.30	-4.6

Sampling

Sampling beginning time: 11:15 Sampling completion time: 11:20

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
11:17	20.50	100	5.7	20.32	0.543	5.94	3.0	0.31	-5.1

Sample Information

Sample ID: 12WW23-091108 Sample collection date/time: 9/11/08 11:15

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s): 10450

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOA	8260	2-40ml glass			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00114273

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008A105
Weather: Clear 72°F

Sampling location ID: site 12
Sample ID: 12MW24-091108
Collection Time/Date: 8:55 9/11/08

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 28.90
Initial (pre-installation) DTW/time: 25.03
Final (after pump priming) DTW/time: 24.92
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 200
Discharge tube length (ft.): NA

Installation date/beginning time: 9/11/08 7:55
Installation date/completion time: 9/11/08 8:05
Screen Interval (ft. BTOC): 18.90 to 28.90
Pump intake depth (ft BTOC): 27.00
Post-installation DTW/time: 24.90
Max. sustainable pump rate (mL/min): 100
Appearance of product: clear
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17	17							
Refill Setting	15	15							
Discharge Setting	17	17							
Flow rate (mL/min)	100	100							

Purging

Purging/sampling crew: Beesinger 8:05
Purge date/beginning time: 9/11/08 ~~24:42~~
Initial (pre-purging) DTW (ft. BTOC): 24.92
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 9/11/08 8:55
Final (post-purging) DTW (ft. BTOC): 25.13
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17	17	17	17	17	17	17	17	17
Refill Setting	15	15	15	15	15	15	15	15	15
Discharge Setting	17	17	17	17	17	17	17	17	17
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:15	25.00	100	1.0	21.27	1.460	5.13	226.6	2.74	-6.0
8:20	25.03	100	1.5	20.77	1.488	4.97	251.6	1.34	2.2
8:25	25.05	100	2.0	20.70	1.490	4.89	263.1	1.11	-1.9
8:30	25.07	100	2.5	20.70	1.491	4.86	268.8	1.01	-5.9
8:35	25.09	100	3.0	20.71	1.493	4.82	273.1	0.92	-5.9
8:40	25.10	100	3.5	20.72	1.493	4.78	278.1	0.81	0.7
8:45	25.11	100	4.0	20.72	1.493	4.77	279.3	0.78	1.5
8:50	25.12	100	4.5	20.74	1.492	4.75	281.5	0.75	-5.9

00114274

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Shaw®

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:55	25.13	100	5.0	20.74	1.492	4.75	284.2	0.75	-5.9

Sampling

Sampling beginning time: 8:55 Sampling completion time: 9:00

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:57	25.13	100	5.2	20.74	1.492	4.75	285.0	0.75	-5.7

Sample Information

Sample ID: 12WW24-091108 Sample collection date/time: 9/11/08 8:55

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s): 10450

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOA	8260	2-40ml glass			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00114275

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: 24-22 | Sampling location ID: S-to-D
Project Name/#: 117571 000BA105 | Sample ID: 12 GW 30 - 020408
Weather: 35°-40°F | Collection Time/Date: 0310408 -

Pump Installation

Pump installation crew: M. Martinez / T. Hernandez | Installation date/beginning time: 02/04/08 0855
PID/FID reading (well head/background): NA | Installation date/completion time: 02/04/08 0860
Casing diameter (inches): 4" | Screen interval (ft. BTOC): 29' to 39'
Total well Depth (ft. BTOC): 39' | Pump intake depth (ft BTOC): 34'
Initial (pre-installation) DTW/time: 20.85 / 0852 | Post-installation DTW/time: 20.82 / 0900
Final (after pump priming) DTW/time: 20.82 / 0900 | Max. sustainable pump rate (mL/min):
Free product (circle): LNAPL / DNAPL | Appearance of product: NA
Volume of water removed during priming (mL): | Discharge tube diameter (3/8" or 1/4"): 1/4"
Discharge tube length (ft.): NA | Inlet reducer used (Y/N): NO

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = 24 psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: M. Martinez / T. Hernandez | PID/FID reading (well head/background): NA
Purge date/beginning time: 02/04/08 | Purge date/completion time: 02/04/08
Initial (pre-purging) DTW (ft. BTOC): 20.82 | Final (post-purging) DTW (ft. BTOC): 21.00
Calculated tubing + pump volume: NA | No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20								20
Refill Setting	10								10
Discharge Setting	5								5
Flow rate (mL/min)	160								160

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
0907	21.50	120	1.0	16.89	1.176	5.56	121.5	1.71	0.0
0917	21.50	120	2.2	16.88	1.179	5.18	147.5	0.90	0.0
0922	21.52	120	2.8	17.19	1.177	5.16	147.6	0.85	0.0
0927	21.52	120	3.4	17.13	1181	5.14	150.2	0.84	0.0
0932	21.50	120	4.0	17.17	1.183	5.13	149.2	0.84	0.0
0933	Sample								

Shaw®

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 0933 Sampling completion time: 0959

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
0940	31.00	120	5.0	17.22	1.184	5.13	149.7	0.80	0.0

Sample Information

Sample ID: 12dup20 020409 Sample collection date/time: 02/04/09 0933

Duplicate sample collected (Y/N): NO Duplicate sample ID: NA

Split sample collected (Y/N): NO Split sample ID: NA

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOA	8260	3 x 40ml VOA			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LMAAP
Project Name/#: 117591.0008A105
Weather: Sunny 65°F

Sampling location ID: Area 12
Sample ID: 12MW21 020409
Collection Time/Date: 1521 020409

Pump Installation

Pump installation crew: M. Martin / T. Alexander
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 41.50
Initial (pre-installation) DTW/time: 24.68 / 1423
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): NA

Installation date/beginning time: 020409 1427
Installation date/completion time: 020409 1428
Screen Interval (ft. BTOC): 31.50 to 41.50
Pump intake depth (ft BTOC): 36.50
Post-installation DTW/time: 24.65 / 1428
Max. sustainable pump rate (mL/min):
Appearance of product: NA
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): NO

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: M. Martin / T. Alexander
Purge date/beginning time: 02-04-09 / 1429
Initial (pre-purging) DTW (ft. BTOC): 24.65
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 02-04-09
Final (post-purging) DTW (ft. BTOC): 25.54
No of tubing + pump volumes purged:

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	23								23
Refill Setting	10								10
Discharge Setting	5								5
Flow rate (mL/min)	180								180

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1435	24.91	180	1	13.19	0.009	5.50	101.6	9.21	0.0
1445	25.22	180	2.8	16.36	5.433	5.60	19.1	1.80	0.0
1450	25.31	180	3.7	16.45	5.405	5.58	16.0	1.38	0.0
1455	25.37	180	4.6	16.95	5.467	5.56	14.6	1.25	0.0
1500	25.42	180	5.5	16.80	5.489	5.54	9.3	1.12	0.0
1505	25.45	180	6.4	16.05	5.494	5.52	5.4	1.04	0.0
1510	25.48	180	7.3	16.48	5.497	5.49	-2.0	0.96	0.0
1515	25.48	180	8.2	16.55	5.496	5.47	-4.2	0.92	0.0

Shaw®

GROUNDWATER SAMPLING FORM

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1520	35.46	180	9.1	16.52	5.500	5.46	-9.4	0.90	0.0
1521	Sampling Ce								

Sampling

Sampling beginning time: 1521 Sampling completion time: 1524

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1527	25.54	180	11.5	16.59	5.497	5.45	-11.3	0.92	0.0

Sample Information

Sample ID: 12mw21 020409
Duplicate sample collected (Y/N): yes
Split sample collected (Y/N): no
COC No(s): NA

Sample collection date/time: 020409 / 1521
Duplicate sample ID: 12mw21-020409-FD
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
8260 VOC	8260	4 x 40mL Vials			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LMAAP
Project Name/#: 117591.0008A105
Weather: 33°-38° F
Sampling location ID: SWMU 12
Sample ID: 12GW22 02CH08
Collection Time/Date: 02/04/08 0831

Pump Installation

Pump installation crew: M. Martinez / T. Alexander
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 38.40
Initial (pre-installation) DTW/time: 10.88' / 0741
Final (after pump priming) DTW/time: 10.71' / 0747
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):
Installation date/beginning time: 02/04/08 0745
Installation date/completion time: 02/04/08 0746
Screen Interval (ft. BTOC): 28.40 to 38.40
Pump intake depth (ft BTOC): 33.40'
Post-installation DTW/time: 10.71' / 0747
Max. sustainable pump rate (mL/min):
Appearance of product: NA
Discharge tube diameter (3/8" or 1/4"): 1/4
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: M. Martinez / T. Alexander
Purge date/beginning time: 02/04/08 0752
Initial (pre-purging) DTW (ft. BTOC): 10.71'
Calculated tubing + pump volume: NA
PID/FID reading (well head/background): NA
Purge date/completion time: 02/04/08
Final (post-purging) DTW (ft. BTOC): 12.10
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	30								30
Refill Setting	10								10
Discharge Setting	5								5
Flow rate (mL/min)	100								100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
0800	11.05	100	1	11.74	1.397	6.96	-97.3	2.31	0.0
0810	11.50	100	1.5	12.93	1.364	6.84	-101.9	1.53	0.0
0815	11.60	100	2.0	12.81	1.305	6.84	-102.7	1.56	0.0
0820	11.70	100	2.5	12.75	1.303	6.83	-103.7	1.57	0.0
0825	11.80	100	3.0	12.35	1.299	6.82	-104.8	1.60	0.0
0830	11.95	100	3.5	11.12	1.300	6.82	-97.7	1.62	0.0
0831	Sample								

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 0337 Sampling completion time: 0833

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
0337	12.20	100	4.5	12.00	1247	6.85	-92.4	1.66	0.0

Sample Information

Sample ID: RWW22 020409 Sample collection date/time: 02/04/09 0831

Duplicate sample collected (Y/N): No Duplicate sample ID: n/a

Split sample collected (Y/N): No Split sample ID: n/a

COC No(s): n/a

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC	8260	2 x 40mL vials			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake, mL - milliliter; L - Liter

Shaw®

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: CHHAP
Project Name/#: 117591.000.8A105
Weather:

Sampling location ID: Site 12
Sample ID: 12 GW23 020409
Collection Time/Date: 1348 02 04 09

Pump Installation

Pump installation crew: M. Maestrini / T. Alexander
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 25.12'
Initial (pre-installation) DTW/time: 20.76' 1340
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):

Installation date/beginning time: 02 04 09 1042
Installation date/completion time: 02 04 09 1043
Screen Interval (ft. BTOC): 15.12 to 25.12
Pump intake depth (ft BTOC): 24.12
Post-installation DTW/time: 20.65 1247
Max. sustainable pump rate (mL/min):
Appearance of product: NA
Discharge tube diameter ~~(3/8"~~ or ~~1/4"~~): 1/4"
Inlet reducer used (Y/N): NO

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: M. Maestrini / T. Alexander
Purge date/beginning time: 02 04 09 / 1348
Initial (pre-purging) DTW (ft. BTOC): 20.65
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 02 04 09
Final (post-purging) DTW (ft. BTOC): 22.95
No. of tubing + pump volumes purged:

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	22	17							17
Refill Setting	10	12							12
Discharge Setting	5	3							5
Flow rate (mL/min)	270	100							100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1352	21.50	270	1	16.98	0.596	5.87	41.6	1.51	66.3
1402	21.50	100	3.7	17.48	0.529	5.76	26.7	0.29	28.4
1407	21.75	100	4.2	17.63	0.514	5.67	46.1	0.21	22.8
1412	21.95	100	4.7	17.71	0.514	5.64	56.0	0.14	17.2
1417	22.15	100	5.2	17.75	0.513	5.64	53.9	0.14	13.9
1422	22.46	100	5.7	17.43	0.507	5.62	26.2	0.15	4.3
1427	22.45	100	6.2	17.44	0.505	5.61	3.8	0.17	0.2
1432	22.58	100	6.7	17.39	0.501	5.60	-25.4	0.24	0.0

Shaw®

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1337	22.63	100	7.2	16.44	0.494	5.58	-62.5	0.3	0.0
1342	22.75	100	7.7	16.64	0.494	5.58	-62.4	0.32	0.0
1347	22.80	100	8.2	16.85	0.494	5.57	-64.9	0.34	0.0
1348	Sample								

Sampling

Sampling beginning time: 1348 Sampling completion time: 1349

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1354	22.95	100	8.7	16.89	0.498	5.57	-63.2	0.36	0.0

Sample Information

Sample ID: 12 MW23 020409 Sample collection date/time: 020409 / 1348

Duplicate sample collected (Y/N): NO Duplicate sample ID: NA

Split sample collected (Y/N): NO Split sample ID: NA

COC No(s): NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC	8260	2 x 40mL Vials			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008A105
Weather:
Sampling location ID: 5-12
Sample ID: 12GW024 020408
Collection Time/Date: 02-04-08

Pump Installation

Pump installation crew: M. Martinez / T. Alvarado
Installation date/beginning time: 02-04-08 1002
PID/FID reading (well head/background): NA
Installation date/completion time: 02-04-08 1002
Casing diameter (inches): 4"
Screen Interval (ft. BTOC): 18.90 to 28.90
Total well Depth (ft. BTOC): 28.90
Pump intake depth (ft BTOC): 27.90
Initial (pre-installation) DTW/time: 25.37 1000
Post-installation DTW/time: 25.25 1003
Final (after pump priming) DTW/time:
Max. sustainable pump rate (mL/min):
Free product (circle): LNAPL / ~~DNAPL~~
Appearance of product: NA
Volume of water removed during priming (mL): NA
Discharge tube diameter (~~3/8~~ or (1/4")): 1/4"
Discharge tube length (ft.): NA
Inlet reducer used (~~YES~~): NO

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: M. Martinez
PID/FID reading (well head/background): NA
Purge date/beginning time: 02-04-08
Purge date/completion time: 02-04-08
Initial (pre-purging) DTW (ft. BTOC): 25.25'
Final (post-purging) DTW (ft. BTOC): 26.05
Calculated tubing + pump volume: NA
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	25	20							20
Refill Setting	10	12							12
Discharge Setting	5	3							3
Flow rate (mL/min)	225	130							130

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mV)	DO (mg/L)	Turbidity (NTU)
1008	25.55	225	1	15.60	~~1.32.8~~ 1.496	4.73	132.8	1.54	0.0
1018	25.72	130	3.25	17.00	1.480	4.60	156.3	1.06	0.0
1023	26.10	130	3.9	17.17	1.480	4.59	154.0	0.91	0.0
1028	26.20	130	4.55	17.04	1.477	4.57	158.7	0.69	0.0
1033	26.35	130	5.2	16.56	1.475	4.56	159.3	0.62	0.0
1038	26.45	130	5.85	16.35	1.473	4.54	159.7	0.61	0.0
1043	26.55	130	4.50	16.23	1.473	4.54	159.7	0.61	0.0
1044	Sample								

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 1044 Sampling completion time: 1045

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1044	20.65	130	7.15	16.23	147	4.57	158.5	0.60	0.0

Sample Information

Sample ID: 12 GWM34 020409
Duplicate sample collected (Y/N): NO
Split sample collected (Y/N): NO
COC No(s): NA

Sample collection date/time: 02 04 09 / 1044
Duplicate sample ID: NA
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC	8260	2 x 40mL Vials			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP 12
Project Name/#: USACE- LHAAP 117591
Weather: O/C ≈ 70°-75° F

Sampling location ID: RLW 20
Sample ID: RLW20 042909
Collection Time/Date: 042909 / 1101

Pump Installation

Pump installation crew: M. Martinez
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 39'
Initial (pre-installation) DTW/time: 19.81' / 1008
Final (after pump priming) DTW/time: NT
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.):

Installation date/beginning time: 04-29-09 / 1011
Installation date/completion time: 04-29-09 / 1013
Screen Interval (ft. BTOC): 29 to 39
Pump intake depth (ft BTOC): 34'
Post-installation DTW/time: 19.71' / 1020
Max. sustainable pump rate (mL/min): NR
Appearance of product: NA
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): NO

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: M. Martinez
Purge date/beginning time: 04-29-09 / 1025
Initial (pre-purging) DTW (ft. BTOC): 19.71
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 04-29-09
Final (post-purging) DTW (ft. BTOC): 20.38
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	28								26
Refill Setting	12								12
Discharge Setting	3								3
Flow rate (mL/min)	120								120

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1030	20.35	120	1.5	20.05	1.358	6.51	100.6	4.76	-1.6
1045	20.38	120	3.3	20.06	1.350	5.86	137.5	4.50	-2.8
1050	20.38	120	3.9	20.18	1.349	5.85	140.0	4.53	-2.2
1055	20.38	120	4.5	20.16	1.348	5.83	144.4	4.55	-2.2
1100	20.38	120	5.1	20.15	1.345	5.82	147.4	4.57	-2.8
1101	Sample								

00114286

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12WW20

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 1101 Sampling completion time: 1104

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1105	20.38	200	3.6	20.18	1.342	5.82	148.2	4.54	-3.2

Sample Information

Sample ID: 12WW20 042909 Sample collection date/time: 04-29-09 / 1101

Duplicate sample collected (Y/N): NO Duplicate sample ID: N/A

Split sample collected (Y/N): NO Split sample ID: N/A

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		3 x 40mL VOA			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: USACE - LHAAP 12
Project Name/#: USACE - LHAAP 117591
Weather:

Sampling location ID: 12GW21
Sample ID: 12GW21 042909
Collection Time/Date: 04-29-09 / 1528

Pump Installation

Pump installation crew: M. Maurice
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 41.46
Initial (pre-installation) DTW/time: 23.95' / 1445
Final (after pump priming) DTW/time: NA
Free product (circle): ~~LNAPL / DNAPL~~
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): NA

Installation date/beginning time: 04-29-09
Installation date/completion time: 04-29-09
Screen Interval (ft. BTOC): 31 to 41
Pump intake depth (ft BTOC): 36'
Post-installation DTW/time: 23.80 1449
Max. sustainable pump rate (mL/min): NA
Appearance of product: NA
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): NO

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: M. Maurice
Purge date/beginning time: 04-29-09 / 1452
Initial (pre-purging) DTW (ft. BTOC): 23.80
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

PID/FID reading (well head/background): NA
Purge date/completion time: 04-29-09
Final (post-purging) DTW (ft. BTOC): 24.59
No. of tubing + pump volumes purged: NA

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	30								30
Refill Setting	12								12
Discharge Setting	3								3
Flow rate (mL/min)	100								100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1457	24.40	100	1.5	19.98	5.840	6.11	138.3	12.85	3.8
1502	24.58	100	3.0	19.73	6.001	6.17	130.9	19.31	-2.4
1507	24.59	100	3.5	19.82	6.022	6.18	127.7	19.32	-2.7
1522	24.59	100	4.0	19.91	6.027	6.17	125.5	19.36	-3.4
1527	24.59	100	4.5	19.90	6.028	6.17	122.9	19.52	-2.6
1528	Sample								

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12MW21

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 1507 Sampling completion time: 1530

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1532	24.59	100	5.0	20.00	0.034	6.16	120.4	19.38	~29

Sample Information

Sample ID: 12MW21 042409

Sample collection date/time: 04-24-09 / 1507

Duplicate sample collected (Y/N): NO

Duplicate sample ID: N/A

Split sample collected (Y/N): NO

Split sample ID: N/A

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		3 x 40 mL VOA			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00114289

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP 12
Project Name/#: USACE - LHAAP #12
Weather: O/C = 70-75° F

Sampling location ID: 12 GWS22
Sample ID: 12GWS22 042909
Collection Time/Date: 04-29-09 0930

Pump Installation

Pump installation crew: M. Martinez
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 38.40
Initial (pre-installation) DTW/time: 8.90 / 0850
Final (after pump priming) DTW/time: NA
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): NA

Installation date/beginning time: 04-29-09
Installation date/completion time: 04-29-09
Screen Interval (ft. BTOC): 28 to 38
Pump intake depth (ft BTOC): 33
Post-installation DTW/time: 8.60' / 0908
Max. sustainable pump rate (mL/min): NA
Appearance of product: NA
Discharge tube diameter (3/8" or 1/4"): 1/4
Inlet reducer used (Y/N): NO

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: M. Martinez
Purge date/beginning time: 04-29-09 / 0902
Initial (pre-purging) DTW (ft. BTOC): 8.60
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

PID/FID reading (well head/background): NA
Purge date/completion time: 04-29-09
Final (post-purging) DTW (ft. BTOC): 11.01
No. of tubing + pump volumes purged: NA

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	25								25
Refill Setting	12								12
Discharge Setting	3								3
Flow rate (mL/min)	100								100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
0905	9.12	100	1.5						
0910	9.90	100	3.0	18.00	1.535	7.59	21.8	1.96	-4.8
0915	10.20	100	3.5	17.95	1.532	7.63	20.7	1.66	-4.9
0920	10.39	100	4.0	17.96	1.529	7.62	18.8	1.69	-5.0
0925	10.52	100	4.5	17.97	1.525	7.63	15.9	1.68	-5.1
0930	Sample								

00114290

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12WW22

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 0936 Sampling completion time: 0940

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
0935	11.01	100	6.00	17.97	1522	7.64	14.4	1.60	-4.0

Sample Information

Sample ID: 12WW22 042909 Sample collection date/time: 04-29-09 0936

Duplicate sample collected (Y/N): NO Duplicate sample ID: NA

Split sample collected (Y/N): NO Split sample ID: NA

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC's		3 x 40mL VOAs			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP 12 | Sampling location ID: 12GWS23
Project Name/#: USACE - LHAAP 12 | Sample ID: 12GWS23 042909
Weather: | Collection Time/Date: 04-29-09 / 1421

Pump Installation

Pump installation crew: M. Maddux | Installation date/beginning time: 04-29-09 /
PID/FID reading (well head/background): 0/0 | Installation date/completion time: 04-29-09 /
Casing diameter (inches): 4" | Screen interval (ft. BTOC): 15 to 25
Total well Depth (ft. BTOC): 25.12 | Pump intake depth (ft BTOC): 24.00'
Initial (pre-installation) DTW/time: 19.58/1325 | Post-installation DTW/time: 20.46 1340
Final (after pump priming) DTW/time: NA | Max. sustainable pump rate (mL/min): NA
Free product (circle): LNAPL / DNAPL | Appearance of product: NA
Volume of water removed during priming (mL): NA | Discharge tube diameter (3/8" or 1/4"): 1/4
Discharge tube length (ft.): 0.8 | Inlet reducer used (Y/N): NO

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: M. Maddux | PID/FID reading (well head/background): 0/0
Purge date/beginning time: 04-29-09 / | Purge date/completion time: 04-29-09
Initial (pre-purging) DTW (ft. BTOC): 20.46 | Final (post-purging) DTW (ft. BTOC):
Calculated tubing + pump volume: NA | No. of tubing + pump volumes purged:

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	19								19
Refill Setting	10								10
Discharge Setting	5								5
Flow rate (mL/min)	150								150

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1350	20.95	150	1.5	18.60	0.591	6.06	91.5	0.69	43.0
1405	21.39	150	3.75	18.51	0.589	5.95	116.1	0.37	23.5
1410	21.55	150	4.5	18.53	0.589	5.97	114.2	0.31	18.4
1415	21.65	150	5.25	18.58	0.588	5.99	113.8	0.32	17.1
1420	21.75	150	6.00	18.56	0.586	5.97	112.2	0.30	14.2
1421	Samples								

00114292

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12mw23

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 1421 Sampling completion time: 1424

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1425	22.00	150	0.75	18.68	0.580	5.97	101.9	0.28	13.2

Sample Information

Sample ID: 12 mw23 042909 Sample collection date/time: 042909 / 1421

Duplicate sample collected (Y/N): no Duplicate sample ID: NA

Split sample collected (Y/N): no Split sample ID: NA

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		3 x 40mL Vial			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00114293

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP 12
Project Name/#: USACE-LHAAP 117591
Weather: S/C P/S ≈ 75°F
Sampling location ID: 12GWW24
Sample ID: 12GWW24 042909
Collection Time/Date: 04-29-09 / 1151

Pump Installation

Pump installation crew: M. Martinez
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 27.86
Initial (pre-installation) DTW/time: 24.66
Final (after pump priming) DTW/time: NA
Free product (circle): ~~LNAPL~~ / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): NA
Installation date/beginning time: 04-29-09
Installation date/completion time: 04-29-09
Screen Interval (ft. BTOC): 17.86 to 27.86
Pump intake depth (ft BTOC): 26.86
Post-Installation DTW/time: 24.56
Max. sustainable pump rate (mL/min): NA
Appearance of product: NA
Discharge tube diameter (3/8" or (1/4")): 1/4"
Inlet reducer used (Y/N): No

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)					200 (circled)				

Purging

Purging/sampling crew: M. Martinez
Purge date/beginning time: 04-29-09 / 1116
Initial (pre-purging) DTW (ft. BTOC): 24.56 ~~24.48~~ (circled)
Calculated tubing + pump volume: NA
PID/FID reading (well head/background): NA
Purge date/completion time: 04-29-09
Final (post-purging) DTW (ft. BTOC): 25.45
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20								20
Refill Setting	12								12
Discharge Setting	3								3
Flow rate (mL/min)	100								100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1120	24.81	100	1.5	20.40	1.671	5.47	142.1	4.01	-6.9
1125	25.05	100	3.0	19.97	1.677	5.33	158.5	5.55	-7.0
1130	25.15	100	3.5	20.04	1.679	5.32	160.4	5.58	-7.1
1135	25.25	100	4.0	20.05	1.680	5.31	161.9	5.60	-7.2
1140	25.35	100	4.5	20.05	1.679	5.31	160.4	5.61	-7.2
1151	Sample								

Shaw®

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12MW24

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 1151 Sampling completion time: 1153

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1155	25.45	100	5.0	20.10	1.679	5.34	163.9	5.65	7.5

Sample Information

Sample ID: 12MW24 042909

Sample collection date/time: 04-29-09 / 1151

Duplicate sample collected (Y/N): NO

Duplicate sample ID: NA

Split sample collected (Y/N): NO

Split sample ID: NA

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		3x40mL VOA			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008B105
Weather: CLEAR 90°F
Sampling location ID: SITE 12
Sample ID: 12MW20-071509
Collection Time/Date: 9:05 7/15/09

Pump Installation

Pump installation crew: BEESINGER
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 39.00
Initial (pre-installation) DTW/time: 20.22
Final (after pump priming) DTW/time: 20.29
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 200
Discharge tube length (ft.): NA
Installation date/beginning time: 7/15/09 8:00
Installation date/completion time: 7/15/09 8:10
Screen Interval (ft. BTOC): 29.00 to 39.00
Pump intake depth (ft BTOC): 34.00
Post-installation DTW/time: 20.15
Max. sustainable pump rate (mL/min): 100
Appearance of product: CLEAR
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20	20							
Refill Setting	17	17							
Discharge Setting	20	20							
Flow rate (mL/min)	~~100~~	100							

Purging

Purging/sampling crew: BEESINGER
Purge date/beginning time: 7/15/09 8:10
Initial (pre-purging) DTW (ft. BTOC): 20.29
Calculated tubing + pump volume: NA
PID/FID reading (well head/background): NA
Purge date/completion time: 7/15/09 9:05
Final (post-purging) DTW (ft. BTOC): 20.35
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20	20	20	20	20	20	20	20	20
Refill Setting	17	17	17	17	17	17	17	17	17
Discharge Setting	20	~~80~~	20	20	20	20	20	20	20
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:20	20.37	100	1.0	21.31	1.234	5.79	181.0	2.94	4.5
8:25	20.34	100	1.5	20.80	1.212	5.65	212.7	2.08	3.6
8:30	20.35	100	2.0	20.69	1.209	5.64	228.8	1.91	3.2
8:35	20.35	100	2.5	20.63	1.208	5.64	244.0	1.82	3.1
8:40	20.35	100	3.0	20.61	1.207	5.65	250.0	1.72	2.0
8:45	20.35	100	3.5	20.47	1.206	5.64	258.1	1.67	2.0
8:50	20.35	100	4.0	20.63	1.206	5.65	254.0	1.57	1.9
8:55	20.35	100	4.5	20.63	1.206	5.64	256.7	1.53	1.9

00114296

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12WW20

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:00	20.35	100	5.0	20.63	1.206	5.64	260.5	1.52	2.0
9:05	20.35	100	5.5	20.63	1.206	5.64	262.0	1.51	1.5

Sampling

Sampling beginning time: 9:05 Sampling completion time: 9:07

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:06	20.35	100	5.6	20.63	1.206	5.64	262.5	1.51	1.4

Sample Information

Sample ID: 12WW20-071509
Duplicate sample collected (Y/N): N
Split sample collected (Y/N): N
COC No(s): 5871

Sample collection date/time: 7/15/09 9:05
Duplicate sample ID: NA
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		2-40 mL GLASS			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP — Sampling location ID: SITE 12
Project Name/#: 117591.0008B105 — Sample ID: 12WW21-071509
Weather: CLEAR 98°F — Collection Time/Date: 11:20 7/15/09

Pump Installation

Pump installation crew: BEESINGER — Installation date/beginning time: 7/15/09 10:30
PID/FID reading (well head/background): NA — Installation date/completion time: 7/15/09 10:40
Casing diameter (inches): 4" — Screen Interval (ft. BTOC): 31.45 to 41.45
Total well Depth (ft. BTOC): 41.45 — Pump intake depth (ft BTOC): 36.50
Initial (pre-installation) DTW/time: 24.00 — Post-installation DTW/time: 23.93
Final (after pump priming) DTW/time: 24.05 — Max. sustainable pump rate (mL/min): 100
Free product (circle): LNAPL / DNAPL — Appearance of product: CLEAR
Volume of water removed during priming (mL): 200 — Discharge tube diameter (3/8" or 1/4"): 1/4"
Discharge tube length (ft.): NA — Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	24	24							
Refill Setting	21	21							
Discharge Setting	24	24							
Flow rate (mL/min)	100	100							

Purging

Purging/sampling crew: BEESINGER — PID/FID reading (well head/background): NA
Purge date/beginning time: 7/15/09 10:40 — Purge date/completion time: 7/15/09 11:30
Initial (pre-purging) DTW (ft. BTOC): 24.05 — Final (post-purging) DTW (ft. BTOC): 24.12
Calculated tubing + pump volume: NA — No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	24	24	24	24	24	24	24	24	24
Refill Setting	21	21	21	21	21	21	21	21	21
Discharge Setting	24	24	24	24	24	24	24	24	24
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:45	24.08	100	.5	21.40	5.187	6.71	75.4	4.03	5.3
10:50	24.10	100	1.0	19.66	5.289	6.17	119.4	2.11	3.7
10:55	24.11	100	1.5	19.43	5.294	6.13	133.3	1.93	3.4
11:00	24.12	100	2.0	19.32	5.293	6.12	144.4	1.91	3.6
11:05	24.12	100	2.5	19.34	5.293	6.12	149.1	1.84	3.5
11:10	24.12	100	3.0	19.33	5.292	6.11	152.1	1.80	2.4
11:15	24.12	100	3.5	19.30	5.293	6.11	153.5	1.79	1.4
11:20	24.12	100	4.0	19.31	5.292	6.11	150.1	1.78	0.8

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12WW21

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 11:20 Sampling completion time: 11:23

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
11:21	24.12	100	4.1	19.31	5.292	6.11	351.0	1.78	1.0

Sample Information

Sample ID: 12WW21-071509 Sample collection date/time: 7/15/09 11:20

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s): 5821

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		2-40 mL GLASS			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008B105
Weather: CLEAR 95°F

Sampling location ID: SITE 12
Sample ID: 124W22-071509
Collection Time/Date: 10:10 7/15/09

Pump Installation

Pump installation crew: BEESINGER
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 38.40
Initial (pre-installation) DTW/time: 10.05
Final (after pump priming) DTW/time: 10.08
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 200
Discharge tube length (ft.): NA

Installation date/beginning time: 7/15/09 9:20
Installation date/completion time: 7/15/09 9:30
Screen Interval (ft. BTOC): 28.40 to 38.40
Pump intake depth (ft BTOC): 33.50
Post-installation DTW/time: 9.98
Max. sustainable pump rate (mL/min): 100
Appearance of product: CLEAR
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20	20							
Refill Setting	17	17							
Discharge Setting	20	20							
Flow rate (mL/min)	17	17							

Purging

Purging/sampling crew: BEESINGER 9:30
Purge date/beginning time: 7/15/09 10:08
Initial (pre-purging) DTW (ft. BTOC): 10.08
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 7/15/09 10:10
Final (post-purging) DTW (ft. BTOC): 10:20
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20	20	20	20	20	20	20	20	20
Refill Setting	17	17	17	17	17	17	17	17	17
Discharge Setting	20	20	20	20	20	20	20	20	20
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:35	10.12	100	.5	20.41	1.326	7.10	-127.9	2.12	0.1
9:40	10.14	100	1.0	19.98	1.327	7.16	-135.6	1.09	-0.6
9:45	10.16	100	1.5	19.88	1.327	7.18	-137.7	0.82	-0.7
9:50	10.17	100	2.0	19.89	1.329	7.19	-139.6	0.78	0.4
9:55	10.18	100	2.5	19.84	1.328	7.20	-140.6	0.72	-0.7
10:00	10.19	100	3.0	19.95	1.328	7.20	-139.0	0.68	-0.7
10:05	10.20	100	3.5	19.90	1.328	7.20	-139.3	0.66	-0.7
10:10	10.20	100	4.0	19.88	1.328	7.20	-140.5	0.65	-0.8

Shaw®

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12WW22

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 10:10 Sampling completion time: 10:12

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:11	10.20	100	4.1	19.88	1.328	7.20	-140.0	0.65	0.7

Sample Information

Sample ID: 12WW22-071509
Duplicate sample collected (Y/N): YES
Split sample collected (Y/N): N
COC No(s): 5821

Sample collection date/time: 7/15/09 10:10
Duplicate sample ID: 12WW22-071509-FD
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		4-40mL GLASS			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: CAAAP
Project Name/#: 117591.0008B105
Weather: CLEAR 101°F
Sampling location ID: SITE 12
Sample ID: 12WW23-071509
Collection Time/Date: 12:45 7/15/09

Pump Installation

Pump installation crew: BEESINGER
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 25.15
Initial (pre-installation) DTW/time: 20.41
Final (after pump priming) DTW/time: 20.45
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 200
Discharge tube length (ft.): NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

Installation date/beginning time: 7/15/09 11:40
Installation date/completion time: 7/15/09 11:50
Screen Interval (ft. BTOC): 15.15 to 25.15
Pump intake depth (ft BTOC): 22.50
Post-installation DTW/time: 20.35
Max. sustainable pump rate (mL/min): 100
Appearance of product: ~~Colorless~~ LITTLE MUDDY
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17	17							
Refill Setting	14	14							
Discharge Setting	17	17							
Flow rate (mL/min)	100	100							

Purging

Purging/sampling crew: BEESINGER
Purge date/beginning time: 7/15/09 11:50
Initial (pre-purging) DTW (ft. BTOC): 20.45
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

PID/FID reading (well head/background): NA
Purge date/completion time: 7/15/09 12:45
Final (post-purging) DTW (ft. BTOC): 20.55
No. of tubing + pump volumes purged: NA

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17	17	17	17	17	17	17	17	17
Refill Setting	14	14	14	14	14	14	14	14	14
Discharge Setting	17	17	17	17	17	17	17	17	17
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
11:55	20.49	100	.5	23.82	0.828	6.28	15.7	3.71	45.6
12:00	20.51	100	1.0	20.63	0.580	6.01	31.4	1.25	33.3
12:05	20.52	100	1.5	19.99	0.533	5.89	50.1	0.84	28.4
12:10	20.53	100	2.0	19.89	0.526	5.82	65.3	0.77	26.2
12:15	20.54	100	2.5	19.67	0.517	5.76	75.2	0.73	24.6
12:20	20.55	100	3.0	19.73	0.518	5.70	85.4	0.69	22.0
12:25	20.55	100	3.5	19.74	0.516	5.68	90.2	0.70	15.3
12:30	20.55	100	4.0	19.77	0.516	5.64	97.1	0.67	10.9

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12WW23

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
12:35	20.55	~~100~~ 180	4.5	19.78	0.517	5.64	98.3	0.67	8.0
12:40	20.55	~~180~~ 180	5.0	19.79	0.517	5.63	99.0	0.67	6.1
12:45	20.55	100	5.5	19.79	0.517	5.63	99.7	0.67	4.2

Sampling

Sampling beginning time: 12:45 Sampling completion time: 12:47

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
12:46	20.55	100	5.6	19.80	0.517	5.63	99.9	0.67	3.9

Sample Information

Sample ID: 12WW23-071509
Duplicate sample collected (Y/N): N
Split sample collected (Y/N): N
COC No(s): 5821

Sample collection date/time: 7/15/09 12:45
Duplicate sample ID: NA
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		2-40 mL Glass			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008B105
Weather: CLEAR 102°F
Sampling location ID: SITE 12
Sample ID: 12WW24 071409
Collection Time/Date: 1:25 7/14/09

Pump Installation

Pump installation crew: BEESINGER
PID/FID reading (well head/background): NA
Casing diameter (inches): 4
Total well Depth (ft. BTOC): 27.90
Initial (pre-installation) DTW/time: 24.50
Final (after pump priming) DTW/time: 24.55
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): NA
Installation date/beginning time: 7/14/09 12:30
Installation date/completion time: 7/14/09 12:40
Screen Interval (ft. BTOC): 17.90 to 27.90
Pump intake depth (ft BTOC): 26.00
Post-installation DTW/time: 24.45
Max. sustainable pump rate (mL/min): 50
Appearance of product: CLEAR
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	15	15							
Refill Setting	13	13							
Discharge Setting	15	15							
Flow rate (mL/min)	50	50							

Purging

Purging/sampling crew: BEESINGER
Purge date/beginning time: 7/14/09 12:40
Initial (pre-purging) DTW (ft. BTOC): 24.55
Calculated tubing + pump volume: NA
PID/FID reading (well head/background): NA
Purge date/completion time: 7/14/09 1:25
Final (post-purging) DTW (ft. BTOC): 24.70
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	15	15	15	15	15	15	15	15	15
Refill Setting	13	13	13	13	13	13	13	13	13
Discharge Setting	15	15	15	15	15	15	15	15	15
Flow rate (mL/min)	50	50	50	50	50	50	50	50	50

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
12:50	24.59	50	.5	25.10	1.512	5.31	187.2	1.89	7.1
12:55	24.62	50	.75	22.40	1.488	5.26	197.2	0.98	2.4
1:00	24.65	50	1.0	21.93	1.479	5.25	200.2	0.86	1.3
1:05	24.67	50	1.25	21.76	1.477	5.25	201.6	0.78	0.4
1:10	24.68	50	1.50	21.73	1.474	5.26	202.6	0.75	-0.1
1:15	24.69	50	1.75	21.90	1.474	5.26	204.3	0.75	0.0
1:20	24.70	50	2.0	21.88	1.475	5.26	204.9	0.74	-0.4
1:25	24.70	50	2.25	21.91	1.476	5.26	205.3	0.73	-0.5

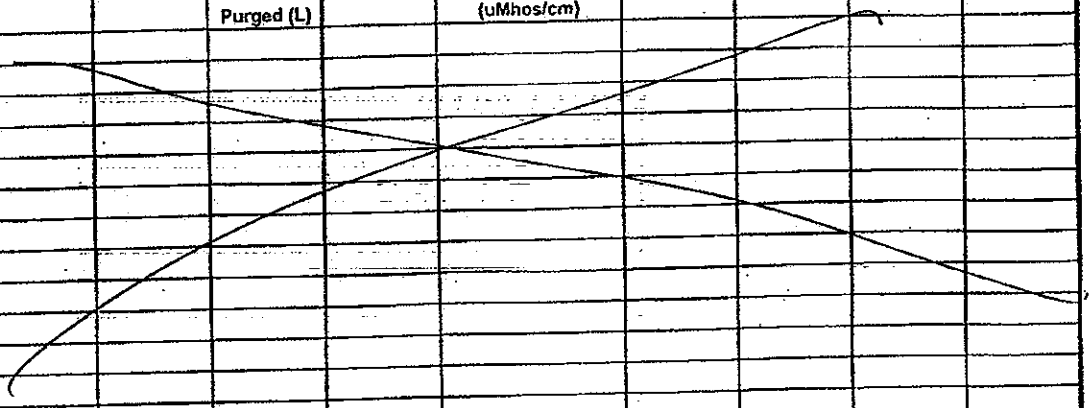
GROUNDWATER SAMPLING FORM

Sheet 2 of 2

12MW24

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)



Sampling

Sampling beginning time: 1:25

Sampling completion time: 1:27

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1:26	24.70	~~450~~ 450	2.30	21.91	1.471	5.26	205.7	0.73	-0.5

Sample Information

Sample ID: 12MW24-071409

Sample collection date/time: 7/14/09 1:25

Duplicate sample collected (Y/N): N

Duplicate sample ID: NA

Split sample collected (Y/N): N

Split sample ID: NA

COC No(s): 5821

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		2-40ml GLASS			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

Appendix C

Laboratory Analytical Results

(Laboratory Data is provided on compact disk)

Analytical Summary Table
September 2007 to July 2009
LHAAP-12

		Location_Code	12WW20			12WW20			12WW20			12WW20			12WW20			12WW20			12WW20			12WW20		
		Sample_No	12WW20-070905			12WW20-070905FD			12WW20-121807			12WW20-121807FD			12WW20-030608			12WW20-030608FD			12WW20-060408			12WW20-060408FD		
		Sample_Date	5-Sep-07			5-Sep-07			18-Dec-07			18-Dec-07			6-Mar-08			6-Mar-08			4-Jun-08			4-Jun-08		
		Sample_Purpose	REG			FD			REG			FD			REG			FD			REG			FD		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
DHE	Dehalococcoides	cells/ml	10	U		10	U		810			950			760			970			10	U		10	U	
FIELD TESTS	Dissolved Oxygen	mg/L	5.21						2.27						4.65						4.4					
FIELD TESTS	Ferrous iron	mg/L	0.1						0.12						0						0.1					
FIELD TESTS	Oxidation-Reduction Potential	mV	23.5						197.9						235.1						445					
FIELD TESTS	pH	PH UNITS	5.54						5.54						5.72						5.3					
FIELD TESTS	Specific Conductivity	uS/cm	1.23						1.307						1.167						1.224					
FIELD TESTS	Temperature	Deg C	20.58						19.14						18.2						20.67					
FIELD TESTS	Turbidity	NTU	0.2						-0.9						-1.2						4					
GASES	Carbon Dioxide	ug/L	94000			110000		J																		
GASES	Ethane	ug/L	2.5	U	U	2.5	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
GASES	Ethylene	ug/L	2.5	U	U	2.5	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
GASES	Methane	ug/L	8.7			9.5			9.14			8.74			2.85			2.23			6.74			5.34		
GEN CHEMISTRY	Chloride	mg/L	249			244			285			283			241			244			261			262		
GEN CHEMISTRY	Nitrate	mg/L	1	U	U	1	U	U	3	U	U	3	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
GEN CHEMISTRY	Nitrite	mg/L	1	U	U	1	U	U	3	U	U	3	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
GEN CHEMISTRY	Sulfate	mg/L	141			142			174			176			137			139			133			133		
GEN CHEMISTRY	Total Alkalinity	mg/L	41.2			43.3																				
GEN CHEMISTRY	Total Inorganic Carbon	mg/L	0.5	U	U	0.5	U	U	29.4			27.6			15.9			14.6			30			24.8		
GEN CHEMISTRY	Total Organic Carbon	mg/L	1.96			1.91			3.54		J	1.17		J	2.78			2.89			5.4			3.96		
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L							0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,1,1-Trichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,1-Dichloroethane	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,1-Dichloroethene	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	1,1-Dichloropropene	ug/L							0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2,3-Trichlorobenzene	ug/L							0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.15	U	U	0.15	U	U
VOLATILES	1,2,3-Trichloropropane	ug/L							0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	1,2,4-Trimethylbenzene	ug/L							0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,2-Dichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L							0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,3,5-Trimethylbenzene	ug/L							0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,3-Dichloropropane	ug/L							0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	2,2-Dichloropropane	ug/L							0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	2-Butanone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	2-Chloroethyl vinyl ether	ug/L							2	U	U	2	U	U	2	U	U	2	U	U	2	U	U	2	U	U
VOLATILES	2-Chlorotoluene	ug/L							0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	2-Hexanone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	4-Chlorotoluene	ug/L							0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Acetone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	6.54	J	JB	7.19	J	JB	2.5	U	U	2.5	U	U

Analytical Summary Table
September 2007 to July 2009
LHAAP-12

		Location_Code	12WW20			12WW20			12WW20			12WW20			12WW20			12WW20			12WW20			12WW20		
		Sample_No	12WW20-070905			12WW20-070905FD			12WW20-121807			12WW20-121807FD			12WW20-030608			12WW20-030608FD			12WW20-060408			12WW20-060408FD		
		Sample_Date	5-Sep-07			5-Sep-07			18-Dec-07			18-Dec-07			6-Mar-08			6-Mar-08			4-Jun-08			4-Jun-08		
		Sample_Purpose	REG			FD			REG			FD			REG			FD			REG			FD		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
VOLATILES	Benzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Bromobenzene	ug/L							0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Bromochloromethane	ug/L							0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Bromoform	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Bromomethane	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Carbon disulfide	ug/L	0.5	U	U	0.5	U	U	1.14			0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Chlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Chloroethane	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Chloroform	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Chloromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.898	J	J	1			0.844	J	J	0.785	J	J	0.664	J	J	0.698	J	J	0.656	J	J	0.599	J	J
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Cyclohexane	ug/L	0.25	U	U	0.25	U	U																		
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Dibromomethane	ug/L							0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Dichlorodifluoromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Ethylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Freon 113	ug/L	0.25	U	U	0.25	U	U																		
VOLATILES	Hexachlorobutadiene	ug/L							0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	m,p-Xylenes	ug/L							0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Methyl Acetate	ug/L	0.25	U	U	0.25	U	U																		
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	Methyl tert-butyl ether	ug/L	0.5	U	U	0.5	U	U																		
VOLATILES	Methylcyclohexane	ug/L	0.25	U	U	0.25	U	U																		
VOLATILES	Methylene chloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Naphthalene	ug/L							0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	n-BUTYLBENZENE	ug/L							0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	n-PROPYLBENZENE	ug/L							0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	p-ISOPROPYLTOLUENE	ug/L							0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	sec-BUTYLBENZENE	ug/L							0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Styrene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	tert-BUTYLBENZENE	ug/L							0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Tetrachloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.327	J	J	0.25	U	U
VOLATILES	Toluene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Trichloroethene	ug/L	1.34			1.57			1.19			1.18			0.999	J	J	0.996	J	J	1.04			1.07		
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Vinyl acetate	ug/L							2.5	U	UJ	2.5	U	UJ	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	Vinyl chloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Xylenes, Total	ug/L	0.5	U	U	0.5	U	U																		

Analytical Summary Table
September 2007 to July 2009
LHAAP-12

		Location_Code	12WW20			12WW20			12WW20			12WW20			12WW20			12WW21			12WW21			12WW21		
		Sample_No	12WW20-090808			12WW20-020409			12WW20-042909			12WW20-042909-FD			12WW20-071509			12WW21-070905			12WW21-121807			12WW21-030608		
		Sample_Date	8-Sep-08			4-Feb-09			29-Apr-09			29-Apr-09			15-Jul-09			5-Sep-07			18-Dec-07			6-Mar-08		
		Sample_Purpose	REG			REG			REG			FD			REG			REG			REG			REG		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
DHE	Dehalococcoides	cells/ml																10	U		16000			10000		
FIELD TESTS	Dissolved Oxygen	mg/L	1.08			0.86			4.54						1.51			4.85			0.36			2.19		
FIELD TESTS	Ferrous iron	mg/L																1.87			0.9			0.34		
FIELD TESTS	Oxidation-Reduction Potential	mV	223.8			149.7			148.2						262.5			6.9			-3.9			-31.2		
FIELD TESTS	pH	PH UNITS	5.6			5.13			5.82						5.64			6.17			5.97			5.96		
FIELD TESTS	Specific Conductivity	uS/cm	1.242			1.184			1.342						1.206			5.51			5.56			5.485		
FIELD TESTS	Temperature	Deg C	21.45			17.22			20.18						20.63			19.2			18.11			17.66		
FIELD TESTS	Turbidity	NTU	-0.3			0			-3.2						1.4			-1.1			-5.4			-2.8		
GASES	Carbon Dioxide	ug/L																69000								
GASES	Ethane	ug/L																2.5	U	U	0.25	U	U	0.25	U	U
GASES	Ethylene	ug/L																2.5	U	U	0.25	U	U	0.25	U	U
GASES	Methane	ug/L																7.3			196			743		
GEN CHEMISTRY	Chloride	mg/L																1560			1660			1540		
GEN CHEMISTRY	Nitrate	mg/L																1	U	U	1	U	U	0.5	U	U
GEN CHEMISTRY	Nitrite	mg/L																1	U	U	1	U	U	0.5	U	U
GEN CHEMISTRY	Sulfate	mg/L																370			407			419		
GEN CHEMISTRY	Total Alkalinity	mg/L																111								
GEN CHEMISTRY	Total Inorganic Carbon	mg/L																0.5	U	U	39.6			27.8		
GEN CHEMISTRY	Total Organic Carbon	mg/L																2.4			3.22		J	2.37		
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U	0.25	U	U
VOLATILES	1,1,1-Trichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,1-Dichloroethane	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,1-Dichloroethene	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	1,1-Dichloropropene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U	0.25	U	U
VOLATILES	1,2,3-Trichlorobenzene	ug/L	0.15	U	U	0.15	U	U	0.15	U	U	0.15	U	U	0.15	U	U				0.125	U	U	0.125	U	U
VOLATILES	1,2,3-Trichloropropane	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U				0.5	U	U	0.5	U	U
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	1,2,4-Trimethylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U	0.25	U	U
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,2-Dichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U	0.25	U	U
VOLATILES	1,3,5-Trimethylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U	0.25	U	U
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,3-Dichloropropane	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U				0.2	U	U	0.2	U	U
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.288	J	J	0.276	J	J	0.239	J	UJ	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	2,2-Dichloropropane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U	0.25	U	U
VOLATILES	2-Butanone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	2-Chloroethyl vinyl ether	ug/L	2	U	U	2	U	U	2	U	U	2	U	U	2	U	U				2	U	U	2	U	U
VOLATILES	2-Chlorotoluene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U				0.125	U	U	0.125	U	U
VOLATILES	2-Hexanone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	4-Chlorotoluene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U	0.25	U	U
VOLATILES	Acetone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.62	J	UJ,TB	2.5	U	U	2.5	U	U	2.5	U	U	4.86	J	JB

Analytical Summary Table
September 2007 to July 2009
LHAAP-12

		Location_Code	12WW20			12WW20			12WW20			12WW20			12WW20			12WW21			12WW21			12WW21		
		Sample_No	12WW20-090808			12WW20-020409			12WW20-042909			12WW20-042909-FD			12WW20-071509			12WW21-070905			12WW21-121807			12WW21-030608		
		Sample_Date	8-Sep-08			4-Feb-09			29-Apr-09			29-Apr-09			15-Jul-09			5-Sep-07			18-Dec-07			6-Mar-08		
		Sample_Purpose	REG			REG			REG			FD			REG			REG			REG			REG		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
VOLATILES	Benzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Bromobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U				0.125	U	U	0.125	U	U
VOLATILES	Bromochloromethane	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U				0.2	U	U	0.2	U	U
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Bromoform	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Bromomethane	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Carbon disulfide	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Chlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Chloroethane	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Chloroform	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Chloromethane	ug/L	0.25	U	U	0.378	J	J	0.729	J	J	0.25	U	U	0.337	J	J	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.667	J	J	0.818	J	J	0.7	J	J	0.752	J	J	0.71	J	J	0.25	U	U	0.25	U	UJ	0.25	U	U
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Cyclohexane	ug/L																0.25	U	U						
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Dibromomethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U	0.25	U	U
VOLATILES	Dichlorodifluoromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Ethylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Freon 113	ug/L																0.25	U	U						
VOLATILES	Hexachlorobutadiene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U	0.25	U	U
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	m,p-Xylenes	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U				0.5	U	U	0.5	U	U
VOLATILES	Methyl Acetate	ug/L																0.25	U	U						
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	Methyl tert-butyl ether	ug/L																0.5	U	U						
VOLATILES	Methylcyclohexane	ug/L																0.25	U	U						
VOLATILES	Methylene chloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Naphthalene	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U				0.2	U	U	0.2	U	U
VOLATILES	n-BUTYLBENZENE	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U	0.25	U	U
VOLATILES	n-PROPYLBENZENE	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U				0.125	U	U	0.125	U	U
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U	0.25	U	U
VOLATILES	sec-BUTYLBENZENE	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U	0.25	U	U
VOLATILES	Styrene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	tert-BUTYLBENZENE	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U	0.25	U	U
VOLATILES	Tetrachloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Toluene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Trichloroethene	ug/L	0.985	J	J	1.18			0.997	J	J	1.01			0.931	J	J	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Vinyl acetate	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U				2.5	U	UJ	2.5	U	U
VOLATILES	Vinyl chloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Xylenes, Total	ug/L																0.5	U	U						

Analytical Summary Table
September 2007 to July 2009
LHAAP-12

		Location_Code	12WW21			12WW21			12WW21			12WW21			12WW21			12WW21			12WW22			12WW22		
		Sample_No	12WW21-060408			12WW21-091108			12WW21-020409			12WW21-020409-FD			12WW21-042909			12WW21-071509			12WW22-070904			12WW22-121807		
		Sample_Date	4-Jun-08			11-Sep-08			4-Feb-09			4-Feb-09			29-Apr-09			15-Jul-09			4-Sep-07			18-Dec-07		
		Sample_Purpose	REG			REG			REG			FD			REG			REG			REG			REG		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
DHE	Dehalococcoides	cells/ml	9700																					15000		
FIELD TESTS	Dissolved Oxygen	mg/L	3.59			0.41			0.92						19.39			1.78			3.29			0.36		
FIELD TESTS	Ferrous iron	mg/L	0.28																		0.08			0.26		
FIELD TESTS	Oxidation-Reduction Potential	mV	48.9			75.2			-11.3						120.4			151			-29.3			-69.5		
FIELD TESTS	pH	PH UNITS	6.03			6			5.45						6.16			6.11			8.37			6.9		
FIELD TESTS	Specific Conductivity	uS/cm	5.464			5.468			5.497						6.034			5.292			1.05			1.16		
FIELD TESTS	Temperature	Deg C	18.89			19.7			16.59						20			19.31			19.95			18.51		
FIELD TESTS	Turbidity	NTU	5			-6			0						-2.8			1			21			-2.4		
GASES	Carbon Dioxide	ug/L																								
GASES	Ethane	ug/L	0.25	U	U																			0.25	U	U
GASES	Ethylene	ug/L	0.25	U	U																			0.25	U	U
GASES	Methane	ug/L	14.8																					291		
GEN CHEMISTRY	Chloride	mg/L	1530																					85.7		
GEN CHEMISTRY	Nitrate	mg/L	1	U	U																			1.5	U	U
GEN CHEMISTRY	Nitrite	mg/L	1	U	U																			1.5	U	U
GEN CHEMISTRY	Sulfate	mg/L	411																					67.2		
GEN CHEMISTRY	Total Alkalinity	mg/L																								
GEN CHEMISTRY	Total Inorganic Carbon	mg/L	30.3																					46.9		
GEN CHEMISTRY	Total Organic Carbon	mg/L	5.9																					1.14		J
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U
VOLATILES	1,1,1-Trichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,1-Dichloroethane	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,1-Dichloroethene	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	1,1-Dichloropropene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U
VOLATILES	1,2,3-Trichlorobenzene	ug/L	0.15	U	U	0.15	U	U	0.15	U	U	0.15	U	U	0.15	U	U	0.15	U	U				0.125	U	U
VOLATILES	1,2,3-Trichloropropane	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U				0.5	U	U
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	1,2,4-Trimethylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,2-Dichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U
VOLATILES	1,3,5-Trimethylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,3-Dichloropropane	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U				0.2	U	U
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.293	J	UJ	0.125	U	U	0.125	U	U
VOLATILES	2,2-Dichloropropane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U
VOLATILES	2-Butanone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	2-Chloroethyl vinyl ether	ug/L	2	U	U	2	U	U	2	U	U	2	U	U	2	U	U	2	U	U				2	U	U
VOLATILES	2-Chlorotoluene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U				0.125	U	U
VOLATILES	2-Hexanone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	4-Chlorotoluene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U
VOLATILES	Acetone	ug/L	2.5	U	U	4.25	J	J	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U

Analytical Summary Table
September 2007 to July 2009
LHAAP-12

		Location_Code	12WW21			12WW21			12WW21			12WW21			12WW21			12WW21			12WW22			12WW22		
		Sample_No	12WW21-060408			12WW21-091108			12WW21-020409			12WW21-020409-FD			12WW21-042909			12WW21-071509			12WW22-070904			12WW22-121807		
		Sample_Date	4-Jun-08			11-Sep-08			4-Feb-09			4-Feb-09			29-Apr-09			15-Jul-09			4-Sep-07			18-Dec-07		
		Sample_Purpose	REG			REG			REG			FD			REG			REG			REG			REG		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
VOLATILES	Benzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.319	J	J	0.125	U	U
VOLATILES	Bromobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U				0.125	U	U
VOLATILES	Bromochloromethane	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U				0.2	U	U
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Bromoform	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Bromomethane	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Carbon disulfide	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Chlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Chloroethane	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Chloroform	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Chloromethane	ug/L	0.25	U	U	0.323	J	J	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	UJ
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Cyclohexane	ug/L																			0.25	U	U			
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Dibromomethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U
VOLATILES	Dichlorodifluoromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Ethylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Freon 113	ug/L																			0.25	U	U			
VOLATILES	Hexachlorobutadiene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	m,p-Xylenes	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U				0.5	U	U
VOLATILES	Methyl Acetate	ug/L																			0.25	U	U			
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	Methyl tert-butyl ether	ug/L																			0.5	U	U			
VOLATILES	Methylcyclohexane	ug/L																			0.25	U	U			
VOLATILES	Methylene chloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Naphthalene	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U				0.2	U	U
VOLATILES	n-BUTYLBENZENE	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U
VOLATILES	n-PROPYLBENZENE	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U				0.125	U	U
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U
VOLATILES	sec-BUTYLBENZENE	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U
VOLATILES	Styrene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	tert-BUTYLBENZENE	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U				0.25	U	U
VOLATILES	Tetrachloroethene	ug/L	0.432	J	J	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Toluene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Trichloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Vinyl acetate	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U				2.5	U	UJ
VOLATILES	Vinyl chloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Xylenes, Total	ug/L																			0.5	U	U			

Analytical Summary Table
September 2007 to July 2009
LHAAP-12

		Location_Code	12WW22			12WW22			12WW22			12WW22			12WW22			12WW22			12WW22			12WW22		
		Sample_No	12WW22-030508			12WW22-060308			12WW22-090808			12WW22-090808-FD			12WW22-020409			12WW22-042909			12WW22-071509			12WW22-071509-FD		
		Sample_Date	5-Mar-08			3-Jun-08			8-Sep-08			8-Sep-08			4-Feb-09			29-Apr-09			15-Jul-09			15-Jul-09		
		Sample_Purpose	REG			REG			REG			FD			REG			REG			REG			FD		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
DHE	Dehalococcoides	cells/ml																								
FIELD TESTS	Dissolved Oxygen	mg/L	3.37			1.99			0.23						1.66			1.6			0.65					
FIELD TESTS	Ferrous iron	mg/L	0.33			0.14																				
FIELD TESTS	Oxidation-Reduction Potential	mV	-44.8			-35.2			-135.8						-92.4			14.4			-140					
FIELD TESTS	pH	PH UNITS	7.29			7.55			7.14						6.85			7.64			7.2					
FIELD TESTS	Specific Conductivity	uS/cm	1.085			1.137			1.264						1.297			1.522			1.328					
FIELD TESTS	Temperature	Deg C	17.08			18.56			19.9						12			17.97			19.88					
FIELD TESTS	Turbidity	NTU	-0.4			6.5			-5						0			-4			-0.7					
GASES	Carbon Dioxide	ug/L																								
GASES	Ethane	ug/L																								
GASES	Ethylene	ug/L																								
GASES	Methane	ug/L																								
GEN CHEMISTRY	Chloride	mg/L																								
GEN CHEMISTRY	Nitrate	mg/L																								
GEN CHEMISTRY	Nitrite	mg/L																								
GEN CHEMISTRY	Sulfate	mg/L																								
GEN CHEMISTRY	Total Alkalinity	mg/L																								
GEN CHEMISTRY	Total Inorganic Carbon	mg/L																								
GEN CHEMISTRY	Total Organic Carbon	mg/L																								
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,1,1-Trichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,1-Dichloroethane	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,1-Dichloroethene	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	1,1-Dichloropropene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2,3-Trichlorobenzene	ug/L	0.125	U	U	0.15	U	U	0.15	U	U	0.15	U	U	0.15	U	U	0.15	U	U	0.15	U	U	0.15	U	U
VOLATILES	1,2,3-Trichloropropane	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	1,2,4-Trimethylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,2-Dichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,3,5-Trimethylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,3-Dichloropropane	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.291	J	J	0.294	J	UJ	0.32	J	UJ
VOLATILES	2,2-Dichloropropane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	2-Butanone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	2-Chloroethyl vinyl ether	ug/L	2	U	U	2	U	U	2	U	U	2	U	U	2	U	U	2	U	U	2	U	U	2	U	U
VOLATILES	2-Chlorotoluene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	2-Hexanone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	4-Chlorotoluene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Acetone	ug/L	6.57	J	JB	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U

Analytical Summary Table
September 2007 to July 2009
LHAAP-12

		Location_Code	12WW22			12WW22			12WW22			12WW22			12WW22			12WW22			12WW22			12WW22		
		Sample_No	12WW22-030508			12WW22-060308			12WW22-090808			12WW22-090808-FD			12WW22-020409			12WW22-042909			12WW22-071509			12WW22-071509-FD		
		Sample_Date	5-Mar-08			3-Jun-08			8-Sep-08			8-Sep-08			4-Feb-09			29-Apr-09			15-Jul-09			15-Jul-09		
		Sample_Purpose	REG			REG			REG			FD			REG			REG			REG			FD		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
VOLATILES	Benzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Bromobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Bromochloromethane	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Bromoform	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Bromomethane	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Carbon disulfide	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Chlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Chloroethane	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Chloroform	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Chloromethane	ug/L	0.25	U	U	0.25	U	U	0.269	J	J	0.25	U	U	0.25	U	U	0.567	J	J	0.25	U	U	0.25	U	U
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Cyclohexane	ug/L																								
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Dibromomethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Dichlorodifluoromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Ethylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Freon 113	ug/L																								
VOLATILES	Hexachlorobutadiene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	m,p-Xylenes	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Methyl Acetate	ug/L																								
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	Methyl tert-butyl ether	ug/L																								
VOLATILES	Methylcyclohexane	ug/L																								
VOLATILES	Methylene chloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Naphthalene	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	n-BUTYLBENZENE	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	n-PROPYLBENZENE	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	sec-BUTYLBENZENE	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Styrene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	tert-BUTYLBENZENE	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Tetrachloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Toluene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Trichloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Vinyl acetate	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	Vinyl chloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Xylenes, Total	ug/L																								

Analytical Summary Table
September 2007 to July 2009
LHAAP-12

		Location_Code	12WW23			12WW23			12WW23			12WW23			12WW23			12WW23			12WW23			12WW23		
		Sample_No	12WW23-070904			12WW23-121907			12WW23-030508			12WW23-060308			12WW23-091108			12WW23-020409			12WW23-042909			12WW23-071509		
		Sample_Date	4-Sep-07			19-Dec-07			5-Mar-08			3-Jun-08			11-Sep-08			4-Feb-09			29-Apr-09			15-Jul-09		
		Sample_Purpose	REG			REG			REG			REG			REG			REG			REG			REG		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
DHE	Dehalococcoides	cells/ml				9200																				
FIELD TESTS	Dissolved Oxygen	mg/L	2.91			0.67			0.6			2.04			0.31			0.36			0.28			0.67		
FIELD TESTS	Ferrous iron	mg/L	3.01			0.19			0.25			0.42														
FIELD TESTS	Oxidation-Reduction Potential	mV	-14.3			-33			108.1			59.5			3			-63.2			109.9			99.9		
FIELD TESTS	pH	PH UNITS	6.06			5.9			5.86			5.85			5.94			5.57			5.97			5.63		
FIELD TESTS	Specific Conductivity	uS/cm	0.504			0.479			0.428			0.451			0.543			0.498			0.58			0.517		
FIELD TESTS	Temperature	Deg C	20.25			18.36			17.5			18.38			20.32			16.84			18.6			19.8		
FIELD TESTS	Turbidity	NTU	5.7			1.2			8.1			10			-5.1			0			13.2			3.9		
GASES	Carbon Dioxide	ug/L																								
GASES	Ethane	ug/L				0.25	U	U																		
GASES	Ethylene	ug/L				0.342	J	J																		
GASES	Methane	ug/L				3700																				
GEN CHEMISTRY	Chloride	mg/L				70.5																				
GEN CHEMISTRY	Nitrate	mg/L				1	U	U																		
GEN CHEMISTRY	Nitrite	mg/L				1	U	U																		
GEN CHEMISTRY	Sulfate	mg/L				8.35	J	J																		
GEN CHEMISTRY	Total Alkalinity	mg/L																								
GEN CHEMISTRY	Total Inorganic Carbon	mg/L				13.3																				
GEN CHEMISTRY	Total Organic Carbon	mg/L				2.17																				
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L				0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,1,1-Trichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,1-Dichloroethane	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,1-Dichloroethene	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	1,1-Dichloropropene	ug/L				0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2,3-Trichlorobenzene	ug/L				0.125	U	U	0.125	U	U	0.15	U	U	0.15	U	U	0.15	U	U	0.15	U	U	0.15	U	U
VOLATILES	1,2,3-Trichloropropane	ug/L				0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	1,2,4-Trimethylbenzene	ug/L				0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U	1	U	U
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	1,2-Dichloroethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L				0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,3,5-Trimethylbenzene	ug/L				0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	1,3-Dichloropropane	ug/L				0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.277	J	UJ
VOLATILES	2,2-Dichloropropane	ug/L				0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	2-Butanone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	2-Chloroethyl vinyl ether	ug/L				2	U	U	2	U	U	2	U	U	2	U	U	2	U	U	2	U	U	2	U	U
VOLATILES	2-Chlorotoluene	ug/L				0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	2-Hexanone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	4-Chlorotoluene	ug/L				0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Acetone	ug/L	2.5	U	U	2.5	U	U	7.3	J	JB	2.5	U	U	2.5	U	U	2.5	U	U	6.65	J	UJ,TB	2.5	U	U

Analytical Summary Table
September 2007 to July 2009
LHAAP-12

		Location_Code	12WW23			12WW23			12WW23			12WW23			12WW23			12WW23			12WW23			12WW23		
		Sample_No	12WW23-070904			12WW23-121907			12WW23-030508			12WW23-060308			12WW23-091108			12WW23-020409			12WW23-042909			12WW23-071509		
		Sample_Date	4-Sep-07			19-Dec-07			5-Mar-08			3-Jun-08			11-Sep-08			4-Feb-09			29-Apr-09			15-Jul-09		
		Sample_Purpose	REG			REG			REG			REG			REG			REG			REG			REG		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
VOLATILES	Benzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Bromobenzene	ug/L				0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Bromochloromethane	ug/L				0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Bromoform	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Bromomethane	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Carbon disulfide	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Chlorobenzene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Chloroethane	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Chloroform	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	Chloromethane	ug/L	0.25	U	U	0.546	J	J	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.516	J	J
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Cyclohexane	ug/L	0.25	U	U																					
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Dibromomethane	ug/L				0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Dichlorodifluoromethane	ug/L	0.25	U	U	0.25	U	UJL	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Ethylbenzene	ug/L	0.729	J	J	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Freon 113	ug/L	0.25	U	U																					
VOLATILES	Hexachlorobutadiene	ug/L				0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	m,p-Xylenes	ug/L				0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Methyl Acetate	ug/L	0.25	U	U																					
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	Methyl tert-butyl ether	ug/L	0.5	U	U																					
VOLATILES	Methylcyclohexane	ug/L	0.25	U	U																					
VOLATILES	Methylene chloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Naphthalene	ug/L				0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U	0.2	U	U
VOLATILES	n-BUTYLBENZENE	ug/L				0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	n-PROPYLBENZENE	ug/L				0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	p-ISOPROPYLTOLUENE	ug/L				0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	sec-BUTYLBENZENE	ug/L				0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Styrene	ug/L	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U	0.125	U	U
VOLATILES	tert-BUTYLBENZENE	ug/L				0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Tetrachloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Toluene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U	0.5	U	U
VOLATILES	Trichloroethene	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Vinyl acetate	ug/L				2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U	2.5	U	U
VOLATILES	Vinyl chloride	ug/L	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U	0.25	U	U
VOLATILES	Xylenes, Total	ug/L	0.5	U	U																					

Analytical Summary Table
September 2007 to July 2009
LHAAP-12

		Location_Code	12WW24			12WW24			12WW24			12WW24			12WW24			12WW24			12WW24			12WW24		
		Sample_No	12WW24-070905			12WW24-121907			12WW24-030508			12WW24-060408			12WW24-091108			12WW24-020409			12WW24-042909			12WW24-071409		
		Sample_Date	5-Sep-07			19-Dec-07			5-Mar-08			4-Jun-08			11-Sep-08			4-Feb-09			29-Apr-09			14-Jul-09		
		Sample_Purpose	REG			REG			REG			REG			REG			REG			REG			REG		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
DHE	Dehalococcoides	cells/ml				10	U					10	U													
FIELD TESTS	Dissolved Oxygen	mg/L	7.81			5.1			3.69			6.05			0.75			0.6			5.65			0.73		
FIELD TESTS	Ferrous iron	mg/L	0.1			0.58			0.19			0.02														
FIELD TESTS	Oxidation-Reduction Potential	mV	25.5			212.1			193			100.2			285			158.5			163.9			205.7		
FIELD TESTS	pH	PH UNITS	5.27			5.09			5.02			5.12			4.75			4.57			5.31			5.26		
FIELD TESTS	Specific Conductivity	uS/cm	1.5			1.474			1.484			1.503			1.492			1.473			1.679			1.477		
FIELD TESTS	Temperature	Deg C	21.25			19.7			21.89			20.71			20.74			16.23			20.1			21.91		
FIELD TESTS	Turbidity	NTU	-2			-5			-2.2			0.1			-5.7			0			-7.2			-0.5		
GASES	Carbon Dioxide	ug/L																								
GASES	Ethane	ug/L				0.25	U	U				0.25	U	U												
GASES	Ethylene	ug/L				0.323	J	J				0.25	U	U												
GASES	Methane	ug/L				6.03						1.56														
GEN CHEMISTRY	Chloride	mg/L				328						313														
GEN CHEMISTRY	Nitrate	mg/L				1	U	U				0.21	J	J												
GEN CHEMISTRY	Nitrite	mg/L				1	U	U				0.2	U	U												
GEN CHEMISTRY	Sulfate	mg/L				176						168														
GEN CHEMISTRY	Total Alkalinity	mg/L																								
GEN CHEMISTRY	Total Inorganic Carbon	mg/L				23.7						23.3														
GEN CHEMISTRY	Total Organic Carbon	mg/L				7.61						13.2														
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L				0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	1,1,1-Trichloroethane	ug/L	0.5	U	U	0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.25	U	U	0.125	U	U	0.25	U	U	0.313	U	U	0.25	U	U	0.25	U	U	0.125	U	U	0.25	U	U
VOLATILES	1,1,2-Trichloroethane	ug/L	0.5	U	U	0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	1,1-Dichloroethane	ug/L	1.05	J	J	1.18			1.05	J	J	0.681	J	J	0.25	U	U	1.09	J	J	0.819	J	J	0.41	J	J
VOLATILES	1,1-Dichloroethene	ug/L	1	U	U	1.05			1	U	U	1.25	U	U	1	U	U	1	U	U	0.575	J	J	1	U	U
VOLATILES	1,1-Dichloropropene	ug/L				0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	1,2,3-Trichlorobenzene	ug/L				0.125	U	U	0.25	U	U	0.375	U	U	0.3	U	U	0.3	U	U	0.15	U	U	0.3	U	U
VOLATILES	1,2,3-Trichloropropane	ug/L				0.5	U	U	1	U	U	1.25	U	U	1	U	U	1	U	U	0.5	U	U	1	U	U
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.4	U	U	0.2	U	U	0.4	U	U	0.5	U	U	0.4	U	U	0.4	U	U	0.2	U	U	0.4	U	U
VOLATILES	1,2,4-Trimethylbenzene	ug/L				0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	2	U	U	1	U	U	2	U	U	2.5	U	U	2	U	U	2	U	U	1	U	U	2	U	U
VOLATILES	1,2-Dibromoethane	ug/L	0.5	U	U	0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	1,2-Dichlorobenzene	ug/L	0.25	U	U	0.125	U	U	0.25	U	U	0.313	U	U	0.25	U	U	0.25	U	U	0.125	U	U	0.25	U	U
VOLATILES	1,2-Dichloroethane	ug/L	0.5	U	U	0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	1,2-Dichloropropane	ug/L	0.4	U	U	0.2	U	U	0.4	U	U	0.5	U	U	0.4	U	U	0.4	U	U	0.2	U	U	0.4	U	U
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L				0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	1,3,5-Trimethylbenzene	ug/L				0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	1,3-Dichlorobenzene	ug/L	0.5	U	U	0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	1,3-Dichloropropane	ug/L				0.2	U	U	0.4	U	U	0.5	U	U	0.4	U	U	0.4	U	U	0.2	U	U	0.4	U	U
VOLATILES	1,4-Dichlorobenzene	ug/L	3.29			4.5			2.98			3.94			3.2			5.3			3.8			4.01		J
VOLATILES	2,2-Dichloropropane	ug/L				0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	2-Butanone	ug/L	5	U	U	2.5	U	U	5	U	U	6.25	U	U	5	U	U	5	U	U	2.5	U	U	5	U	U
VOLATILES	2-Chloroethyl vinyl ether	ug/L				2	U	U	4	U	U	5	U	U	4	U	U	4	U	U	2	U	U	4	U	U
VOLATILES	2-Chlorotoluene	ug/L				0.125	U	U	0.25	U	U	0.313	U	U	0.25	U	U	0.25	U	U	0.125	U	U	0.25	U	U
VOLATILES	2-Hexanone	ug/L	5	U	U	2.5	U	U	5	U	U	6.25	U	U	5	U	U	5	U	U	2.5	U	U	5	U	U
VOLATILES	4-Chlorotoluene	ug/L				0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	Acetone	ug/L	5	U	U	2.5	U	U	5	U	U	6.25	U	U	5	U	U	5	U	U	7.5	J	UJ,TB	5	U	U

Analytical Summary Table
September 2007 to July 2009
LHAAP-12

		Location_Code	12WW24			12WW24			12WW24			12WW24			12WW24			12WW24			12WW24			12WW24		
		Sample_No	12WW24-070905			12WW24-121907			12WW24-030508			12WW24-060408			12WW24-091108			12WW24-020409			12WW24-042909			12WW24-071409		
		Sample_Date	5-Sep-07			19-Dec-07			5-Mar-08			4-Jun-08			11-Sep-08			4-Feb-09			29-Apr-09			14-Jul-09		
		Sample_Purpose	REG			REG			REG			REG			REG			REG			REG			REG		
Test Group	Parameter	Units	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual	Result	Qual	ValQual
VOLATILES	Benzene	ug/L	0.87	J	J	1.04			0.878	J	J	0.624	J	J	0.756	J	J	1.08	J	J	0.761	J	J	0.684	J	J
VOLATILES	Bromobenzene	ug/L				0.125	U	U	0.25	U	U	0.313	U	U	0.25	U	U	0.25	U	U	0.125	U	U	0.25	U	U
VOLATILES	Bromochloromethane	ug/L				0.2	U	U	0.4	U	U	0.5	U	U	0.4	U	U	0.4	U	U	0.2	U	U	0.4	U	U
VOLATILES	Bromodichloromethane	ug/L	0.5	U	U	0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	Bromoform	ug/L	1	U	U	0.5	U	U	1	U	U	1.25	U	U	1	U	U	1	U	U	0.5	U	U	1	U	U
VOLATILES	Bromomethane	ug/L	1	U	U	0.5	U	U	1	U	U	1.25	U	U	1	U	U	1	U	U	0.5	U	U	1	U	U
VOLATILES	Carbon disulfide	ug/L	1	U	U	0.5	U	U	1	U	U	1.25	U	U	1	U	U	1	U	U	0.5	U	U	1	U	U
VOLATILES	Carbon tetrachloride	ug/L	0.5	U	U	0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	Chlorobenzene	ug/L	11.3			14			11.2			10.5			9.79			14.4			10.2			9.74		
VOLATILES	Chloroethane	ug/L	1	U	U	0.5	U	U	1	U	U	1.25	U	U	1	U	U	1	U	U	0.5	U	U	1	U	U
VOLATILES	Chloroform	ug/L	0.558	J	J	0.576	J	J	0.529	J	J	0.384	J	J	0.341	J	J	0.55	J	J	0.388	J	J	0.352	J	J
VOLATILES	Chloromethane	ug/L	0.5	U	U	0.952	J	J	0.5	U	U	0.625	U	U	0.5	U	U	0.551	J	J	0.325	J	J	0.5	U	U
VOLATILES	cis-1,2-Dichloroethene	ug/L	82.5			103			89.3			59			54.3			96.2			56.5			50.4		
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.5	U	U	0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	Cyclohexane	ug/L	0.5	U	U																					
VOLATILES	Dibromochloromethane	ug/L	0.5	U	U	0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	Dibromomethane	ug/L				0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	Dichlorodifluoromethane	ug/L	0.5	U	U	0.25	U	UJL	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	Ethylbenzene	ug/L	0.5	U	U	0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	Freon 113	ug/L	0.5	U	U																					
VOLATILES	Hexachlorobutadiene	ug/L				0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	Isopropylbenzene	ug/L	0.5	U	U	0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	m,p-Xylenes	ug/L				0.5	U	U	1	U	U	1.25	U	U	1	U	U	1	U	U	0.5	U	U	1	U	U
VOLATILES	Methyl Acetate	ug/L	0.5	U	U																					
VOLATILES	Methyl isobutyl ketone	ug/L	5	U	U	2.5	U	U	5	U	U	6.25	U	U	5	U	U	5	U	U	2.5	U	U	5	U	U
VOLATILES	Methyl tert-butyl ether	ug/L	1	U	U																					
VOLATILES	Methylcyclohexane	ug/L	0.5	U	U																					
VOLATILES	Methylene chloride	ug/L	0.5	U	U	0.25	U	U	0.5	U	U	0.625	U	U	1.53	J	J	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	Naphthalene	ug/L				0.2	U	U	0.4	U	U	0.5	U	U	0.4	U	U	0.4	U	U	0.2	U	U	0.4	U	U
VOLATILES	n-BUTYLBENZENE	ug/L				0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	n-PROPYLBENZENE	ug/L				0.125	U	U	0.25	U	U	0.313	U	U	0.25	U	U	0.25	U	U	0.125	U	U	0.25	U	U
VOLATILES	p-ISOPROPYLTOLUENE	ug/L				0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	sec-BUTYLBENZENE	ug/L				0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	Styrene	ug/L	0.25	U	U	0.125	U	U	0.25	U	U	0.313	U	U	0.25	U	U	0.25	U	U	0.125	U	U	0.25	U	U
VOLATILES	tert-BUTYLBENZENE	ug/L				0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	Tetrachloroethene	ug/L	1.23	J	J	1			0.639	J	JH	1.04	J	J	0.5	U	U	1.09	J	J	0.698	J	J	0.745	J	J
VOLATILES	Toluene	ug/L	0.5	U	U	0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.5	U	U	0.404	J	J	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	1.12			0.5	U	U
VOLATILES	trans-1,3-Dichloropropene	ug/L	1	U	U	0.5	U	U	1	U	U	1.25	U	U	1	U	U	1	U	U	0.5	U	U	1	U	U
VOLATILES	Trichloroethene	ug/L	272			313			301			237			185			334			197			204		
VOLATILES	Trichlorofluoromethane	ug/L	0.5	U	U	0.25	U	U	0.5	U	U	0.625	U	U	0.5	U	U	0.5	U	U	0.25	U	U	0.5	U	U
VOLATILES	Vinyl acetate	ug/L				2.5	U	U	5	U	U	6.25	U	U	5	U	U	5	U	U	2.5	U	U	5	U	U
VOLATILES	Vinyl chloride	ug/L	2.33			3.26			3.84			1.75	J	J	1.45	J	J	3.6			1.46			0.681	J	J
VOLATILES	Xylenes, Total	ug/L	1	U	U																					

Shaw Environmental & Infrastructure, Inc.

Technology Applications
312 Directors Drive
Knoxville, TN 37923
Phone: 865.690.3211
FAX: 865.694.9573

Shaw The Shaw Group Inc.™

STATEMENT OF ANALYSIS

Client: Shaw Environmental Inc.

Date: January 17, 2008

Contact: Kay Everett

Project No. 117591

Client Project Name / ID:	Longhorn Army Ammunition Plant
Date Received by Lab:	December 20, 2007
Number of Samples:	Six (6)
Sample Type:	Groundwater

1.0 Introduction

On December 20, 2007 six (6) groundwater samples arrived at Shaw Environmental, Inc. Technology Development Laboratory in Knoxville, Tennessee. The microbial communities from the groundwater samples were screened for the presence of *Dehalococcoides* species.

2.0 Overview of Analytical Methodology

A Roche Real-Time LightCycler PCR instrument was used to determine the presence of and quantify *Dehalococcoides* sp. in groundwater. All cells (animals, plants, fungi, and bacteria) contain DNA that allows for their identification. The polymerase chain reaction (PCR) is a method of copying a specific sequence of DNA into a quantity that can be detected. If the sequence in *Dehalococcoides* sp. is located, the reaction creates multiple copies. During this reaction a genetic fluorescent tag specific for the region attaches to each copied strand of DNA, which is then detected by the instrument. A *Dehalococcoides* species DNA (standard and positive control), a *Dehalococcoides*-negative bacterial species (negative control), and no template control (blank) are analyzed to verify the test results.

3.0 Results

The microbial communities in the groundwater samples were screened for the presence of *Dehalococcoides* species. The results are shown in the Table 1 below.

Table 1. Dehalococcoides Results

Sample No.	Shaw Sample No.	Concentration (cells / milliliter)
12WW20-121807	1903	**8.1×10^2**
12WW20-121807-FD	1904	**9.5×10^2**
12WW22-121807	1905	**1.5×10^4**
12WW21-121807	1906	**1.6×10^4**
12WW23-121907	1907	**9.2×10^3**
12WW24-121907	1908	1.0×10^1 U
Dehalococcoides – Positive Control	--	**1.0×10^6**
Dehalococcoides – Positive Control	--	**6.8×10^5**
Negative (no DNA template control)	--	1.0×10^1 U
Negative (no DNA template control)	--	1.0×10^1 U

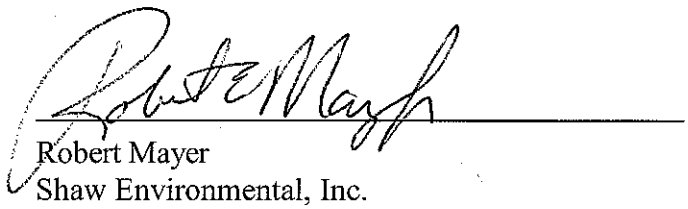
U: Below detection limit. Detection limits may be elevated due to sample matrix.
Bold: Sample detection

4.0 Quality Control (QC)

Standard laboratory QC was performed.

Analyst: Shirley Scarborough

Reviewed and Approved



Robert Mayer
Shaw Environmental, Inc.

Chain of Custody

NO. 10233

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: SHAW Address: 304 Directors Dr. Knoxville, TN. 37923 Contact: D. Root

Project Name: LHAAP Project Location: KARNACK, TX.

Project No.: 117591.0008A105 Project Contact: Kay Everett Project Telephone No.: 713-996-4421

Point of Contact: Kay Everett Telephone No.: 713-996-4421

Project Manager/Supervisor: Praveen Srivastav

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	Analysis and Method Desired (Indicate separate containers): Dehalococcoides	Remarks
1	12WW20-121807	12/18/07	10:05		✓	W	Groundwater, Site 12	1	✓	SEK 1903
2	12WW20-121807-FD	12/18/07	10:05		✓	W	Groundwater, Site 12	1	✓	1904
3	12WW22-121807	12/18/07	1:35		✓	W	Groundwater, Site 12	1	✓	1905
4	12WW21-121807	12/18/07	3:05		✓	W	Groundwater, Site 12	1	✓	1906
5	12WW23-121907	12/19/07	9:25		✓	W	Groundwater, Site 12	1	✓	1907
6	12WW24-121907	12/19/07	11:30		✓	W	Groundwater, Site 12	1	✓	1908
7										
8										
9										
10										

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time
Scott Beesinger	12/19/07 21:00		
	12/20/07 1000		
		Laboratory	

Special Instructions

FedEx Airbill No.:

Sampler's Signature: Scott Beesinger

TAT: ____ Standard ✓ Rush Date ____ Seals Intact? ____ Y ____ N Received Good Condition ____ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_1
Rev. 03-19-07

00114320

Shaw Environmental & Infrastructure, Inc.

Technology Applications
312 Directors Drive
Knoxville, TN 37923
Phone: 865.690.3211
FAX: 865.694.9573

The Shaw Group Inc.™

STATEMENT OF ANALYSIS

Client: Shaw Environmental Inc. Date: July 14, 2008

Contact: Kay Everett Project No. 117591

Client Project Name / ID:	Longhorn Army Ammunition Plant
Date Received by Lab:	June 10, 2008
Number of Samples:	Four (4)
Sample Type:	Groundwater

1.0 Introduction

On June 10, 2008 four (4) groundwater samples arrived at Shaw Environmental, Inc. Technology Development Laboratory in Knoxville, Tennessee. The microbial communities from the groundwater samples were screened for the presence of *Dehalococcoides* species.

2.0 Overview of Analytical Methodology

A Roche Real-Time LightCycler PCR instrument was used to determine the presence of and quantify *Dehalococcoides* sp. in groundwater. All cells (animals, plants, fungi, and bacteria) contain DNA that allows for their identification. The polymerase chain reaction (PCR) is a method of copying a specific sequence of DNA into a quantity that can be detected. If the sequence in *Dehalococcoides* sp. is located, the reaction creates multiple copies. During this reaction a genetic fluorescent tag specific for the region attaches to each copied strand of DNA, which is then detected by the instrument. A *Dehalococcoides* species DNA (standard and positive control), a *Dehalococcoides*-negative bacterial species (negative control), and no template control (blank) are analyzed to verify the test results.

3.0 Results

The microbial communities in the groundwater samples were screened for the presence of *Dehalococcoides* species. The results are shown in the Table 1 below.

Table 1. Dehalococcoides Results

Sample No.	Shaw Sample No.	Concentration (cells / milliliter)
12WW21-060408	2343	**9.7×10^3**
12WW24-060408	2344	1.0×10^1 U
12WW20-060408	2345	1.8×10^1 U
12WW20-060408-FD	2346	1.0×10^1 U
Dehalococcoides – Positive Control	--	**1.0×10^5**
Dehalococcoides – Positive Control	--	**1.4×10^5**
Negative (no DNA template control)	--	1.0×10^1 U
Negative (no DNA template control)	--	1.0×10^1 U

U: Below detection limit. Detection limits may be elevated due to sample matrix.
Bold: Sample detection

4.0 Quality Control (QC)

Standard laboratory QC was performed.

Analyst: Stephen Crouch, CHMM

Reviewed and Approved

Robert Mayer
Shaw Environmental, Inc.

00114323

Chain of Custody

NO. 10254

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: SHAW Address: 304 Directors DR. Knoxville, TN. 37923 Contact: D. ROOT

Project Name LHAAP Project Location KARNACK, TX.

Project No. 117591.0008A105 Project Contact Kay Everett Project Telephone No. 713-996-4421

Point of Contact: Scott Beesinger Project Manager/Supervisor: Praveen Srivastav

Telephone No. 903-679-3448

Item No.	Sample ~~Telephone~~ Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	Dehalococcoides	Analysis and Method Desired (Indicate separate containers)	Remarks
1	12WW21-060408	6/4/08	9:05		✓	W	Groundwater, Site 12	1	✓	SEK 2343	
2	12WW24-060408	6/4/08	10:40		✓	W	Groundwater, Site 12	1	✓	SEK 2344	
3	12WW20-060408	6/4/08	1:45		✓	W	Groundwater, Site 12	1	✓	SEK 2345	
4	12WW20-060408-FD	6/4/08	1:45		✓	W	Groundwater, Site 12	1	✓	SEK 2346	
5											
6											
7											
8											
9											
10											

Transfers ~~Relinquished~~ By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
Scott Beesinger	6/4/08 3:00	Scott Beesinger	6/10/08	
				FedEx Airbill No.:
		Laboratory		Sampler's Signature Scott Beesinger

TAT: _____ Standard _____ Rush Date _____ Seals Intact? _____ Y _____ N Received Good Condition _____ Y _____ N _____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_1
Rev. 03-19-07

Shaw Environmental & Infrastructure, Inc.

Technology Applications
312 Directors Drive
Knoxville, TN 37923
Phone: 865.690.3211
FAX: 865.694.9573

The Shaw Group Inc.™

STATEMENT OF ANALYSIS

Client: Shaw Environmental Inc. Date: March 14, 2008

Contact: Kay Everett Project No. 117591

Client Project Name / ID:	Longhorn Army Ammunition Plant
Date Received by Lab:	March 7, 2008
Number of Samples:	Three (3)
Sample Type:	Groundwater

1.0 Introduction

On March 7, 2008 three (3) groundwater samples arrived at Shaw Environmental, Inc. Technology Development Laboratory in Knoxville, Tennessee. The microbial communities from the groundwater samples were screened for the presence of *Dehalococcoides* species.

2.0 Overview of Analytical Methodology

A Roche Real-Time LightCycler PCR instrument was used to determine the presence of and quantify *Dehalococcoides* sp. in groundwater. All cells (animals, plants, fungi, and bacteria) contain DNA that allows for their identification. The polymerase chain reaction (PCR) is a method of copying a specific sequence of DNA into a quantity that can be detected. If the sequence in *Dehalococcoides* sp. is located, the reaction creates multiple copies. During this reaction a genetic fluorescent tag specific for the region attaches to each copied strand of DNA, which is then detected by the instrument. A *Dehalococcoides* species DNA (standard and positive control), a *Dehalococcoides*-negative bacterial species (negative control), and no template control (blank) are analyzed to verify the test results.

3.0 Results

The microbial communities in the groundwater samples were screened for the presence of *Dehalococcoides* species. The results are shown in the Table 1 below.

Table 1. Dehalococcoides Results

Sample No.	Shaw Sample No.	Concentration (cells / milliliter)
12WW20-030608	2083	**7.6×10^2**
12WW20-030608-FD	2084	**9.7×10^2**
12WW21-030608	2085	**1.0×10^4**
Dehalococcoides – Positive Control	--	**1.0×10^6**
Dehalococcoides – Positive Control	--	**1.2×10^6**
Negative (no DNA template control)	--	1.0×10^1 U
Negative (no DNA template control)	--	1.0×10^1 U

U: Below detection limit. Detection limits may be elevated due to sample matrix.
Bold: Sample detection

4.0 Quality Control (QC)

Standard laboratory QC was performed.

Analyst: Shirley Scarborough

Reviewed and Approved

Robert Mayer
Shaw Environmental, Inc.

00114326

Chain of Custody

NO. 10244

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: SHAW Address: 304 DIRECTORS DR. KNOXVILLE, TN. 37923 Contact: D. ROOT

Project Name: LHAAP Project Location: KARNACK, TX.

Project No.: 117591.0008A105 Project Contact: KAY EVERETT Project Telephone No.: 713-996-4421

Point of Contact: KAY EVERETT Telephone No.: 713-996-4421

Project Manager/Supervisor: PRAVEEN SRIVASTAV

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	DEHALOCCIDES						Remarks
1	12WW20-030608	3/6/08	9:20		✓	W	GROUNDWATER, SITE 12	1	1						SEL 2083
2	12WW20-030608-FD	3/6/08	9:20		✓	W	GROUNDWATER, SITE 12	1	1						SEL 2084
3	12WW21-030608	3/6/08	10:50		✓	W	GROUNDWATER, SITE 12	1	1						SEL 2085
4															
5															
6															
7															
8															
9															
10															

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
Scott Beesinger	3/6/08 12:30			
				FedEx Airbill No.:
		Laboratory	3-7-08 10:30	Sampler's Signature: Scott Beesinger

TAT: ____ (Standard) ____ Rush Date ____ Seals Intact? ____ Y ____ N Received Good Condition ____ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_1
Rev. 03-19-07

Shaw Environmental & Infrastructure, Inc.

Technology Applications
312 Directors Drive
Knoxville, TN 37923
Phone: 865.690.3211
FAX: 865.694.9573

Shaw The Shaw Group Inc.™

STATEMENT OF ANALYSIS

Client: Shaw Environmental Inc.	Date: September 26, 2007
Contact: Kay Everett	Project No. 117591

Client Project Name / ID:	Longhorn Army Ammunition Plant
Date Received by Lab:	September 7, 2007
Number of Samples:	Three (3)
Sample Type:	Groundwater

1.0 Introduction

On September 7, 2007 three (3) groundwater samples arrived at Shaw Environmental, Inc. Technology Development Laboratory in Knoxville, Tennessee. The microbial communities from the groundwater samples were screened for the presence of *Dehalococcoides* species.

2.0 Overview of Analytical Methodology

A Roche Real-Time LightCycler PCR instrument was used to determine the presence of and quantify *Dehalococcoides* sp. in groundwater. All cells (animals, plants, fungi, and bacteria) contain DNA that allows for their identification. The polymerase chain reaction (PCR) is a method of copying a specific sequence of DNA into a quantity that can be detected. If the sequence in *Dehalococcoides* sp. is located, the reaction creates multiple copies. During this reaction a genetic fluorescent tag specific for the region attaches to each copied strand of DNA, which is then detected by the instrument. A *Dehalococcoides* species DNA (standard and positive control), a *Dehalococcoides*-negative bacterial species (negative control), and no template control (blank) are analyzed to verify the test results.

3.0 Results

The microbial communities in the groundwater samples were screened for the presence of *Dehalococcoides* species. The results are shown in the Table 1 below.

Table 1. Dehalococcoides Results

Sample No.	Shaw Sample No.	Concentration (cells / milliliter)
12WW20	1356	1.0×10^1 U
12WW20-FD	1357	1.0×10^1 U
12WW21	1358	1.0×10^1 U
Dehalococcoides – Positive Control	--	**7.6×10^6**
Dehalococcoides – Positive Control	--	**7.2×10^6**
Negative (no DNA template control)	--	1.0×10^1 U
Negative (no DNA template control)	--	1.0×10^1 U

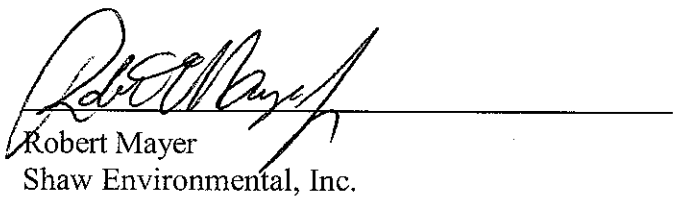
U: Below detection limit. Detection limits may be elevated due to sample matrix.
Bold: Sample detection

4.0 Quality Control (QC)

Standard laboratory QC was performed.

Analyst: Kit Daniels

Reviewed and Approved



Robert Mayer
Shaw Environmental, Inc.

00114329

Chain of Custody

NO. 10223

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: SHAW Address: 304 Directors DR. Knoxville, TN. 37923 Contact: D. ROOT

Project Name: LHAAP Project Location: KARNACK, TX.

Project No.: 117591.0008A105 Project Contact: Kay Everett Project Telephone No.: 713-996-4421

Point of Contact: Kay Everett Telephone No.: 713-996-4421

Project Manager/Supervisor: Praveen Srivastav

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	Dehalococcoides	[redacted]	Remarks
1	12WW20	9/5/07	10:15			W	Groundwater, Site12	2	✓		
2	12WW20-FD	9/5/07	10:15			W	Groundwater, Site12	2	✓		
3	12WW21	9/5/07	12:20			W	Groundwater, Site12	2	✓		
4											
5											
6											
7											
8											
9											
10											

Analysis and Method Desired (Indicate separate containers)

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time
Scott Beesinger	9/5/07 3:00	X: Emily Zhen	9/7/07 4:30
		Laboratory	

Special Instructions

FedEx Airbill No.:

Sampler's Signature: Scott Beesinger

TAT: ____ Standard ✓ Rush Date ____ Seals Intact? ____ Y ____ N Received Good Condition ____ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_1
Rev. 03-19-07

156 Starlite Drive, Marietta, OH 45750 • TEL 740-373-4071 • FAX 740-373-4835 • http://www.kemron.com

Laboratory Report Number: L0709052

Please find enclosed the analytical results for the samples you submitted to KEMRON Environmental Services.

Review and compilation of your report was completed by KEMRON's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box bleow at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Debra Elliott - Team Leader
delliott@kemron-lab.com

Amanda Fickiesen - Client Services Specialist
afickiesen@kemron-lab.com

Kathy Albertson - Team Chemist/Data Specialist
kalbertson@kemron-lab.com

Annie Bock - Client Services Specialist
abock@kemron-lab.com

Stephanie Mossburg - Team Chemist/Data Specialist
smossburg@kemron-lab.com

Katie Barnes - Team Assistant
kbarnes@kemron-lab.com

Brenda Gregory - Client Services Specialist
bgregory@kemron-lab.com

Jacqueline Parsons - Team Assistant
jparsons@kemron-lab.com

This report was reviewed on September 24, 2007.

Stephanie Mossburg

STEPHANIE MOSSBURG - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the NELAP standards and other applicable contract terms and conditions. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of KEMRON Environmental Services.

This report was certified on September 24, 2007.

David E. Vandenberg

David Vandenberg - Vice President

FL DOH NELAP ID: E8755
This report contains a total of 274 pages.

Protecting Our Environmental Future

KEMRON REPORT L0709052
PREPARED FOR Shaw E I, Inc.
WORK ID: LONGHORN AAP KARNACK TX

1.0 Introduction 3
2.1 Volatiles Data 29
2.1.1 Volatiles GCMS Data (8260) 30
2.1.1.1 Summary Data 31
2.1.1.2 QC Summary Data 47
2.1.2 RSK 175 98
2.1.2.1 Summary Data 99
2.1.2.2 QC Summary Data 108
2.2 General Chemistry Data 140
2.2.1 Method 9056 141
2.2.1.1 Summary Data 142
2.2.1.2 QC Summary Data 150
2.2.2 Alkalinity Data 173
2.2.2.1 Summary Data 174
2.2.2.2 QC Summary Data 179
2.2.2.3 Raw Data 186
2.2.3 Total Organic Carbon Data 192
2.2.3.1 Summary Data 193
2.2.3.2 QC Summary Data 201
2.2.3.3 Raw Data 208
3.0 Attachments 263

1.0 Introduction

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

KEMRON Login No.: L0709052

CHAIN OF CUSTODY: The chain of custody number was 10221.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 3 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 07-SEP-07

Stephanie Mossburg

Laboratory Data Package Cover Page

00114334

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

MICHAEL D. COCHRAN		Semivolatiles Lab Supervisor	September 14, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709052
Project Name:	798-LONGHORN
Method:	9056-300
Prep Batch Number(s):	WG249542
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	September 06, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?	✓				
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	✓				
Were MS/MSD analyzed at the appropriate frequency?	✓				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		✓			1

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?	✓				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				2
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709052
Project Name:	798-LONGHORN
Method:	9056-300
Prep Batch Number(s):	WG249542
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	September 06, 2007

EXCEPTIONS REPORT
ER# - Description
1. The MS/MSD recoveries were below the advisory limit for chloride, nitrite and sulfate. The chosen parent sample had chloride and sulfate well above their calibration range and was diluted 1/10 for initial analysis.
2. All samples were analyzed at an initial dilution due to very high screen results for chloride and sulfate. This was done to prevent possible damage to the analytical columns of the instrument.

(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00114339

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna I. Hesson	Conventional Lab Supervisor	September 22, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709052
Project Name:	798-LONGHORN
Method:	ALKALINITY
Prep Batch Number(s):	WG249548
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 22, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?	✓				
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	✓				
Were MS/MSD analyzed at the appropriate frequency?	✓				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?	✓				

Checklist ID: **21448**

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709052
Project Name:	798-LONGHORN
Method:	ALKALINITY
Prep Batch Number(s):	WG249548
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 22, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		

Checklist ID: **21448**

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709052
Project Name:	798-LONGHORN
Method:	ALKALINITY
Prep Batch Number(s):	WG249548
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 22, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709052
Project Name:	798-LONGHORN
Method:	ALKALINITY
Prep Batch Number(s):	WG249548
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 22, 2007

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00114345

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna I. Hesson	Conventional Lab Supervisor	September 22, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709052
Project Name:	798-LONGHORN
Method:	TOC
Prep Batch Number(s):	WG249733
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 22, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?	✓				
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	✓				
Were MS/MSD analyzed at the appropriate frequency?	✓				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?	✓				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709052
Project Name:	798-LONGHORN
Method:	TOC
Prep Batch Number(s):	WG249733
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 22, 2007

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00114350

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [✓] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	September 18, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709052
Project Name:	798-LONGHORN
Method:	RSK175
Prep Batch Number(s):	WG249953, WG250034
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	September 18, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?		✓			1
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT

ER# - Description

1) The RPD for carbon dioxide exceeded the upper control limit in the LCS/LCSD analyzed 09/13/07.

Footnotes:

(1) NA = Not applicable to method or project

(2) NR = Not reviewed

(3) ER# = Exception report number

Laboratory Data Package Cover Page

00114354

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [✓] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	September 14, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0709052
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	249650, 249716
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	September 14, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?		✓			1
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT

ER# - Description

#1: Dichlorodifluoromethane exceeded the upper control limit.

Footnotes:

(1) NA = Not applicable to method or project

(2) NR = Not reviewed

(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

L0709052

09/24/07 08:27

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP

P.O. Number: 200328

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW22	L0709052-01	8260B	1	06-SEP-07
12WW23	L0709052-02	8260B	1	06-SEP-07
12WW24	L0709052-03	8260B	2	06-SEP-07
12WW20	L0709052-04	8260B	1	06-SEP-07
12WW20-FD	L0709052-05	8260B	1	06-SEP-07
12WW21	L0709052-06	8260B	1	06-SEP-07
TRIP BLANK	L0709052-07	8260B	1	06-SEP-07

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114362

Sample Number: **L0709052-01**
Client ID: **12WW22**
Matrix: **Water**
Workgroup Number: **WG249650**
Collect Date: **09/04/2007 11:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/09/2007 01:14**
Cal Date: **09/05/2007 19:51**
Run Date: **09/09/2007 01:14**
File ID: **11M45309**

Analyte	CAS. Number	Result	Qual	PQL	SQL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2	0.319	J	1.00	0.125
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Cyclohexane	110-82-7		U	5.00	0.250
Dibromochloromethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethyl benzene	100-41-4		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methyl acetate	79-20-9		U	10.0	0.250
Methyl tert-butyl ether	1634-04-4		U	5.00	0.500
Methylcyclohexane	108-87-2		U	10.0	0.250
Methylene chloride	75-09-2		U	2.00	0.250
Styrene	100-42-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes, Total	1330-20-7		U	1.00	0.500

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114363

Sample Number: **L0709052-01**
Client ID: **12WW22**
Matrix: **Water**
Workgroup Number: **WG249650**
Collect Date: **09/04/2007 11:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/09/2007 01:14**
Cal Date: **09/05/2007 19:51**
Run Date: **09/09/2007 01:14**
File ID: **11M45309**

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	94.2	80	120	
Dibromofluoromethane	92.5	86	118	
p-Bromofluorobenzene	97.4	86	115	
Toluene-d8	95.1	88	110	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114364

Sample Number: **L0709052-02**
Client ID: **12WW23**
Matrix: **Water**
Workgroup Number: **WG249650**
Collect Date: **09/04/2007 14:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/09/2007 01:44**
Cal Date: **09/05/2007 19:51**
Run Date: **09/09/2007 01:44**
File ID: **11M45310**

Analyte	CAS. Number	Result	Qual	PQL	SQL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Cyclohexane	110-82-7		U	5.00	0.250
Dibromochloromethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethyl benzene	100-41-4	0.729	J	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methyl acetate	79-20-9		U	10.0	0.250
Methyl tert-butyl ether	1634-04-4		U	5.00	0.500
Methylcyclohexane	108-87-2		U	10.0	0.250
Methylene chloride	75-09-2		U	2.00	0.250
Styrene	100-42-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes, Total	1330-20-7		U	1.00	0.500

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114365

Sample Number: **L0709052-02**
Client ID: **12WW23**
Matrix: **Water**
Workgroup Number: **WG249650**
Collect Date: **09/04/2007 14:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/09/2007 01:44**
Cal Date: **09/05/2007 19:51**
Run Date: **09/09/2007 01:44**
File ID: **11M45310**

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	98.0	80	120	
Dibromofluoromethane	92.2	86	118	
p-Bromofluorobenzene	97.5	86	115	
Toluene-d8	95.0	88	110	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114366

Sample Number: **L0709052-03**
Client ID: **12WW24**
Matrix: **Water**
Workgroup Number: **WG249650**
Collect Date: **09/05/2007 09:50**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **2**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/09/2007 02:15**
Cal Date: **09/05/2007 19:51**
Run Date: **09/09/2007 02:15**
File ID: **11M45311**

Analyte	CAS. Number	Result	Qual	PQL	SQL
1,1,1-Trichloroethane	71-55-6		U	2.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	2.00	0.250
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	10.0	0.500
1,1,2-Trichloroethane	79-00-5		U	2.00	0.500
1,1-Dichloroethane	75-34-3	1.05	J	2.00	0.250
1,1-Dichloroethene	75-35-4		U	2.00	1.00
1,2,4-Trichlorobenzene	120-82-1		U	2.00	0.400
1,2-Dibromo-3-chloropropane	96-12-8		U	10.0	2.00
1,2-Dibromoethane	106-93-4		U	2.00	0.500
1,2-Dichlorobenzene	95-50-1		U	2.00	0.250
1,2-Dichloroethane	107-06-2		U	2.00	0.500
cis-1,2-Dichloroethene	156-59-2	82.5		2.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	2.00	0.500
1,2-Dichloropropane	78-87-5		U	2.00	0.400
1,3-Dichlorobenzene	541-73-1		U	2.00	0.500
1,4-Dichlorobenzene	106-46-7	3.29		2.00	0.250
2-Butanone	78-93-3		U	20.0	5.00
2-Hexanone	591-78-6		U	20.0	5.00
4-Methyl-2-pentanone	108-10-1		U	20.0	5.00
Acetone	67-64-1		U	20.0	5.00
Benzene	71-43-2	0.870	J	2.00	0.250
Bromodichloromethane	75-27-4		U	2.00	0.500
Bromoform	75-25-2		U	2.00	1.00
Bromomethane	74-83-9		U	2.00	1.00
Carbon disulfide	75-15-0		U	2.00	1.00
Carbon tetrachloride	56-23-5		U	2.00	0.500
Chlorobenzene	108-90-7	11.3		2.00	0.250
Chloroethane	75-00-3		U	2.00	1.00
Chloroform	67-66-3	0.558	J	2.00	0.250
Chloromethane	74-87-3		U	2.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	2.00	0.500
Cyclohexane	110-82-7		U	10.0	0.500
Dibromochloromethane	124-48-1		U	2.00	0.500
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
Ethyl benzene	100-41-4		U	2.00	0.500
Isopropylbenzene	98-82-8		U	2.00	0.500
Methyl acetate	79-20-9		U	20.0	0.500
Methyl tert-butyl ether	1634-04-4		U	10.0	1.00
Methylcyclohexane	108-87-2		U	20.0	0.500
Methylene chloride	75-09-2		U	4.00	0.500
Styrene	100-42-5		U	2.00	0.250
Tetrachloroethene	127-18-4	1.23	J	2.00	0.500
Toluene	108-88-3		U	2.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	2.00	1.00
Trichloroethene	79-01-6	272		2.00	0.500
Trichlorofluoromethane	75-69-4		U	2.00	0.500
Vinyl chloride	75-01-4	2.33		2.00	0.500
Xylenes, Total	1330-20-7		U	2.00	1.00

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114367

Sample Number: **L0709052-03**
Client ID: **12WW24**
Matrix: **Water**
Workgroup Number: **WG249650**
Collect Date: **09/05/2007 09:50**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **2**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/09/2007 02:15**
Cal Date: **09/05/2007 19:51**
Run Date: **09/09/2007 02:15**
File ID: **11M45311**

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	94.5	80	120	
Dibromofluoromethane	90.9	86	118	
p-Bromofluorobenzene	97.8	86	115	
Toluene-d8	95.6	88	110	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114368

Sample Number: **L0709052-04**
Client ID: **12WW20**
Matrix: **Water**
Workgroup Number: **WG249716**
Collect Date: **09/05/2007 10:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/10/2007 22:02**
Cal Date: **09/05/2007 19:51**
Run Date: **09/10/2007 22:02**
File ID: **11M45339**

Analyte	CAS. Number	Result	Qual	PQL	SQL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
cis-1,2-Dichloroethene	156-59-2	0.898	J	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Cyclohexane	110-82-7		U	5.00	0.250
Dibromochloromethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethyl benzene	100-41-4		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methyl acetate	79-20-9		U	10.0	0.250
Methyl tert-butyl ether	1634-04-4		U	5.00	0.500
Methylcyclohexane	108-87-2		U	10.0	0.250
Methylene chloride	75-09-2		U	2.00	0.250
Styrene	100-42-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	1.34		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes, Total	1330-20-7		U	1.00	0.500

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114369

Sample Number: **L0709052-04**
Client ID: **12WW20**
Matrix: **Water**
Workgroup Number: **WG249716**
Collect Date: **09/05/2007 10:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/10/2007 22:02**
Cal Date: **09/05/2007 19:51**
Run Date: **09/10/2007 22:02**
File ID: **11M45339**

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	97.8	80	120	
Dibromofluoromethane	92.3	86	118	
p-Bromofluorobenzene	99.4	86	115	
Toluene-d8	94.5	88	110	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114370

Sample Number: **L0709052-05**
Client ID: **12WW20-FD**
Matrix: **Water**
Workgroup Number: **WG249716**
Collect Date: **09/05/2007 10:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/10/2007 22:32**
Cal Date: **09/05/2007 19:51**
Run Date: **09/10/2007 22:32**
File ID: **11M45340**

Analyte	CAS. Number	Result	Qual	PQL	SQL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
cis-1,2-Dichloroethene	156-59-2	1.00		1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Cyclohexane	110-82-7		U	5.00	0.250
Dibromochloromethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethyl benzene	100-41-4		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methyl acetate	79-20-9		U	10.0	0.250
Methyl tert-butyl ether	1634-04-4		U	5.00	0.500
Methylcyclohexane	108-87-2		U	10.0	0.250
Methylene chloride	75-09-2		U	2.00	0.250
Styrene	100-42-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6	1.57		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes, Total	1330-20-7		U	1.00	0.500

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114371

Sample Number: **L0709052-05**
Client ID: **12WW20-FD**
Matrix: **Water**
Workgroup Number: **WG249716**
Collect Date: **09/05/2007 10:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/10/2007 22:32**
Cal Date: **09/05/2007 19:51**
Run Date: **09/10/2007 22:32**
File ID: **11M45340**

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	97.0	80	120	
Dibromofluoromethane	92.2	86	118	
p-Bromofluorobenzene	96.9	86	115	
Toluene-d8	92.4	88	110	

U Not detected at or above adjusted sample detection limit

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114372

Sample Number: **L0709052-06**
Client ID: **12WW21**
Matrix: **Water**
Workgroup Number: **WG249716**
Collect Date: **09/05/2007 12:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/10/2007 23:02**
Cal Date: **09/05/2007 19:51**
Run Date: **09/10/2007 23:02**
File ID: **11M45341**

Analyte	CAS. Number	Result	Qual	PQL	SQL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Cyclohexane	110-82-7		U	5.00	0.250
Dibromochloromethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethyl benzene	100-41-4		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methyl acetate	79-20-9		U	10.0	0.250
Methyl tert-butyl ether	1634-04-4		U	5.00	0.500
Methylcyclohexane	108-87-2		U	10.0	0.250
Methylene chloride	75-09-2		U	2.00	0.250
Styrene	100-42-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes, Total	1330-20-7		U	1.00	0.500

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114373

Sample Number: **L0709052-06**
Client ID: **12WW21**
Matrix: **Water**
Workgroup Number: **WG249716**
Collect Date: **09/05/2007 12:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/10/2007 23:02**
Cal Date: **09/05/2007 19:51**
Run Date: **09/10/2007 23:02**
File ID: **11M45341**

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	101	80	120	
Dibromofluoromethane	93.3	86	118	
p-Bromofluorobenzene	97.0	86	115	
Toluene-d8	93.0	88	110	

U Not detected at or above adjusted sample detection limit

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114374

Sample Number: **L0709052-07**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG249650**
Collect Date: **09/05/2007 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/08/2007 21:43**
Cal Date: **09/05/2007 19:51**
Run Date: **09/08/2007 21:43**
File ID: **11M45302**

Analyte	CAS. Number	Result	Qual	PQL	SQL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1		U	5.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
2-Butanone	78-93-3		U	10.0	2.50
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Cyclohexane	110-82-7		U	5.00	0.250
Dibromochloromethane	124-48-1		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethyl benzene	100-41-4		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
Methyl acetate	79-20-9		U	10.0	0.250
Methyl tert-butyl ether	1634-04-4		U	5.00	0.500
Methylcyclohexane	108-87-2		U	10.0	0.250
Methylene chloride	75-09-2		U	2.00	0.250
Styrene	100-42-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes, Total	1330-20-7		U	1.00	0.500

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114375

Sample Number: **L0709052-07**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG249650**
Collect Date: **09/05/2007 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/08/2007 21:43**
Cal Date: **09/05/2007 19:51**
Run Date: **09/08/2007 21:43**
File ID: **11M45302**

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	90.7	80	120	
Dibromofluoromethane	89.9	86	118	
p-Bromofluorobenzene	94.2	86	115	
Toluene-d8	93.6	88	110	

U Not detected at or above adjusted sample detection limit

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**
Dry weight correction:	
Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a\left(c - y\right)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS11 Dataset: 090507
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 20749

Internal Standard: STD21253 Surrogate Standard: STD21736
CCV: STD21737 LCS: STD21763 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG249372

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	11M45197	SYSTEM BLANK	NA	1	1		09/05/07 08:27
2	11M45198	std	NA	1	1		09/05/07 09:04
3	11M45199	std	NA	1	1		09/05/07 09:45
4	11M45200	SYSTEM BLANK	NA	1	1		09/05/07 10:19
5	11M45201	SYSTEM BLANK	NA	1	1		09/05/07 10:50
6	11M45202	WG249372-01 50NG BFB STD 8260	NA	1	1	STD21685	09/05/07 11:36
7	11M45203	WG249372-02 0.3ug/L WATER STD 8260	NA	1	1	STD21694	09/05/07 11:58
8	11M45204	WG249372-03 0.4 ug/L WATER STD 8260	NA	1	1	STD21737	09/05/07 12:28
9	11M45205	WG249372-04 1 ug/L WATER STD 8260	NA	1	1	STD21737	09/05/07 12:59
10	11M45206	WG249372-01 50ng BFB STD 8260	NA	1	1	STD21685	09/05/07 13:28
11	11M45207	WG249372-02 0.3 ug/L WATER STD 8260	NA	1	1	STD21737	09/05/07 13:51
12	11M45208	WG249372-03 0.4 ug/L WATER STD 8260	NA	1	1	STD21737	09/05/07 14:21
13	11M45209	WG249372-04 1 ug/L WATER STD 8260	NA	1	1	STD21737	09/05/07 14:51
14	11M45210	WG249372-05 2 ug/L WATER STD 8260	NA	1	1	STD21737	09/05/07 15:21
15	11M45211	WG249372-06 5 ug/L WATER STD 8260	NA	1	1	STD21737	09/05/07 15:51
16	11M45212	WG249372-07 20 ug/L WATER STD 8260	NA	1	1	STD21737	09/05/07 16:21
17	11M45213	WG249372-08 50 ug/L WATER STD 8260	NA	1	1	STD21737	09/05/07 16:51
18	11M45214	WG249372-09 100 ug/L WATER STD 8260	NA	1	1	STD21737	09/05/07 17:21
19	11M45215	WG249372-10 200 ug/L WATER STD 8260	NA	1	1	STD21737	09/05/07 17:51
20	11M45216	SYSTEM BLANK	NA	1	1		09/05/07 18:21
21	11M45217	SYSTEM BLANK	NA	1	1		09/05/07 18:51
22	11M45218	SYSTEM BLANK	NA	1	1		09/05/07 19:21
23	11M45219	WG249372-03 0.4ug/L WATER STD 8260	NA	1	1	STD21737	09/05/07 19:51
24	11M45220	WG249372-11 20ug/L ALT SOURCE	NA	1	1	STD21669	09/05/07 20:21

Comments

Seq.	Rerun	Dil.	Reason	Analytes
9				
File ID: 11M45205				
			Restarting curve-adjusting scan ratio.	
12				
File ID: 11M45208				
			Do not report.	
24				

Approved: September 10, 2007

Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS11 Dataset: 090507
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 20749

Internal Standard: STD21253 Surrogate Standard: STD21736
CCV: STD21737 LCS: STD21763 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG249372

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 11M45220				
Do not report-bromomethane is high.				

Approved: September 10, 2007

Page: 2

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS11 Dataset: 090607
Analyst1: MES Analyst2: FJB
Method: 8260B SOP: MSV01 Rev: 10
Method: 624 SOP: MSV10 Rev: 9
Method: 5030/5035 SOP: PAT01 Rev: 10
Maintenance Log ID: 20766

Internal Standard: STD21253 Surrogate Standard: STD21736
CCV: STD21737 LCS: STD21763 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG249484, WG249372

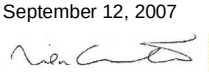
Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	11M45222	SYSTEM BLANK	NA	1	1		09/06/07 09:59
2	11M45223	SYSTEM BLANK	NA	1	1		09/06/07 10:44
3	11M45224	WG249483-01 50ng BFB STD 8260	NA	1	1	STD21685	09/06/07 12:22
4	11M45225	WG249483-01 50ug/L STD 8260	NA	1	1	STD21737	09/06/07 12:45
5	11M45226	WG249483-01 50ug/L STD 8260	NA	1	1	STD21737	09/06/07 13:20
6	11M45227	SYSTEM BLANK	NA	1	1		09/06/07 13:50
7	11M45228	WG249372-11 20ug/L ALT SOURCE	NA	1	1	STD21669	09/06/07 14:21
8	11M45229	WG249484-01 VBLK0906 BLANK 8260	NA	1	1		09/06/07 14:51
9	11M45230	WG249484-02 20ug/L LCS STD 8260	NA	1	1	STD21763	09/06/07 15:21
10	11M45231	WG249484-03 20ug/L LCSDUP STD 8260	NA	1	1	STD21763	09/06/07 15:51
11	11M45232	L0708788-24 A 826-SPE	<2	1	1		09/06/07 16:21
12	11M45233	L0708788-25 A 826-SPE	<2	1	1		09/06/07 16:51
13	11M45234	L0708788-26 A 826-SPE	<2	1	1		09/06/07 17:21
14	11M45235	L0708788-27 A 826-SPE	<2	1	1		09/06/07 17:52
15	11M45236	L0708729-02 A 826-LOW	<2	1	1		09/06/07 18:22
16	11M45237	L0708729-01 A 826-LOW	<2	1	1		09/06/07 18:52
17	11M45238	L0708844-14 A 826-SPE	<2	1	1		09/06/07 19:22
18	11M45239	L0708844-15 A 826-SPE	<2	1	1		09/06/07 19:52
19	11M45240	L0708844-16 A 826-SPE	<2	1	1		09/06/07 20:22
20	11M45241	L0708844-17 A 826-SPE	<2	1	1		09/06/07 20:52
21	11M45242	L0708844-18 A 826-SPE	<2	1	1		09/06/07 21:22
22	11M45243	L0708844-19 A 826-SPE	<2	1	1		09/06/07 21:52
23	11M45244	L0708844-20 A 826-SPE	<2	1	1		09/06/07 22:23
24	11M45245	L0708844-21 A 826-SPE	<2	1	1		09/06/07 22:53
25	11M45246	L0708844-22 A 826-SPE	<2	1	1		09/06/07 23:23
26	11M45247	SYSTEM BLANK	NA	1	1		09/06/07 23:53
27	11M45248	WG249484-04 624 BLANK	NA	1	1		09/07/07 00:23
28	11M45249	L0709035-01 A 624-SPE	7	2	1		09/07/07 00:53
29	11M45250	L0709035-02 A 624-SPE	7	2	1		09/07/07 01:23

Comments

Seq.	Rerun	Dil.	Reason	Analytes
22	X	25	Over Calibration Range	BETX,124-TMB,naph

Approved: September 12, 2007



Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS11 Dataset: 090607
Analyst1: MES Analyst2: FJB
Method: 8260B SOP: MSV01 Rev: 10
Method: 624 SOP: MSV10 Rev: 9
Method: 5030/5035 SOP: PAT01 Rev: 10
Maintenance Log ID: 20766

Internal Standard: STD21253 Surrogate Standard: STD21736
CCV: STD21737 LCS: STD21763 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG249484, WG249372

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 11M45243				
24	X	1	Carry-over contamination	
File ID: 11M45245				
Do not report.				
25	X	1	Carry-over contamination	
File ID: 11M45246				
Do not report.				

Approved: September 12, 2007

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS11 Dataset: 090807
Analyst1: MES Analyst2: FJB
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 20793

Internal Standard: STD21253 Surrogate Standard: STD21736
CCV: STD21828 LCS: STD21763 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG249650

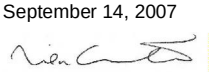
Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	11M45285	SYSTEM BLANK	NA	1	1		09/08/07 13:39
2	11M45286	SYSTEM BLANK	NA	1	1		09/08/07 14:09
3	11M45287	WG249649-01 50NG BFB ST D8260	NA	1	1	STD21685	09/08/07 14:36
4	11M45288	WG249649-01 50NG BFB ST D8260	NA	1	1	STD21685	09/08/07 14:48
5	11M45289	WG249649-02 50ug/L WATER STD 8260	NA	1	1	STD21828	09/08/07 15:11
6	11M45290	WG249649-02 50ug/L WATER STD 8260	NA	1	1	STD21828	09/08/07 15:41
7	11M45291	WG249650-01 VBLK0908 BLANK 8260	NA	1	1		09/08/07 16:12
8	11M45292	WG249650-01 VBLK0908 BLANK 8260	NA	1	1		09/08/07 16:42
9	11M45293	WG249650-02 20ug/L LCS 8260	NA	1	1	STD21763	09/08/07 17:12
10	11M45294	WG249650-03 20ug/L LCSDUP 8260	NA	1	1	STD21763	09/08/07 17:42
11	11M45295	L0708844-23 B D1 50X 826-SPE	<2	1	50		09/08/07 18:12
12	11M45296	L0709072-01 B D1 2X 826-LOW	<2	1	2		09/08/07 18:42
13	11M45297	L0707001-01 A 826-SPE	NA	1	1	STD21737	09/08/07 19:12
14	11M45298	L0707187-01 A 826-SPE	NA	1	1	STD21737	09/08/07 19:42
15	11M45299	L0709016-03 A 826-SPE	<2	1	1		09/08/07 20:13
16	11M45300	L0709038-02 A 826-SPE	<2	1	1		09/08/07 20:43
17	11M45301	L0709025-03 A 826-SPE	<2	1	1		09/08/07 21:13
18	11M45302	L0709052-07 A 826-SPE	<2	1	1		09/08/07 21:43
19	11M45303	L0709056-02 A 826-SPE	<2	1	1		09/08/07 22:13
20	11M45304	L0708845-22 A 826-SPE	<2	1	1		09/08/07 22:43
21	11M45305	L0708844-39 B 826-SPE	<2	1	1		09/08/07 23:13
22	11M45306	L0709001-10 A 826-SPE1	5	1	1		09/08/07 23:44
23	11M45307	L0709025-01 A 826-SPE	<2	1	1		09/09/07 00:14
24	11M45308	L0709025-02 A 826-SPE	<2	1	1		09/09/07 00:44
25	11M45309	L0709052-01 A 826-SPE	<2	1	1		09/09/07 01:14
26	11M45310	L0709052-02 A 826-SPE	<2	1	1		09/09/07 01:44
27	11M45311	L0709052-03 A 2X 826-SPE	<2	1	2		09/09/07 02:15
28	11M45312	SYSTEM BLANK	NA	1	1		09/09/07 02:44
29	11M45313	SYSTEM BLANK	NA	1	1		09/09/07 03:14

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3				

Approved: September 14, 2007



KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS11 Dataset: 090807
Analyst1: MES Analyst2: FJB
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 20793

Internal Standard: STD21253 Surrogate Standard: STD21736
CCV: STD21828 LCS: STD21763 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG249650

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 11M45287				
			RR, BFB failed.	
5				
File ID: 11M45289				
			RR, SS is high.	

Approved: September 14, 2007

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS11 Dataset: 091007
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 20823

Internal Standard: STD21253 Surrogate Standard: STD21736
CCV: STD21737 LCS: STD21763 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG249716

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	11M45314	SYSTEM BLANK	NA	1	1		09/10/07 08:34
2	11M45315	SYSTEM BLANK	NA	1	1		09/10/07 09:04
3	11M45316	SYSTEM BLANK	NA	1	1		09/10/07 09:34
4	11M45317	SYSTEM BLANK	NA	1	1		09/10/07 10:04
5	11M45318	SYSTEM BLANK	NA	1	1		09/10/07 11:37
6	11M45319	SYSTEM BLANK	NA	1	1		09/10/07 12:27
7	11M45320	SYSTEM BLANK	NA	1	1		09/10/07 12:58
8	11M45321	WG249715-01 50ng BFB STD 8260	NA	1	1	STD21685	09/10/07 13:24
9	11M45322	WG249715-01 50ng BFB STD 8260	NA	1	1	STD21685	09/10/07 13:37
10	11M45323	WG249715-02 50ug/L STD 8260	NA	1	1	STD21737	09/10/07 14:00
11	11M45324	WG249716-01 VBLK0910 BLANK 8260	NA	1	1		09/10/07 14:30
12	11M45325	WG249716-01 VBLK0910 BLANK 8260	NA	1	1		09/10/07 15:01
13	11M45326	WG249716-02 20ug/L LCS STD 8260	NA	1	1	STD21763	09/10/07 15:31
14	11M45327	WG249716-03 20ug/L LCS DUP STD 8260	NA	1	1	STD21763	09/10/07 16:01
15	11M45328	L0709114-04 A 826-SPE	<2	1	1		09/10/07 16:31
16	11M45329	L0709102-04 A 826-LOW	<2	1	1		09/10/07 17:01
17	11M45330	L0709098-02 A 826-SPE	<2	1	1		09/10/07 17:31
18	11M45331	L0709153-01 A 826-SPE	<2	1	1		09/10/07 18:01
19	11M45332	L0709153-14 A 826-SPE	<2	1	1		09/10/07 18:31
20	11M45333	L0709119-01 A 826-SPE	<2	1	1		09/10/07 19:01
21	11M45334	L0709119-02 A 826-SPE	<2	1	1		09/10/07 19:31
22	11M45335	L0709119-03 A 826-SPE	<2	1	1		09/10/07 20:02
23	11M45336	L0709119-04 A 826-SPE	<2	1	1		09/10/07 20:32
24	11M45337	L0709119-05 A 826-SPE	<2	1	1		09/10/07 21:02
25	11M45338	L0709102-01 A 826-LOW	<2	1	1		09/10/07 21:32
26	11M45339	L0709052-04 A 826-SPE	<2	1	1		09/10/07 22:02
27	11M45340	L0709052-05 A 826-SPE	<2	1	1		09/10/07 22:32
28	11M45341	L0709052-06 A 826-SPE	<2	1	1		09/10/07 23:02
29	11M45342	L0709114-01 25X A 826-SPE	<2	1	25		09/10/07 23:32
30	11M45343	L0709114-02 2X A,B 826-SPE	<2	1	2		09/11/07 00:02
31	11M45344	L0709114-03 A 826-SPE	<2	1	1		09/11/07 00:32
32	11M45345	L0709103-01 A 826-LOW	<2	1	1		09/11/07 01:02
33	11M45346	SYSTEM BLANK	NA	1	1		09/11/07 01:32
34	11M45347	SYSTEM BLANK	NA	1	1		09/11/07 02:02

Approved: September 13, 2007

Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS11 Dataset: 091007
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 20823

Internal Standard: STD21253 Surrogate Standard: STD21736
CCV: STD21737 LCS: STD21763 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG249716

Comments

Seq.	Rerun	Dil.	Reason	Analytes
8				
File ID: 11M45321				
	RR, BFB failed.			

Approved: September 13, 2007

KEMRON Environmental Services
Data Checklist

Date: 05-SEP-2007
Analyst: MES
Analyst: NA
Method: 8260
Instrument: HPMS11
Curve Workgroup: NA
Runlog ID: 18123
Analytical Workgroups: WG249372

BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	NA
Project/Client Specific Requirements	NA
Special Standards	NA
Blanks	NA
TCL's	NA
Surrogates	NA
LCS (Laboratory Control Sample)	NA
Recoveries	NA
Surrogates	NA
MS/MSD/Duplicates	NA
Samples	NA
TCL Hits	NA
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	X
Manual Integrations	NA
Case Narrative	NA
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
07-SEP-2007

Secondary Reviewer:
10-SEP-2007

Generated: SEP-10-2007 08:52:42

KEMRON Environmental Services
Data Checklist

Date: 06-SEP-2007
Analyst: MES
Analyst: FJB
Method: 8260/624
Instrument: HPMS11
Curve Workgroup: NA
Runlog ID: 18141
Analytical Workgroups: WG249484, WG249372

BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
10-SEP-2007

Secondary Reviewer:
12-SEP-2007

Generated: SEP-18-2007 11:17:43

KEMRON Environmental Services
Data Checklist

Date: 08-SEP-2007
Analyst: MES
Analyst: FJB
Method: 8260
Instrument: HPMS11
Curve Workgroup: NA
Runlog ID: 18178
Analytical Workgroups: WG249650

BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	NA
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
12-SEP-2007

Secondary Reviewer:
14-SEP-2007

Generated: SEP-14-2007 08:35:29

KEMRON Environmental Services
Data Checklist

Date: 10-SEP-2007
Analyst: MES
Analyst: FJB
Method: 8260
Instrument: HPMS11
Curve Workgroup: NA
Runlog ID: 18208
Analytical Workgroups: WG249716

BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	NA
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
13-SEP-2007

Secondary Reviewer:
13-SEP-2007

Generated: SEP-13-2007 15:48:25

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8260B **AAB#:** WG249650
Login Number: L0709052

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW24	09/05/07	09/06/07	09/09/07	14	3.68	09/09/07	14	3.68	
12WW22	09/04/07	09/06/07	09/09/07	14	4.57	09/09/07	14	4.57	
12WW23	09/04/07	09/06/07	09/09/07	14	4.49	09/09/07	14	4.49	
TRIP BLANK	09/05/07	09/06/07	09/08/07	14	3.90	09/08/07	14	3.90	

*** EXT = SEE PROJECT QAPP REQUIREMENTS**
***ANAL = SEE PROJECT QAPP REQUIREMENTS**

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 875381
Report generated 09/14/2007 11:20

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8260B **AAB#:** WG249716
Login Number: L0709052

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW20	09/05/07	09/06/07	09/10/07	14	5.49	09/10/07	14	5.49	
12WW21	09/05/07	09/06/07	09/10/07	14	5.45	09/10/07	14	5.45	
12WW20-FD	09/05/07	09/06/07	09/10/07	14	5.51	09/10/07	14	5.51	

*** EXT = SEE PROJECT QAPP REQUIREMENTS**
***ANAL = SEE PROJECT QAPP REQUIREMENTS**

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 875381
Report generated 09/14/2007 11:20

00114393

SURROGATE STANDARDS

Login Number: L0709052
Instrument Id: HPMS11
Workgroup (AAB#): WG249650

Method: 8260
CAL ID: HPMS11-05-SEP-07
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L0709052-01	1.00	01	94.2	92.5	97.4	95.1
L0709052-02	1.00	01	98.0	92.2	97.5	95.0
L0709052-03	2.00	DL01	94.5	90.9	97.8	95.6
L0709052-07	1.00	01	90.7	89.9	94.2	93.6
WG249650-01	1.00	01	87.1	86.9	94.6	95.0
WG249650-02	1.00	01	89.2	89.0	95.6	95.7
WG249650-03	1.00	01	87.6	89.2	97.3	95.6

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - p-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

KEMRON FORMS - Modified 09/27/2006
Version 1.5 PDF File ID: 875389
Report generated 09/14/2007 11:21

00114394

SURROGATE STANDARDS

Login Number:L0709052
Instrument Id:HPMS11
Workgroup (AAB#):WG249716

Method:8260
CAL ID: HPMS11-05-SEP-07
Matrix:Water

Sample Number	Dilution	Tag	1	2	3	4
L0709052-04	1.00	01	97.8	92.3	99.4	94.5
L0709052-05	1.00	01	97.0	92.2	96.9	92.4
L0709052-06	1.00	01	101	93.3	97.0	93.0
WG249716-01	1.00	01	93.7	89.8	96.2	95.5
WG249716-02	1.00	01	91.9	92.3	96.1	94.7
WG249716-03	1.00	01	89.4	87.2	95.0	94.6

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - p-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected

KEMRON FORMS - Modified 09/27/2006
Version 1.5 PDF File ID: 875389
Report generated 09/14/2007 11:21

METHOD BLANK SUMMARY

Login Number: L0709052
Work Group: WG249650
Blank File ID: 11M45292
Blank Sample ID: WG249650-01
Prep Date: 09/08/07 16:42
Instrument ID: HPMS11
Analyzed Date: 09/08/07 16:42
Method: 8260B
Analyst: MES

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG249650-02	11M45293	09/08/07 17:12	01
LCS2	WG249650-03	11M45294	09/08/07 17:42	01
TRIP BLANK	L0709052-07	11M45302	09/08/07 21:43	01
12WW22	L0709052-01	11M45309	09/09/07 01:14	01
12WW23	L0709052-02	11M45310	09/09/07 01:44	01
12WW24	L0709052-03	11M45311	09/09/07 02:15	DL01

KEMRON FORMS - Modified 01/31/2007
Version 1.5 PDF File ID: 875382
Report generated 09/14/2007 11:20

METHOD BLANK SUMMARY

Login Number: L0709052
Work Group: WG249716
Blank File ID: 11M45325
Blank Sample ID: WG249716-01
Prep Date: 09/10/07 15:01
Instrument ID: HPMS11
Analyzed Date: 09/10/07 15:01
Method: 8260B
Analyst: MES

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG249716-02	11M45326	09/10/07 15:31	01
LCS2	WG249716-03	11M45327	09/10/07 16:01	01
12WW20	L0709052-04	11M45339	09/10/07 22:02	01
12WW20-FD	L0709052-05	11M45340	09/10/07 22:32	01
12WW21	L0709052-06	11M45341	09/10/07 23:02	01

METHOD BLANK REPORT

Login Number:L0709052 Prep Date:09/08/07 16:42 Sample ID:WG249650-01
Instrument ID:HPMS11 Run Date:09/08/07 16:42 Prep Method:5030B
File ID:11M45292 Analyst:MES Method:8260B
Workgroup (AAB#):WG249650 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS11-05-SEP-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.250	5.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.351	1	J
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
2-Butanone	2.50	10.0	2.50	1	U
2-Hexanone	2.50	10.0	2.50	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Cyclohexane	0.250	5.00	0.250	1	U
Dibromochloromethane	0.250	1.00	0.250	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethyl benzene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methyl acetate	0.250	10.0	0.250	1	U
Methyl tert-butyl ether	0.500	5.00	0.500	1	U
Methylcyclohexane	0.250	10.0	0.250	1	U
Methylene chloride	0.250	2.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 875383
Report generated 09/14/2007 11:21

METHOD BLANK REPORT

Login Number: L0709052 Prep Date: 09/08/07 16:42 Sample ID: WG249650-01
Instrument ID: HPMS11 Run Date: 09/08/07 16:42 Prep Method: 5030B
File ID: 11M45292 Analyst: MES Method: 8260B
Workgroup (AAB#): WG249650 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HPMS11-05-SEP-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Toluene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes, Total	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	87.1	80 - 120	PASS
Dibromofluoromethane	86.9	86 - 118	PASS
p-Bromofluorobenzene	94.6	86 - 115	PASS
Toluene-d8	95.0	88 - 110	PASS

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 875383
Report generated 09/14/2007 11:21

METHOD BLANK REPORT

00114399

Login Number:L0709052 Prep Date:09/10/07 15:01 Sample ID:WG249716-01
Instrument ID:HPMS11 Run Date:09/10/07 15:01 Prep Method:5030B
File ID:11M45325 Analyst:MES Method:8260B
Workgroup (AAB#):WG249716 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS11-05-SEP-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.250	5.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.258	1	J
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
2-Butanone	2.50	10.0	2.50	1	U
2-Hexanone	2.50	10.0	2.50	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Cyclohexane	0.250	5.00	0.250	1	U
Dibromochloromethane	0.250	1.00	0.250	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethyl benzene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
Methyl acetate	0.250	10.0	0.250	1	U
Methyl tert-butyl ether	0.500	5.00	0.500	1	U
Methylcyclohexane	0.250	10.0	0.250	1	U
Methylene chloride	0.250	2.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 875383
Report generated 09/14/2007 11:21

METHOD BLANK REPORT

Login Number: L0709052 Prep Date: 09/10/07 15:01 Sample ID: WG249716-01
Instrument ID: HPMS11 Run Date: 09/10/07 15:01 Prep Method: 5030B
File ID: 11M45325 Analyst: MES Method: 8260B
Workgroup (AAB#): WG249716 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HPMS11-05-SEP-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Toluene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes, Total	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	93.7	80 - 120	PASS
Dibromofluoromethane	89.8	86 - 118	PASS
p-Bromofluorobenzene	96.2	86 - 115	PASS
Toluene-d8	95.5	88 - 110	PASS

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 875383
Report generated 09/14/2007 11:21

KEMRON Environmental Services

00114401

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0709052 Analyst:MES Prep Method:5030B
Instrument ID:HPMS11 Matrix:Water Method:8260B
Workgroup (AAB#):WG249650 Units:ug/L
QC Key:STD Lot #:STD21763

Sample ID:WG249650-02 LCS File ID:11M45293 Run Date:09/08/2007 17:12
Sample ID:WG249650-03 LCS2 File ID:11M45294 Run Date:09/08/2007 17:42

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,1,1-Trichloroethane	20.0	22.0	110	20.0	21.4	107	2.88	80 - 134	20	
1,1,2,2-Tetrachloroethane	20.0	22.2	111	20.0	22.1	110	0.457	79 - 125	20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	20.0	20.5	103	20.0	19.1	95.4	7.27	80 - 130	20	
1,1,2-Trichloroethane	20.0	21.9	109	20.0	21.5	108	1.67	80 - 125	20	
1,1-Dichloroethane	20.0	20.8	104	20.0	20.6	103	0.764	80 - 125	20	
1,1-Dichloroethene	20.0	22.7	113	20.0	21.4	107	5.90	80 - 132	20	
1,2,4-Trichlorobenzene	20.0	20.9	105	20.0	20.9	104	0.400	65 - 135	20	
1,2-Dibromo-3-chloropropane	20.0	21.9	110	20.0	22.9	114	4.30	50 - 130	20	
1,2-Dibromoethane	20.0	22.8	114	20.0	21.9	109	3.94	80 - 125	20	
1,2-Dichlorobenzene	20.0	22.2	111	20.0	22.2	111	0.0352	80 - 125	20	
1,2-Dichloroethane	20.0	21.1	105	20.0	20.8	104	1.25	80 - 129	20	
cis-1,2-Dichloroethene	20.0	21.3	107	20.0	21.0	105	1.42	70 - 125	20	
trans-1,2-Dichloroethene	20.0	20.6	103	20.0	20.0	100	2.82	80 - 127	20	
1,2-Dichloropropane	20.0	20.6	103	20.0	21.0	105	2.02	80 - 120	20	
1,3-Dichlorobenzene	20.0	21.2	106	20.0	21.2	106	0.210	80 - 120	20	
1,4-Dichlorobenzene	20.0	21.7	109	20.0	21.8	109	0.0923	80 - 120	20	
2-Butanone	20.0	20.1	100	20.0	19.1	95.6	4.96	30 - 150	20	
2-Hexanone	20.0	20.8	104	20.0	21.1	106	1.52	55 - 130	20	
4-Methyl-2-pentanone	20.0	18.5	92.7	20.0	19.1	95.4	2.84	64 - 140	20	
Acetone	20.0	17.6	87.9	20.0	19.4	96.9	9.79	40 - 142	20	
Benzene	20.0	20.4	102	20.0	20.1	100	1.34	80 - 121	20	
Bromodichloromethane	20.0	22.0	110	20.0	21.9	110	0.312	80 - 131	20	
Bromoform	20.0	19.9	99.6	20.0	20.2	101	1.48	70 - 130	20	
Bromomethane	20.0	22.3	111	20.0	22.4	112	0.418	30 - 145	20	
Carbon disulfide	20.0	17.6	87.9	20.0	17.1	85.6	2.64	58 - 138	20	
Carbon tetrachloride	20.0	20.0	99.8	20.0	19.1	95.7	4.19	65 - 140	20	
Chlorobenzene	20.0	21.5	108	20.0	21.4	107	0.454	80 - 120	20	
Chloroethane	20.0	21.3	106	20.0	21.1	105	0.928	60 - 135	20	
Chloroform	20.0	21.3	106	20.0	20.7	103	2.76	80 - 125	20	
Chloromethane	20.0	20.4	102	20.0	19.7	98.4	3.46	40 - 125	20	
cis-1,3-Dichloropropene	20.0	20.9	104	20.0	20.7	103	1.03	70 - 130	20	
Cyclohexane	20.0	20.1	101	20.0	18.7	93.4	7.46	80 - 130	20	
Dibromochloromethane	20.0	20.9	104	20.0	20.6	103	1.21	60 - 135	20	
Dichlorodifluoromethane	20.0	25.7	129	20.0	23.4	117	9.49	50 - 133	20	
Ethyl benzene	20.0	22.3	112	20.0	22.1	110	1.15	80 - 122	20	
Isopropylbenzene	20.0	20.6	103	20.0	20.0	99.9	2.90	80 - 122	20	
Methyl acetate	20.0	22.1	110	20.0	21.9	109	0.956	80 - 130	20	
Methyl tert-butyl ether	20.0	21.0	105	20.0	21.1	105	0.416	65 - 125	20	
Methylcyclohexane	20.0	20.6	103	20.0	18.9	94.3	8.96	80 - 130	20	
Methylene chloride	20.0	19.2	96.1	20.0	19.9	99.6	3.58	80 - 123	20	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 872734
Report generated 09/14/2007 11:21

KEMRON Environmental Services

00114402

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0709052 Analyst:MES Prep Method:5030B
Instrument ID:HPMS11 Matrix:Water Method:8260B
Workgroup (AAB#):WG249650 Units:ug/L
QC Key:STD Lot #:STD21763

Sample ID:WG249650-02 LCS File ID:11M45293 Run Date:09/08/2007 17:12
Sample ID:WG249650-03 LCS2 File ID:11M45294 Run Date:09/08/2007 17:42

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Styrene	20.0	22.5	112	20.0	22.3	111	0.703	80 - 123	20	
Tetrachloroethene	20.0	20.3	101	20.0	20.1	100	1.05	80 - 124	20	
Toluene	20.0	22.2	111	20.0	21.7	108	2.18	80 - 124	20	
trans-1,3-Dichloropropene	20.0	21.6	108	20.0	20.9	105	3.15	80 - 130	20	
Trichloroethene	20.0	21.1	106	20.0	21.0	105	0.571	80 - 122	20	
Trichlorofluoromethane	20.0	17.4	86.9	20.0	16.1	80.5	7.71	62 - 151	20	
Vinyl chloride	20.0	22.5	113	20.0	20.8	104	7.83	65 - 140	20	
Xylenes, Total	60.0	66.1	110	60.0	65.1	108	1.55	80 - 121	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	89.0	89.2	86 - 118	PASS
1,2-Dichloroethane-d4	89.2	87.6	80 - 120	PASS
Toluene-d8	95.7	95.6	88 - 110	PASS
p-Bromofluorobenzene	95.6	97.3	86 - 115	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 872734
Report generated 09/14/2007 11:21

KEMRON Environmental Services

00114403

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0709052 Analyst:MES Prep Method:5030B
Instrument ID:HPMS11 Matrix:Water Method:8260B
Workgroup (AAB#):WG249716 Units:ug/L
QC Key:STD Lot #:STD21763

Sample ID:WG249716-02 LCS File ID:11M45326 Run Date:09/10/2007 15:31
Sample ID:WG249716-03 LCS2 File ID:11M45327 Run Date:09/10/2007 16:01

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,1,1-Trichloroethane	20.0	20.8	104	20.0	20.6	103	1.01	80 - 134	20	
1,1,2,2-Tetrachloroethane	20.0	21.1	105	20.0	21.8	109	3.39	79 - 125	20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	20.0	19.6	98.1	20.0	18.8	93.8	4.53	80 - 130	20	
1,1,2-Trichloroethane	20.0	20.4	102	20.0	20.7	104	1.74	80 - 125	20	
1,1-Dichloroethane	20.0	19.5	97.5	20.0	20.0	100	2.60	80 - 125	20	
1,1-Dichloroethene	20.0	20.1	101	20.0	20.3	102	0.861	80 - 132	20	
1,2,4-Trichlorobenzene	20.0	19.6	98.0	20.0	20.0	99.8	1.84	65 - 135	20	
1,2-Dibromo-3-chloropropane	20.0	20.5	103	20.0	22.2	111	7.66	50 - 130	20	
1,2-Dibromoethane	20.0	22.3	111	20.0	21.6	108	3.15	80 - 125	20	
1,2-Dichlorobenzene	20.0	20.7	103	20.0	21.2	106	2.71	80 - 125	20	
1,2-Dichloroethane	20.0	21.0	105	20.0	20.5	103	2.34	80 - 129	20	
cis-1,2-Dichloroethene	20.0	19.8	98.9	20.0	19.7	98.7	0.201	70 - 125	20	
trans-1,2-Dichloroethene	20.0	18.8	93.8	20.0	18.6	92.8	1.06	80 - 127	20	
1,2-Dichloropropane	20.0	19.9	99.7	20.0	20.1	100	0.776	80 - 120	20	
1,3-Dichlorobenzene	20.0	19.9	99.5	20.0	20.5	103	3.15	80 - 120	20	
1,4-Dichlorobenzene	20.0	20.1	101	20.0	20.6	103	2.48	80 - 120	20	
2-Butanone	20.0	20.1	101	20.0	20.4	102	1.46	30 - 150	20	
2-Hexanone	20.0	22.2	111	20.0	21.7	108	2.47	55 - 130	20	
4-Methyl-2-pentanone	20.0	19.3	96.7	20.0	19.2	95.8	0.874	64 - 140	20	
Acetone	20.0	20.8	104	20.0	20.2	101	2.92	40 - 142	20	
Benzene	20.0	18.8	94.0	20.0	19.0	95.1	1.13	80 - 121	20	
Bromodichloromethane	20.0	21.5	108	20.0	21.3	106	1.17	80 - 131	20	
Bromoform	20.0	19.3	96.3	20.0	19.2	96.1	0.153	70 - 130	20	
Bromomethane	20.0	18.5	92.5	20.0	18.7	93.3	0.823	30 - 145	20	
Carbon disulfide	20.0	17.0	85.2	20.0	16.6	83.1	2.48	58 - 138	20	
Carbon tetrachloride	20.0	18.8	94.1	20.0	18.6	92.8	1.41	65 - 140	20	
Chlorobenzene	20.0	19.9	99.6	20.0	20.3	101	1.85	80 - 120	20	
Chloroethane	20.0	18.4	92.1	20.0	18.8	93.8	1.76	60 - 135	20	
Chloroform	20.0	20.6	103	20.0	20.3	102	1.23	80 - 125	20	
Chloromethane	20.0	16.9	84.7	20.0	16.6	83.2	1.84	40 - 125	20	
cis-1,3-Dichloropropene	20.0	20.1	100	20.0	19.9	99.5	0.824	70 - 130	20	
Cyclohexane	20.0	19.4	97.0	20.0	18.5	92.3	4.99	80 - 130	20	
Dibromochloromethane	20.0	19.9	99.4	20.0	19.6	98.1	1.27	60 - 135	20	
Dichlorodifluoromethane	20.0	15.9	79.6	20.0	14.8	74.2	7.06	50 - 133	20	
Ethyl benzene	20.0	20.5	103	20.0	21.2	106	3.36	80 - 122	20	
Isopropylbenzene	20.0	18.7	93.3	20.0	19.2	95.9	2.77	80 - 122	20	
Methyl acetate	20.0	24.1	120	20.0	23.4	117	2.94	80 - 130	20	
Methyl tert-butyl ether	20.0	21.7	108	20.0	21.2	106	2.22	65 - 125	20	
Methylcyclohexane	20.0	19.4	97.2	20.0	18.5	92.4	5.12	80 - 130	20	
Methylene chloride	20.0	18.1	90.4	20.0	18.5	92.6	2.46	80 - 123	20	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 872734
Report generated 09/14/2007 11:21

KEMRON Environmental Services

00114404

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0709052 Analyst:MES Prep Method:5030B
Instrument ID:HPMS11 Matrix:Water Method:8260B
Workgroup (AAB#):WG249716 Units:ug/L
QC Key:STD Lot #:STD21763

Sample ID:WG249716-02 LCS File ID:11M45326 Run Date:09/10/2007 15:31
Sample ID:WG249716-03 LCS2 File ID:11M45327 Run Date:09/10/2007 16:01

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Styrene	20.0	20.9	104	20.0	21.4	107	2.58	80 - 123	20	
Tetrachloroethene	20.0	18.9	94.3	20.0	19.2	96.1	1.90	80 - 124	20	
Toluene	20.0	20.1	101	20.0	20.7	104	3.00	80 - 124	20	
trans-1,3-Dichloropropene	20.0	20.6	103	20.0	20.8	104	0.576	80 - 130	20	
Trichloroethene	20.0	19.6	98.0	20.0	19.7	98.5	0.491	80 - 122	20	
Trichlorofluoromethane	20.0	15.3	76.4	20.0	14.9	74.7	2.34	62 - 151	20	
Vinyl chloride	20.0	18.7	93.7	20.0	18.0	89.8	4.30	65 - 140	20	
Xylenes, Total	60.0	60.4	101	60.0	62.1	104	2.78	80 - 121	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	92.3	87.2	86 - 118	PASS
1,2-Dichloroethane-d4	91.9	89.4	80 - 120	PASS
Toluene-d8	94.7	94.6	88 - 110	PASS
p-Bromofluorobenzene	96.1	95.0	86 - 115	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 872734
Report generated 09/14/2007 11:21

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L0709052
Instrument: HPMS11
Analyst: MES
Workgroup: WG249372

Tune ID: WG249372-01
Run Date: 09/05/2007
Run Time: 13:28
File ID: 11M45206
Cal ID: HPMS11-05-SEP-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	25.8	10280	PASS
75.0	95.0	30.0	60.0	52.3	20827	PASS
95.0	95.0	100	100	100	39826	PASS
96.0	95.0	5.00	9.00	7.00	2788	PASS
173	174	0	2.00	0.975	244	PASS
174	95.0	50.0	100	62.9	25032	PASS
175	174	5.00	9.00	7.96	1992	PASS
176	174	95.0	101	96.0	24027	PASS
177	176	5.00	9.00	6.28	1510	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG249372-02	STD	01	09/05/2007 13:51	
WG249372-04	STD	01	09/05/2007 14:51	
WG249372-05	STD	01	09/05/2007 15:21	
WG249372-06	STD	01	09/05/2007 15:51	
WG249372-07	STD	01	09/05/2007 16:21	
WG249372-09	STD	01	09/05/2007 17:21	
WG249372-10	STD	01	09/05/2007 17:51	
WG249372-03	STD	01	09/05/2007 19:51	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 875386
Report generated 09/14/2007 11:21

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L0709052 Tune ID: WG249483-01
Instrument: HPMS11 Run Date: 09/06/2007
Analyst: MES Run Time: 12:22
Workgroup: WG249483 File ID: 11M45224
Cal ID: HPMS11-05-SEP-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	22.8	14998	PASS
75.0	95.0	30.0	60.0	49.8	32797	PASS
95.0	95.0	100	100	100	65850	PASS
96.0	95.0	5.00	9.00	6.49	4275	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	63.2	41589	PASS
175	174	5.00	9.00	6.96	2895	PASS
176	174	95.0	101	98.0	40773	PASS
177	176	5.00	9.00	6.66	2715	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG249372-11	SSCV	01	09/06/2007 14:21	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 875386
Report generated 09/14/2007 11:21

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L0709052 Tune ID: WG249649-01
Instrument: HPMS11 Run Date: 09/08/2007
Analyst: MES Run Time: 14:48
Workgroup: WG249649 File ID: 11M45288
Cal ID: HPMS11-05-SEP-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	24.1	10717	PASS
75.0	95.0	30.0	60.0	52.1	23160	PASS
95.0	95.0	100	100	100	44445	PASS
96.0	95.0	5.00	9.00	7.24	3216	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	61.2	27184	PASS
175	174	5.00	9.00	8.05	2189	PASS
176	174	95.0	101	95.4	25931	PASS
177	176	5.00	9.00	7.13	1850	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG249649-02	CCV	01	09/08/2007 15:41	
WG249650-01	BLANK	01	09/08/2007 16:42	
WG249650-02	LCS	01	09/08/2007 17:12	
WG249650-03	LCS2	01	09/08/2007 17:42	
L0709052-07	TRIP BLANK	01	09/08/2007 21:43	
L0709052-01	12WW22	01	09/09/2007 01:14	
L0709052-02	12WW23	01	09/09/2007 01:44	
L0709052-03	12WW24	DL01	09/09/2007 02:15	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 875386
Report generated 09/14/2007 11:21

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L0709052 Tune ID: WG249715-01
Instrument: HPMS11 Run Date: 09/10/2007
Analyst: MES Run Time: 13:37
Workgroup: WG249715 File ID: 11M45322
Cal ID: HPMS11-05-SEP-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	24.7	11952	PASS
75.0	95.0	30.0	60.0	52.1	25194	PASS
95.0	95.0	100	100	100	48402	PASS
96.0	95.0	5.00	9.00	6.81	3296	PASS
173	174	0	2.00	0.427	132	PASS
174	95.0	50.0	100	63.9	30949	PASS
175	174	5.00	9.00	7.08	2191	PASS
176	174	95.0	101	95.5	29545	PASS
177	176	5.00	9.00	6.19	1828	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG249715-02	CCV	01	09/10/2007 14:00	
WG249716-01	BLANK	01	09/10/2007 15:01	
WG249716-02	LCS	01	09/10/2007 15:31	
WG249716-03	LCS2	01	09/10/2007 16:01	
L0709052-04	12WW20	01	09/10/2007 22:02	
L0709052-05	12WW20-FD	01	09/10/2007 22:32	
L0709052-06	12WW21	01	09/10/2007 23:02	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 875386
Report generated 09/14/2007 11:21

INITIAL CALIBRATION SUMMARY

Login Number: L0709052 **Instrument ID:** HPMS11

Analytical Method: 8260B **Initial Calibration Date:** 05-SEP-07 19:51

ICAL Workgroup: WG249372 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.4664	14.4		
1,2-Dichloropropane	CCC	0.2667	10.7		
Chloroform	CCC	0.4928	10.6		
Ethylbenzene	CCC	0.4939	9.13		
Toluene	CCC	1.398	7.15		
Vinyl Chloride	CCC	0.3322	10.2		
1,1,2,2-Tetrachloroethane	SPCC	0.3777	13.3		
1,1-Dichloroethane	SPCC	0.5603	10.9		
Bromoform	SPCC	0.1387	17.7	1.00	
Chlorobenzene	SPCC	0.9424	5.71		
Chloromethane	SPCC	0.3492	12.1		
1,1,1-Trichloroethane		0.4619	12.9		
1,1,2-Trichloro-1,2,2-Trifluoroethane		0.2305	6.63		
1,1,2-Trichloroethane		0.2011	16.4		1.00
1,2,4-Trichlorobenzene		0.8650	18.5		1.00
1,2-Dibromo-3-Chloropropane		0.07976	8.29		
1,2-Dibromoethane		0.2038	8.69		
1,2-Dichlorobenzene		1.101	7.71		
1,2-Dichloroethane		0.4138	6.33		
1,3-Dichlorobenzene		1.281	8.13		
1,4-Dichlorobenzene		1.263	8.76		
2-Butanone		0.05220	4.90		
2-Hexanone		0.1144	4.72		
4-Methyl-2-Pentanone		0.05798	3.48		
Acetone		0.03950	14.0		
Benzene		0.9597	5.97		
Bromodichloromethane		0.3437	11.0		
Bromomethane		0.1391	25.1	1.00	
Carbon Disulfide		0.7293	7.16		
Carbon Tetrachloride		0.3679	17.2		1.00
Chloroethane		0.2193	2.85		
Cyclohexane		0.5020	6.83		
Dibromochloromethane		0.2701	16.8		1.00
Dichlorodifluoromethane		0.3740	8.96		
Isopropylbenzene		1.541	8.65		
Methyl Tert Butyl Ether		0.5737	6.64		
Methyl acetate		0.1056	4.41		
Methylcyclohexane		0.3673	11.0		
Methylene Chloride		0.3006	22.0		1.00
Styrene		0.9666	12.6		
Tetrachloroethene		0.2410	19.2		1.00
Trichloroethene		0.2403	7.66		
Trichlorofluoromethane		0.4767	20.7		1.00
cis-1,2-Dichloroethene		0.2532	9.84		
cis-1,3-Dichloropropene		0.3844	12.3		

KEMRON FORMS - Modified 01/18/2007
Version 1.5 PDF File ID: 875384
Report generated 09/14/2007 11:21

INITIAL CALIBRATION SUMMARY

Login Number: L0709052 **Instrument ID:** HPMS11

Analytical Method: 8260B **Initial Calibration Date:** 05-SEP-07 19:51

ICAL Workgroup: WG249372 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
m-,p-Xylene		0.6258	8.17		
o-Xylene		0.6009	8.09		
trans-1,2-Dichloroethene		0.2478	8.82		
trans-1,3-Dichloropropene		0.4819	11.0		

R = Correlation coefficient; 0.995 minimum

R^2 = Coefficient of determination; 0.99 minimum

INITIAL CALIBRATION DATA

Login Number: L0709052 **Instrument ID:** HPMS11

Analytical Method: 8260B **Initial Calibration Date:** 05-SEP-07 19:51

Column ID: F

Analyte	WG249372-02			WG249372-03			WG249372-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	3960.00000	0.3469	1.00	11074.0000	0.3977
1,2-Dichloropropane	NA	NA	NA	0.400	2398.00000	0.2101	1.00	7169.00000	0.2575
Chloroform	0.300	3476.00000	0.3829	0.400	5291.00000	0.4635	1.00	13248.0000	0.4758
Ethylbenzene	NA	NA	NA	0.400	3679.00000	0.4555	1.00	8255.00000	0.4190
Toluene	NA	NA	NA	0.400	10116.0000	1.252	1.00	25012.0000	1.270
Vinyl Chloride	NA	NA	NA	0.400	3520.00000	0.3084	1.00	10119.0000	0.3634
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	1336.00000	0.3029	1.00	3245.00000	0.3061
1,1-Dichloroethane	NA	NA	NA	0.400	5049.00000	0.4423	1.00	14348.0000	0.5153
Bromoform	NA	NA	NA	NA	NA	NA	1.00	1992.00000	0.1011
Chlorobenzene	NA	NA	NA	0.400	7339.00000	0.9086	1.00	16578.0000	0.8416
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	12092.0000	0.4343
1,1,1-Trichloroethane	NA	NA	NA	0.400	3894.00000	0.3412	1.00	12152.0000	0.4365
1,1,2-Trichloro-1,2,2-Trifluoroethane	NA	NA	NA	NA	NA	NA	1.00	5650.00000	0.2029
1,1,2-Trichloroethane	NA	NA	NA	0.400	1073.00000	0.1328	1.00	3629.00000	0.1842
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	5399.00000	1.224	1.00	8203.00000	0.7739
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	1415.00000	0.1752	1.00	3637.00000	0.1846
1,2-Dichlorobenzene	0.300	3316.00000	1.002	0.400	4793.00000	1.087	1.00	10067.0000	0.9497
1,2-Dichloroethane	NA	NA	NA	0.400	4273.00000	0.3744	1.00	10880.0000	0.3908
1,3-Dichlorobenzene	NA	NA	NA	0.400	5412.00000	1.227	1.00	11329.0000	1.069
1,4-Dichlorobenzene	0.300	3531.00000	1.066	0.400	5405.00000	1.225	1.00	12235.0000	1.154
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	10126.0000	0.8871	1.00	24729.0000	0.8882
Bromodichloromethane	NA	NA	NA	0.400	3271.00000	0.2866	1.00	8477.00000	0.3045
Bromomethane	NA	NA	NA	0.400	860.000000	0.07530	1.00	3484.00000	0.1251
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	18105.0000	0.6503
Carbon Tetrachloride	NA	NA	NA	0.400	2756.00000	0.2415	1.00	9208.00000	0.3307
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	6003.00000	0.2156
Cyclohexane	NA	NA	NA	NA	NA	NA	1.00	12158.0000	0.4367
Dibromochloromethane	NA	NA	NA	0.400	1547.00000	0.1915	1.00	4552.00000	0.2311
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	9037.00000	0.3246
Isopropylbenzene	NA	NA	NA	0.400	10603.0000	1.313	1.00	28057.0000	1.424
Methyl Tert Butyl Ether	NA	NA	NA	NA	NA	NA	1.00	13990.0000	0.5025
Methyl acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	NA	NA	NA	NA	NA	NA	1.00	8035.00000	0.2886
Methylene Chloride	NA	NA	NA	NA	NA	NA	1.00	11656.0000	0.4186
Styrene	NA	NA	NA	0.400	6454.00000	0.7991	1.00	16270.0000	0.8259
Tetrachloroethene	NA	NA	NA	0.400	1123.00000	0.1390	1.00	4680.00000	0.2376
Trichloroethene	NA	NA	NA	0.400	2612.00000	0.2288	1.00	5985.00000	0.2150

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 875384
Report generated 09/14/2007 11:21

INITIAL CALIBRATION DATA

Login Number: L0709052 **Instrument ID:** HPMS11

Analytical Method: 8260B **Initial Calibration Date:** 05-SEP-07 19:51

Column ID: F

Analyte	WG249372-05			WG249372-06			WG249372-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	27029.0000	0.4937	5.00	67554.0000	0.4842	20.0	292323.000	0.5179
1,2-Dichloropropane	2.00	14160.0000	0.2586	5.00	38307.0000	0.2746	20.0	164909.000	0.2922
Chloroform	2.00	28598.0000	0.5223	5.00	73927.0000	0.5299	20.0	307249.000	0.5443
Ethylbenzene	2.00	19023.0000	0.4901	5.00	48639.0000	0.4913	20.0	217560.000	0.5427
Toluene	2.00	54066.0000	1.393	5.00	142339.000	1.438	20.0	601191.000	1.500
Vinyl Chloride	2.00	20018.0000	0.3656	5.00	49837.0000	0.3572	20.0	190023.000	0.3366
1,1,2,2-Tetrachloroethane	2.00	8759.00000	0.4167	5.00	20983.0000	0.3955	20.0	88225.0000	0.4049
1,1-Dichloroethane	2.00	31856.0000	0.5818	5.00	82705.0000	0.5928	20.0	348573.000	0.6175
Bromoform	2.00	4714.00000	0.1214	5.00	13079.0000	0.1321	20.0	63937.0000	0.1595
Chlorobenzene	2.00	36621.0000	0.9434	5.00	94019.0000	0.9497	20.0	402543.000	1.004
Chloromethane	2.00	17941.0000	0.3277	5.00	47394.0000	0.3397	20.0	186733.000	0.3308
1,1,1-Trichloroethane	2.00	25629.0000	0.4681	5.00	69527.0000	0.4983	20.0	290189.000	0.5141
1,1,2-Trichloro-1,2,2-Trifluoroethane	2.00	13371.0000	0.2442	5.00	32959.0000	0.2362	20.0	132152.000	0.2341
1,1,2-Trichloroethane	2.00	8560.00000	0.2205	5.00	21146.0000	0.2136	20.0	90690.0000	0.2262
1,2,4-Trichlorobenzene	2.00	16272.0000	0.7742	5.00	43464.0000	0.8193	20.0	183068.000	0.8402
1,2-Dibromo-3-Chloropropane	2.00	1444.00000	0.06870	5.00	4206.00000	0.07930	20.0	18038.0000	0.08280
1,2-Dibromoethane	2.00	8251.00000	0.2126	5.00	20247.0000	0.2045	20.0	90335.0000	0.2253
1,2-Dichlorobenzene	2.00	23437.0000	1.115	5.00	61291.0000	1.155	20.0	258724.000	1.187
1,2-Dichloroethane	2.00	23176.0000	0.4233	5.00	60611.0000	0.4344	20.0	254413.000	0.4507
1,3-Dichlorobenzene	2.00	27844.0000	1.325	5.00	69482.0000	1.310	20.0	294112.000	1.350
1,4-Dichlorobenzene	2.00	26363.0000	1.254	5.00	70228.0000	1.324	20.0	296926.000	1.363
2-Butanone	NA	NA	NA	5.00	6807.00000	0.04880	20.0	30841.0000	0.05460
2-Hexanone	NA	NA	NA	5.00	10601.0000	0.1071	20.0	48135.0000	0.1201
4-Methyl-2-Pentanone	NA	NA	NA	5.00	7764.00000	0.05560	20.0	32486.0000	0.05760
Acetone	NA	NA	NA	5.00	6633.00000	0.04750	20.0	21851.0000	0.03870
Benzene	2.00	51016.0000	0.9317	5.00	135997.000	0.9747	20.0	567353.000	1.005
Bromodichloromethane	2.00	17932.0000	0.3275	5.00	49823.0000	0.3571	20.0	214776.000	0.3805
Bromomethane	2.00	7104.00000	0.1297	5.00	19110.0000	0.1370	20.0	87160.0000	0.1544
Carbon Disulfide	2.00	37178.0000	0.6790	5.00	104715.000	0.7505	20.0	421712.000	0.7471
Carbon Tetrachloride	2.00	20461.0000	0.3737	5.00	57248.0000	0.4103	20.0	234797.000	0.4160
Chloroethane	2.00	11636.0000	0.2125	5.00	31816.0000	0.2280	20.0	126272.000	0.2237
Cyclohexane	2.00	27681.0000	0.5056	5.00	73096.0000	0.5239	20.0	291756.000	0.5169
Dibromochloromethane	2.00	10139.0000	0.2612	5.00	28055.0000	0.2834	20.0	126050.000	0.3144
Dichlorodifluoromethane	2.00	23029.0000	0.4206	5.00	54507.0000	0.3907	20.0	213955.000	0.3790
Isopropylbenzene	2.00	58612.0000	1.510	5.00	157397.000	1.590	20.0	672458.000	1.677
Methyl Tert Butyl Ether	2.00	31831.0000	0.5814	5.00	84161.0000	0.6032	20.0	342574.000	0.6069
Methyl acetate	2.00	5377.00000	0.09820	5.00	14699.0000	0.1054	20.0	62616.0000	0.1109
Methylcyclohexane	2.00	20085.0000	0.3668	5.00	54011.0000	0.3871	20.0	211544.000	0.3748
Methylene Chloride	2.00	18340.0000	0.3350	5.00	39865.0000	0.2857	20.0	149670.000	0.2652
Styrene	2.00	36618.0000	0.9434	5.00	94177.0000	0.9513	20.0	429786.000	1.072
Tetrachloroethene	2.00	10275.0000	0.2647	5.00	25339.0000	0.2559	20.0	108556.000	0.2708
Trichloroethene	2.00	12221.0000	0.2232	5.00	33581.0000	0.2407	20.0	145743.000	0.2582

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 875384
Report generated 09/14/2007 11:21

INITIAL CALIBRATION DATA

Login Number: L0709052 **Instrument ID:** HPMS11

Analytical Method: 8260B **Initial Calibration Date:** 05-SEP-07 19:51

Column ID: F

Analyte	WG249372-09			WG249372-10		
	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	100	1545440.00	0.5210	200	2943837.00	0.5034
1,2-Dichloropropane	100	858651.000	0.2895	200	1661428.00	0.2841
Chloroform	100	1543538.00	0.5204	200	2944043.00	0.5035
Ethylbenzene	100	1171252.00	0.5396	200	2300719.00	0.5193
Toluene	100	3233400.00	1.490	200	6393987.00	1.443
Vinyl Chloride	100	950410.000	0.3204	200	1599594.00	0.2735
1,1,2,2-Tetrachloroethane	100	467404.000	0.4108	200	986392.000	0.4068
1,1-Dichloroethane	100	1764023.00	0.5947	200	3377326.00	0.5776
Bromoform	100	346208.000	0.1595	200	703578.000	0.1588
Chlorobenzene	100	2132836.00	0.9825	200	4283322.00	0.9668
Chloromethane	100	951974.000	0.3209	200	1999913.00	0.3420
1,1,1-Trichloroethane	100	1494975.00	0.5040	200	2752738.00	0.4708
1,1,2-Trichloro-1,2,2-Trifluoroethane	100	717375.000	0.2419	200	1308966.00	0.2238
1,1,2-Trichloroethane	100	471724.000	0.2173	200	944122.000	0.2131
1,2,4-Trichlorobenzene	100	943544.000	0.8293	200	1925663.00	0.7941
1,2-Dibromo-3-Chloropropane	100	97730.0000	0.08590	200	199189.000	0.08210
1,2-Dibromoethane	100	466282.000	0.2148	200	929539.000	0.2098
1,2-Dichlorobenzene	100	1336839.00	1.175	200	2759566.00	1.138
1,2-Dichloroethane	100	1245105.00	0.4198	200	2357989.00	0.4032
1,3-Dichlorobenzene	100	1562638.00	1.373	200	3186161.00	1.314
1,4-Dichlorobenzene	100	1577812.00	1.387	200	3231633.00	1.333
2-Butanone	100	153752.000	0.05180	200	313313.000	0.05360
2-Hexanone	100	251023.000	0.1156	200	508927.000	0.1149
4-Methyl-2-Pentanone	100	172574.000	0.05820	200	354003.000	0.06050
Acetone	100	106386.000	0.03590	200	209883.000	0.03590
Benzene	100	3026490.00	1.020	200	5908606.00	1.010
Bromodichloromethane	100	1122842.00	0.3786	200	2170919.00	0.3713
Bromomethane	100	523744.000	0.1766	200	1028799.00	0.1759
Carbon Disulfide	100	2310229.00	0.7789	200	4501922.00	0.7699
Carbon Tetrachloride	100	1228209.00	0.4141	200	2276289.00	0.3893
Chloroethane	100	658831.000	0.2221	200	1249393.00	0.2137
Cyclohexane	100	1576704.00	0.5316	200	2908886.00	0.4975
Dibromochloromethane	100	669997.000	0.3086	200	1330594.00	0.3003
Dichlorodifluoromethane	100	1128810.00	0.3806	200	2037873.00	0.3485
Isopropylbenzene	100	3595086.00	1.656	200	7157735.00	1.616
Methyl Tert Butyl Ether	100	1727931.00	0.5826	200	3305960.00	0.5654
Methyl acetate	100	318391.000	0.1073	200	621523.000	0.1063
Methylcyclohexane	100	1190626.00	0.4014	200	2250131.00	0.3848
Methylene Chloride	100	745013.000	0.2512	200	1449619.00	0.2479
Styrene	100	2358398.00	1.086	200	4821043.00	1.088
Tetrachloroethene	100	581464.000	0.2679	200	1112050.00	0.2510
Trichloroethene	100	769587.000	0.2595	200	1503056.00	0.2570

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 875384
Report generated 09/14/2007 11:21

INITIAL CALIBRATION DATA

00114414

Login Number: L0709052 **Instrument ID:** HPMS11

Analytical Method: 8260B **Initial Calibration Date:** 05-SEP-07 19:51

Column ID: F

Analyte	WG249372-02			WG249372-03			WG249372-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Trichlorofluoromethane	NA	NA	NA	0.400	2964.00000	0.2597	1.00	13071.0000	0.4695
cis-1,2-Dichloroethene	NA	NA	NA	0.400	2492.00000	0.2183	1.00	6277.00000	0.2255
cis-1,3-Dichloropropene	NA	NA	NA	0.400	3612.00000	0.3164	1.00	9103.00000	0.3270
m-,p-Xylene	NA	NA	NA	0.800	8957.00000	0.5545	2.00	22461.0000	0.5701
o-Xylene	NA	NA	NA	0.400	4371.00000	0.5412	1.00	10453.0000	0.5306
trans-1,2-Dichloroethene	NA	NA	NA	0.400	2516.00000	0.2204	1.00	6052.00000	0.2174
trans-1,3-Dichloropropene	NA	NA	NA	0.400	3290.00000	0.4073	1.00	8184.00000	0.4154

INITIAL CALIBRATION DATA

Login Number: L0709052
Instrument ID: HPMS11
Analytical Method: 8260B
Initial Calibration Date: 05-SEP-07 19:51
Column ID: F

Analyte	WG249372-05			WG249372-06			WG249372-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Trichlorofluoromethane	2.00	28461.0000	0.5198	5.00	75766.0000	0.5430	20.0	290262.000	0.5142
cis-1,2-Dichloroethene	2.00	13126.0000	0.2397	5.00	36802.0000	0.2638	20.0	156748.000	0.2777
cis-1,3-Dichloropropene	2.00	20289.0000	0.3706	5.00	55655.0000	0.3989	20.0	240794.000	0.4266
m-,p-Xylene	4.00	46773.0000	0.6025	10.0	126119.000	0.6370	40.0	545740.000	0.6806
o-Xylene	2.00	22811.0000	0.5877	5.00	61477.0000	0.6210	20.0	258545.000	0.6449
trans-1,2-Dichloroethene	2.00	13164.0000	0.2404	5.00	36066.0000	0.2585	20.0	150666.000	0.2669
trans-1,3-Dichloropropene	2.00	18371.0000	0.4733	5.00	50563.0000	0.5107	20.0	219451.000	0.5474

INITIAL CALIBRATION DATA

Login Number: L0709052
Instrument ID: HPMS11
Analytical Method: 8260B
Initial Calibration Date: 05-SEP-07 19:51
Column ID: F

Analyte	WG249372-09			WG249372-10		
	CONC	RESP	RF	CONC	RESP	RF
Trichlorofluoromethane	100	1568812.00	0.5289	200	2933362.00	0.5016
cis-1,2-Dichloroethene	100	812071.000	0.2738	200	1600646.00	0.2737
cis-1,3-Dichloropropene	100	1262107.00	0.4255	200	2488434.00	0.4256
m-,p-Xylene	200	2950242.00	0.6795	400	5817785.00	0.6566
o-Xylene	100	1399395.00	0.6447	200	2818576.00	0.6362
trans-1,2-Dichloroethene	100	796518.000	0.2685	200	1536854.00	0.2628
trans-1,3-Dichloropropene	100	1124247.00	0.5179	200	2222316.00	0.5016

Login Number:L0709052 Run Date:09/06/2007 Sample ID:WG249372-11
Instrument ID:HPMS11 Run Time:14:21 Method:8260B
File ID:11M45228 Analyst:MES QC Key:STD
ICal Workgroup:WG249372 Cal ID:HPMS11 - 05-SEP-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloroethene	CCC	20.0	23.4	ug/L	0.553	17.0	30	
1,2-Dichloropropane	CCC	20.0	22.3	ug/L	0.302	11.6	30	
Chloroform	CCC	20.0	22.4	ug/L	0.558	12.2	30	
Ethylbenzene	CCC	20.0	22.1	ug/L	0.552	10.5	30	
Toluene	CCC	20.0	21.8	ug/L	1.54	9.00	30	
Vinyl Chloride	CCC	20.0	22.6	ug/L	0.375	13.2	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	21.6	ug/L	0.414	8.20	30	
1,1-Dichloroethane	SPCC	20.0	22.2	ug/L	0.629	11.1	30	
Bromoform	SPCC	20.0	19.2	ug/L	0.152	4.10	30	
Chlorobenzene	SPCC	20.0	21.2	ug/L	1.01	6.20	30	
Chloromethane	SPCC	20.0	21.0	ug/L	0.366	4.90	30	
1,1,1-Trichloroethane		20.0	23.4	ug/L	0.547	16.9	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane		20.0	21.8	ug/L	0.252	9.00	30	
1,1,2-Trichloroethane		20.0	21.3	ug/L	0.238	6.30	30	
1,2,4-Trichlorobenzene		20.0	20.4	ug/L	0.861	1.90	30	
1,2-Dibromo-3-Chloropropane		20.0	20.9	ug/L	0.0847	4.50	30	
1,2-Dibromoethane		20.0	21.7	ug/L	0.224	8.60	30	
1,2-Dichlorobenzene		20.0	21.4	ug/L	1.18	6.80	30	
1,2-Dichloroethane		20.0	21.6	ug/L	0.451	8.10	30	
cis-1,2-Dichloroethene		20.0	22.3	ug/L	0.286	11.7	30	
trans-1,2-Dichloroethene		20.0	21.9	ug/L	0.274	9.50	30	
1,3-Dichlorobenzene		20.0	20.7	ug/L	1.33	3.30	30	
1,4-Dichlorobenzene		20.0	21.3	ug/L	1.36	6.40	30	
2-Butanone		20.0	20.3	ug/L	0.0534	1.70	30	
2-Hexanone		20.0	19.7	ug/L	0.115	1.50	30	
4-Methyl-2-Pentanone		20.0	20.2	ug/L	0.0591	0.900	30	
Acetone		20.0	21.2	ug/L	0.0418	6.10	30	
Benzene		20.0	21.6	ug/L	1.04	8.10	30	
Bromodichloromethane		20.0	23.0	ug/L	0.400	14.8	30	
Bromomethane		20.0	22.6	ug/L	0.193	13.2	30	
Carbon Disulfide		20.0	19.2	ug/L	0.705	3.90	30	
Carbon Tetrachloride		20.0	21.2	ug/L	0.446	5.90	30	
Chloroethane		20.0	22.8	ug/L	0.251	14.1	30	
cis-1,3-Dichloropropene		20.0	22.4	ug/L	0.437	12.0	30	
Cyclohexane		20.0	21.0	ug/L	0.530	5.20	30	
Dibromochloromethane		20.0	20.1	ug/L	0.316	0.500	30	
Dichlorodifluoromethane		20.0	26.4	ug/L	0.494	31.9	30	*
Isopropylbenzene		20.0	20.2	ug/L	1.58	1.20	30	
Methyl acetate		20.0	21.8	ug/L	0.116	9.20	30	
Methyl Tert Butyl Ether		20.0	21.8	ug/L	0.631	9.00	30	
Methylcyclohexane		20.0	22.0	ug/L	0.405	10.0	30	
Methylene Chloride		20.0	20.8	ug/L	0.272	4.20	30	

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 875385
Report generated 09/14/2007 11:21

KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00114418

Login Number:L0709052 Run Date:09/06/2007 Sample ID:WG249372-11
Instrument ID:HPMS11 Run Time:14:21 Method:8260B
File ID:11M45228 Analyst:MES QC Key:STD
ICal Workgroup:WG249372 Cal ID:HPMS11 - 05-SEP-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Styrene		20.0	22.3	ug/L	1.09	11.3	30	
Tetrachloroethene		20.0	20.7	ug/L	0.286	3.70	30	
trans-1,3-Dichloropropene		20.0	21.1	ug/L	0.515	5.30	30	
Trichloroethene		20.0	22.7	ug/L	0.276	13.7	30	
Trichlorofluoromethane		20.0	18.2	ug/L	0.485	9.20	30	
Xylenes		60.0	64.9	ug/L	0.670	8.10	30	
1,2-Dichloroethene		40.0	44.2	ug/L	0.280	10.6	30	
o-Xylene		20.0	21.6	ug/L	0.656	8.00	30	
m-,p-Xylene		40.0	43.3	ug/L	0.685	8.20	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 875385
Report generated 09/14/2007 11:21

CONTINUING CALIBRATION VERIFICATION (CCV)

00114419

Login Number:L0709052 Run Date:09/08/2007 Sample ID:WG249649-02
Instrument ID:HPMS11 Run Time:15:41 Method:8260B
File ID:11M45290 Analyst:MES QC Key:STD
Workgroup (AAB#):WG249650 Cal ID:HPMS11 - 05-SEP-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloroethene	CCC	50.0	54.1	ug/L	0.511	8.16	20	
1,2-Dichloropropane	CCC	50.0	51.4	ug/L	0.277	2.73	20	
Chloroform	CCC	50.0	52.0	ug/L	0.518	4.06	20	
Ethylbenzene	CCC	50.0	55.7	ug/L	0.557	11.4	20	
Toluene	CCC	50.0	54.7	ug/L	1.54	9.41	20	
Vinyl Chloride	CCC	50.0	47.4	ug/L	0.314	5.23	20	
1,1,2,2-Tetrachloroethane	SPCC	50.0	54.5	ug/L	0.417	9.07	40	
1,1-Dichloroethane	SPCC	50.0	51.5	ug/L	0.582	2.95	40	
Bromoform	SPCC	50.0	53.2	ug/L	0.169	6.43	40	
Chlorobenzene	SPCC	50.0	54.7	ug/L	1.04	9.40	40	
Chloromethane	SPCC	50.0	45.7	ug/L	0.319	8.54	40	
1,1,1-Trichloroethane		50.0	53.7	ug/L	0.503	7.46	40	
1,1,2-Trichloro-1,2,2-Trifluoroethane		50.0	48.7	ug/L	0.225	2.55	40	
1,1,2-Trichloroethane		50.0	51.4	ug/L	0.228	2.80	40	
1,2,4-Trichlorobenzene		50.0	52.0	ug/L	0.873	4.08	40	
1,2-Dibromo-3-Chloropropane		50.0	54.5	ug/L	0.0883	9.03	40	
1,2-Dibromoethane		50.0	55.7	ug/L	0.229	11.4	40	
1,2-Dichlorobenzene		50.0	54.6	ug/L	1.21	9.29	40	
1,2-Dichloroethane		50.0	51.5	ug/L	0.430	2.95	40	
cis-1,2-Dichloroethene		50.0	51.4	ug/L	0.263	2.80	40	
trans-1,2-Dichloroethene		50.0	50.7	ug/L	0.254	1.36	40	
1,3-Dichlorobenzene		50.0	54.4	ug/L	1.40	8.79	40	
1,4-Dichlorobenzene		50.0	55.4	ug/L	1.41	10.8	40	
2-Butanone		50.0	44.6	ug/L	0.0469	10.8	40	
2-Hexanone		50.0	52.6	ug/L	0.122	5.26	40	
4-Methyl-2-Pentanone		50.0	47.8	ug/L	0.0560	4.44	40	
Acetone		50.0	40.6	ug/L	0.0320	18.7	40	
Benzene		50.0	50.0	ug/L	0.966	0.0316	40	
Bromodichloromethane		50.0	53.7	ug/L	0.375	7.44	40	
Bromomethane		50.0	49.0	ug/L	0.170	2.07	40	
Carbon Disulfide		50.0	47.6	ug/L	0.698	4.85	40	
Carbon Tetrachloride		50.0	49.0	ug/L	0.411	2.09	40	
Chloroethane		50.0	48.6	ug/L	0.214	2.73	40	
cis-1,3-Dichloropropene		50.0	52.9	ug/L	0.413	5.85	40	
Cyclohexane		50.0	49.0	ug/L	0.493	2.07	40	
Dibromochloromethane		50.0	53.0	ug/L	0.333	5.91	40	
Dichlorodifluoromethane		50.0	47.8	ug/L	0.358	4.48	40	
Isopropylbenzene		50.0	56.0	ug/L	1.74	12.0	40	
Methyl acetate		50.0	50.9	ug/L	0.109	1.85	40	
Methyl Tert Butyl Ether		50.0	49.3	ug/L	0.570	1.43	40	
Methylcyclohexane		50.0	49.1	ug/L	0.362	1.71	40	
Methylene Chloride		50.0	47.5	ug/L	0.242	5.08	40	

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 875387
Report generated 09/14/2007 11:21

CONTINUING CALIBRATION VERIFICATION (CCV)

00114420

Login Number:L0709052 Run Date:09/08/2007 Sample ID:WG249649-02
Instrument ID:HPMS11 Run Time:15:41 Method:8260B
File ID:11M45290 Analyst:MES QC Key:STD
Workgroup (AAB#):WG249650 Cal ID:HPMS11 - 05-SEP-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Styrene		50.0	57.1	ug/L	1.12	14.2	40	
Tetrachloroethene		50.0	51.2	ug/L	0.280	2.40	40	
trans-1,3-Dichloropropene		50.0	57.5	ug/L	0.563	15.0	40	
Trichloroethene		50.0	51.3	ug/L	0.249	2.53	40	
Trichlorofluoromethane		50.0	48.3	ug/L	0.516	3.35	40	
Xylenes		150	167	ug/L	0.689	11.4	40	
m-,p-Xylene		100	112	ug/L	0.708	11.9	40	
1,2-Dichloroethene		100	102	ug/L	0.258	2.08	40	
o-Xylene		50.0	55.2	ug/L	0.670	10.4	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 875387
Report generated 09/14/2007 11:21

CONTINUING CALIBRATION VERIFICATION (CCV)

00114421

Login Number:L0709052 Run Date:09/10/2007 Sample ID:WG249715-02
Instrument ID:HPMS11 Run Time:14:00 Method:8260B
File ID:11M45323 Analyst:MES QC Key:STD
Workgroup (AAB#):WG249716 Cal ID:HPMS11 - 05-SEP-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloroethene	CCC	50.0	52.3	ug/L	0.494	4.52	20	
1,2-Dichloropropane	CCC	50.0	48.1	ug/L	0.260	3.73	20	
Chloroform	CCC	50.0	49.7	ug/L	0.494	0.636	20	
Ethylbenzene	CCC	50.0	51.0	ug/L	0.510	2.06	20	
Toluene	CCC	50.0	50.4	ug/L	1.42	0.755	20	
Vinyl Chloride	CCC	50.0	49.6	ug/L	0.328	0.896	20	
1,1,2,2-Tetrachloroethane	SPCC	50.0	49.9	ug/L	0.381	0.206	40	
1,1-Dichloroethane	SPCC	50.0	49.4	ug/L	0.559	1.20	40	
Bromoform	SPCC	50.0	48.3	ug/L	0.154	3.34	40	
Chlorobenzene	SPCC	50.0	50.4	ug/L	0.957	0.802	40	
Chloromethane	SPCC	50.0	47.4	ug/L	0.330	5.25	40	
1,1,1-Trichloroethane		50.0	51.2	ug/L	0.479	2.35	40	
1,1,2-Trichloro-1,2,2-Trifluoroethane		50.0	49.7	ug/L	0.230	0.684	40	
1,1,2-Trichloroethane		50.0	47.7	ug/L	0.212	4.62	40	
1,2,4-Trichlorobenzene		50.0	47.7	ug/L	0.801	4.63	40	
1,2-Dibromo-3-Chloropropane		50.0	53.6	ug/L	0.0869	7.28	40	
1,2-Dibromoethane		50.0	50.4	ug/L	0.208	0.894	40	
1,2-Dichlorobenzene		50.0	50.7	ug/L	1.12	1.40	40	
1,2-Dichloroethane		50.0	49.4	ug/L	0.413	1.16	40	
cis-1,2-Dichloroethene		50.0	47.9	ug/L	0.246	4.15	40	
trans-1,2-Dichloroethene		50.0	47.7	ug/L	0.239	4.65	40	
1,3-Dichlorobenzene		50.0	50.5	ug/L	1.30	1.09	40	
1,4-Dichlorobenzene		50.0	51.6	ug/L	1.31	3.16	40	
2-Butanone		50.0	46.2	ug/L	0.0485	7.63	40	
2-Hexanone		50.0	53.3	ug/L	0.124	6.62	40	
4-Methyl-2-Pentanone		50.0	45.3	ug/L	0.0531	9.34	40	
Acetone		50.0	40.2	ug/L	0.0317	19.5	40	
Benzene		50.0	46.3	ug/L	0.895	7.34	40	
Bromodichloromethane		50.0	50.8	ug/L	0.354	1.58	40	
Bromomethane		50.0	47.2	ug/L	0.164	5.62	40	
Carbon Disulfide		50.0	45.8	ug/L	0.672	8.33	40	
Carbon Tetrachloride		50.0	47.5	ug/L	0.399	5.09	40	
Chloroethane		50.0	48.9	ug/L	0.215	2.19	40	
cis-1,3-Dichloropropene		50.0	49.1	ug/L	0.383	1.89	40	
Cyclohexane		50.0	49.0	ug/L	0.493	2.08	40	
Dibromochloromethane		50.0	49.4	ug/L	0.311	1.23	40	
Dichlorodifluoromethane		50.0	50.5	ug/L	0.378	0.977	40	
Isopropylbenzene		50.0	51.3	ug/L	1.60	2.51	40	
Methyl acetate		50.0	53.6	ug/L	0.114	7.15	40	
Methyl Tert Butyl Ether		50.0	47.5	ug/L	0.549	5.10	40	
Methylcyclohexane		50.0	47.7	ug/L	0.352	4.51	40	
Methylene Chloride		50.0	44.8	ug/L	0.229	10.4	40	

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 875387
Report generated 09/14/2007 11:21

CONTINUING CALIBRATION VERIFICATION (CCV)

00114422

Login Number: L0709052 Run Date: 09/10/2007 Sample ID: WG249715-02
Instrument ID: HPMS11 Run Time: 14:00 Method: 8260B
File ID: 11M45323 Analyst: MES QC Key: STD
Workgroup (AAB#): WG249716 Cal ID: HPMS11 - 05-SEP-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Styrene		50.0	52.0	ug/L	1.02	4.03	40	
Tetrachloroethene		50.0	47.1	ug/L	0.259	5.76	40	
trans-1,3-Dichloropropene		50.0	53.9	ug/L	0.528	7.80	40	
Trichloroethene		50.0	47.2	ug/L	0.229	5.69	40	
Trichlorofluoromethane		50.0	50.6	ug/L	0.540	1.27	40	
Xylenes		150	153	ug/L	0.632	2.31	40	
1,2-Dichloroethene		100	95.6	ug/L	0.242	4.40	40	
o-Xylene		50.0	50.3	ug/L	0.610	0.531	40	
m-,p-Xylene		100	103	ug/L	0.653	3.20	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 875387
Report generated 09/14/2007 11:21

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number:L0709052
Instrument ID:HPMS11
Workgroup (AAB#):WG249650

CCV Number:WG249649-02
CAL ID: HPMS11-05-SEP-07
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG249649-02	NA	NA	300714	560296	839339
Upper Limit	NA	NA	601428	1120592	1678678
Lower Limit	NA	NA	150357	280148	419670
L0709052-01	1.00	01	263531	498062	751297
L0709052-02	1.00	01	264646	488300	738758
L0709052-03	2.00	DL01	264273	498309	759650
L0709052-07	1.00	01	275028	516989	774939
WG249650-01	1.00	01	292331	539199	818347
WG249650-02	1.00	01	291080	543635	816899
WG249650-03	1.00	01	291919	552335	828849

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

KEMRON FORMS - Modified 02/20/2007
Version 1.3 PDF File ID: 875388
Report generated 09/14/2007 11:21

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number:L0709052
Instrument ID:HPMS11
Workgroup (AAB#):WG249716

CCV Number:WG249715-02
CAL ID: HPMS11-05-SEP-07
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG249715-02	NA	NA	322653	615342	930117
Upper Limit	NA	NA	645306	1230684	1860234
Lower Limit	NA	NA	161327	307671	465059
L0709052-04	1.00	01	278915	531103	781470
L0709052-05	1.00	01	281129	529503	792514
L0709052-06	1.00	01	282076	527350	772959
WG249716-01	1.00	01	304424	565846	853661
WG249716-02	1.00	01	308154	575594	853256
WG249716-03	1.00	01	314167	591234	886646

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

KEMRON FORMS - Modified 02/20/2007
Version 1.3 PDF File ID: 875388
Report generated 09/14/2007 11:21

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number:L0709052
Instrument ID:HPMS11
Workgroup (AAB#):WG249650

CCV Number:WG249649-02
CAL ID: HPMS11-05-SEP-07
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG249649-02	NA	NA	16.82	14.01	10.38
Upper Limit	NA	NA	17.32	14.51	10.88
Lower Limit	NA	NA	16.32	13.51	9.88
L0709052-01	1.00	01	16.823	14.01	10.381
L0709052-02	1.00	01	16.823	14.01	10.381
L0709052-03	2.00	DL01	16.823	14.01	10.381
L0709052-07	1.00	01	16.823	14.01	10.381
WG249650-01	1.00	01	16.823	14.01	10.381
WG249650-02	1.00	01	16.823	14.01	10.381
WG249650-03	1.00	01	16.823	14.01	10.381

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

KEMRON FORMS - Modified 02/20/2007
Version 1.3 PDF File ID: 875390
Report generated 09/14/2007 11:21

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number:L0709052 CCV Number:WG249715-02
Instrument ID:HPMS11 CAL ID: HPMS11-05-SEP-07
Workgroup (AAB#):WG249716 Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG249715-02	NA	NA	16.82	14.01	10.38
Upper Limit	NA	NA	17.32	14.51	10.88
Lower Limit	NA	NA	16.32	13.51	9.88
L0709052-04	1.00	01	16.823	14.01	10.381
L0709052-05	1.00	01	16.823	14.01	10.381
L0709052-06	1.00	01	16.823	14.01	10.381
WG249716-01	1.00	01	16.823	14.01	10.381
WG249716-02	1.00	01	16.823	14.01	10.381
WG249716-03	1.00	01	16.823	14.01	10.381

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

KEMRON FORMS - Modified 02/20/2007
Version 1.3 PDF File ID: 875390
Report generated 09/14/2007 11:21

2.1.2 RSK 175

2.1.2.1 Summary Data

KEMRON ENVIRONMENTAL SERVICES
GC VOLATILE ORGANICS - RSK-175

KEMRON Login No.: L0709052

METHOD

Analysis: RSK-175

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: The RPD for carbon dioxide exceeded the upper control limit in the LCS/LCSD analyzed 09/13/07. All other acceptance criteria were met.

Matrix Spikes/Sample Duplicates: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Kemron recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Samples: Samples 04, 05, and 06 required dilution analyses.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst: SMH

Approved: 18-SEP-07

LABORATORY REPORT

L0709052

09/24/07 08:27

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP

P.O. Number: 200328

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW20	L0709052-04	RSK175	10	06-SEP-07
12WW20	L0709052-04	RSK175	50	06-SEP-07
12WW20-FD	L0709052-05	RSK175	10	06-SEP-07
12WW20-FD	L0709052-05	RSK175	50	06-SEP-07
12WW21	L0709052-06	RSK175	10	06-SEP-07
12WW21	L0709052-06	RSK175	50	06-SEP-07

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114431

Sample Number: **L0709052-04**
Client ID: **12WW20**
Matrix: **Water**
Workgroup Number: **WG249953**
Collect Date: **09/05/2007 10:15**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **10**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **09/12/2007 19:33**
Cal Date: **01/08/2007 16:52**
Run Date: **09/12/2007 19:33**
File ID: **16G8339**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Methane	74-82-8	8.7		5.0	2.5
Ethene	74-85-1		U	5.0	2.5
Ethane	74-84-0		U	5.0	2.5
Carbon Dioxide		110000	I	5000	2500

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114432

Sample Number: **L0709052-04**
Client ID: **12WW20**
Matrix: **Water**
Workgroup Number: **WG250034**
Collect Date: **09/05/2007 10:15**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **50**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **09/13/2007 15:10**
Cal Date: **01/08/2007 16:52**
Run Date: **09/13/2007 15:10**
File ID: **16G8362**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Methane	74-82-8	52		25	13
Ethene	74-85-1		U	25	13
Ethane	74-84-0		U	25	13
Carbon Dioxide		94000		25000	13000

U Not detected at or above adjusted sample detection limit

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114433

Sample Number: **L0709052-05**
Client ID: **12WW20-FD**
Matrix: **Water**
Workgroup Number: **WG249953**
Collect Date: **09/05/2007 10:15**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **10**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **09/12/2007 19:47**
Cal Date: **01/08/2007 16:52**
Run Date: **09/12/2007 19:47**
File ID: **16G8340**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Methane	74-82-8	9.5		5.0	2.5
Ethene	74-85-1		U	5.0	2.5
Ethane	74-84-0		U	5.0	2.5
Carbon Dioxide		110000	I	5000	2500

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114434

Sample Number: **L0709052-05**
Client ID: **12WW20-FD**
Matrix: **Water**
Workgroup Number: **WG250034**
Collect Date: **09/05/2007 10:15**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **50**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **09/13/2007 15:24**
Cal Date: **01/08/2007 16:52**
Run Date: **09/13/2007 15:24**
File ID: **16G8363**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Methane	74-82-8	46		25	13
Ethene	74-85-1		U	25	13
Ethane	74-84-0		U	25	13
Carbon Dioxide		110000		25000	13000

U Not detected at or above adjusted sample detection limit

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114435

Sample Number: **L0709052-06**
Client ID: **12WW21**
Matrix: **Water**
Workgroup Number: **WG249953**
Collect Date: **09/05/2007 12:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **10**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **09/12/2007 20:01**
Cal Date: **01/08/2007 16:52**
Run Date: **09/12/2007 20:01**
File ID: **16G8341**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Methane	74-82-8	7.3		5.0	2.5
Ethene	74-85-1		U	5.0	2.5
Ethane	74-84-0		U	5.0	2.5
Carbon Dioxide		97000	I	5000	2500

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114436

Sample Number: **L0709052-06**
Client ID: **12WW21**
Matrix: **Water**
Workgroup Number: **WG250034**
Collect Date: **09/05/2007 12:20**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **50**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **09/13/2007 15:38**
Cal Date: **01/08/2007 16:52**
Run Date: **09/13/2007 15:38**
File ID: **16G8364**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Methane	74-82-8	36		25	13
Ethene	74-85-1		U	25	13
Ethane	74-84-0		U	25	13
Carbon Dioxide		69000		25000	13000

U Not detected at or above adjusted sample detection limit

2.1.2.2 QC Summary Data

KEMRON ENVIRONMENTAL SERVICES
GC VOLATILE ORGANICS - RSK-175

KEMRON Login No.: L0709052

METHOD

Analysis: RSK-175

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: The RPD for carbon dioxide exceeded the upper control limit in the LCS/LCSD analyzed 09/13/07. All other acceptance criteria were met.

Matrix Spikes/Sample Duplicates: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Kemron recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Samples: Samples 04, 05, and 06 required dilution analyses.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst: SMH

Approved: 18-SEP-07

KEMRON Environmental Services
Data Checklist

Date: 08-JAN-2007
Analyst: JLS
Analyst: NA
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 14130
Analytical Workgroups: WG231016

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	FJB
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
11-JAN-2007

Secondary Reviewer:
12-JAN-2007

Generated: JAN-16-2007 10:45:32

KEMRON Environmental Services
Data Checklist

Date: 12-SEP-2007
Analyst: FJB
Analyst: NA
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 18255
Analytical Workgroups: WG249953

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	SMH
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
17-SEP-2007

Secondary Reviewer:
18-SEP-2007

Generated: SEP-18-2007 09:17:59

KEMRON Environmental Services
Data Checklist

Date: 13-SEP-2007
Analyst: FJB
Analyst: NA
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 18259
Analytical Workgroups: WG250034

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	SMH
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
17-SEP-2007

Secondary Reviewer:
18-SEP-2007

Generated: SEP-18-2007 11:24:57

RSK-175 - Example Calculation for Methane

ICAL Plot - Linear Regression (y = ax)

1.0 Calculate the Regression Constant (a)

Where:
ICAL_x = the ICAL concentration = x
ICAL_r = the ICAL response (area) = y

ICAL_x	ICAL_r	[ICAL_r}^2	[ICAL-x][ICAL-r]
0.1	21538	463885444	2153.8
1	77578	6018346084	77578
10	665937	4.43472E+11	6659370
20	1376031	1.89346E+12	27520620
50	3424931	1.17302E+13	171246550
100	6927945	4.79964E+13	692794500
200	14533928	2.11235E+14	2906785600
300	21776507	4.74216E+14	6532952100
		7.47521E+14	10338038472
		a:	**72307.84758**

2.0 Calculate the concentration in extract, x:

Where:
y = response of methane from quant report = **37493410**
x = y/a = 37493410/72307 = 518.52

3.0 Calculate the concentration in sample, Cs:

Cs = x (MW/Tf) (HS/S) (DF)

Where:

x = Concentration in extract	**518.5247695**	umol/mol
MW = molecular weight of analyte	**16.04**	ug/umol
TF = temperature factor = (22.45)(313/273)	**25.68**	L/mol
HS = headspace volume	**0.015**	L
S = sample volume remaining after headspace removal	**0.00547**	L
DF = dilution factor	**10**	
Cs = calculated sample concentration	**8881.427692**	ug/L

RSK-175 - Example Calculation for Carbon Dioxide

ICAL Plot - Quadratic Regression (y = Ax^2 + Bx +C)

Ax^2 + Bx + (C - y) = 0

Step 1 - Calculate the concentration in extract, x:

Data from quadratic regression plot:		
Value of A from plot:	**0.916**	
Value of B from plot:	**1540**	
Value of C from plot:	**0**	
Response for carbon dioxide from quantitation report (y):	**8763828**	
Value of C - y	**-8763828**	
Solving for x using the quadratic formula:		
Root 1 - Computed x1:	**2364.716284**	umol/mol
Root 2 - Computed x2:	**-4045.938991**	

Step 2 - Calculate the concentration in sample, Cs:

Cs = x (MW/Tf) (HS/S) (DF)

Where:

x = Concentration in extract :	**2364.716284**	umol/mol
MW = molecular weight of analyte:	**44**	ug/umol
TF = temperature factor = (22.45)(313/273):	**25.68**	L/mol
HS = initial headspace volume (extraction log):	**0.015**	L
S = final volume (extraction log):	**0.00547**	L
DF = dilution factor:	**1**	
Cs = calculated sample concentration:	**11110.6798**	ug/L

Note: Temperature = 40 C = 313 K

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 010807
Analyst1: JLS Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 7
Method: 5021 SOP: RSK01 Rev: 7

Maintenance Log ID: 17380

Internal Standard: NA Surrogate Standard: NA
CCV: STD15381 LCS: STD15381 MS/MSD: STD15381

Column 1 ID: RTQPLOT Column 2 ID: RTQPLOT
Workgroups: WG231016

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G5766	WG231016-01 50umol/mol STD	NA	1	1	STD15381	01/08/07 10:36
2	16G5767	WG231016-01 50umol/mol STD	NA	1	1	STD15381	01/08/07 11:00
3	16G5768	WG231016-01 50umol/mol STD	NA	1	1	STD15381	01/08/07 12:39
4	16G5769	WG231016-01 50umol/mol STD	NA	1	1	STD15381	01/08/07 14:19
5	16G5770	WG231016-01 .1umol/mol STD	NA	1	1	STD15381	01/08/07 15:14
6	16G5771	WG231016-02 1umol/mol STD	NA	1	1	STD15381	01/08/07 15:28
7	16G5772	WG231016-03 10umol/mol STD	NA	1	1	STD15381	01/08/07 15:42
8	16G5773	WG231016-04 20umol/mol STD	NA	1	1	STD15381	01/08/07 15:56
9	16G5774	WG231016-05 50umol/mol STD	NA	1	1	STD15381	01/08/07 16:10
10	16G5775	WG231016-06 100umol/mol STD	NA	1	1	STD15381	01/08/07 16:24
11	16G5776	WG231016-07 200umol/mol STD	NA	1	1	STD15381	01/08/07 16:38
12	16G5777	WG231016-08 300umol/mol STD	NA	1	1	STD15381	01/08/07 16:52
13	16G5778	WG231016-09 20umol/mol ALT SOURCE	NA	1	1	STD15381	01/08/07 17:06

Comments

Seq.	Rerun	Dil.	Reason	Analytes
4				
File ID: 16G5769				
	RUN NEW CURVE			

Approved: January 12, 2007

Page: 1 of 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 091207
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 7

Maintenance Log ID: 20855

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: STD18652

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG249953

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G8327	WG249952-01 50umol/mol STD	NA	1	1	STD18652	09/12/07 16:10
2	16G8328	WG249953-01 BLANK	NA	1	1		09/12/07 16:43
3	16G8329	WG249953-02 20umol/mol LCS	NA	1	1	STD18652	09/12/07 16:57
4	16G8330	WG249953-03 20umol/mol LCS DUP	NA	1	1	STD18652	09/12/07 17:11
5	16G8331	L0709123-01 A 10X	7	1	10		09/12/07 17:28
6	16G8332	L0709123-02 A 10X	7	1	10		09/12/07 17:42
7	16G8333	L0709123-03 A 10X	7	1	10		09/12/07 17:56
8	16G8334	L0709123-04 A 10X MS	7	1	10	STD18652	09/12/07 18:22
9	16G8335	L0709123-05 A 10X MSD	7	1	10	STD18652	09/12/07 18:37
10	16G8336	L0709124-01 A 10X	7	1	10		09/12/07 18:51
11	16G8337	L0709124-02 A 10X	7	1	10		09/12/07 19:05
12	16G8338	WG249952-02 50umol/mol STD	NA	1	1	STD18652	09/12/07 19:19
13	16G8339	L0709052-04 A 10X	7	1	10		09/12/07 19:33
14	16G8340	L0709052-05 A 10X	7	1	10		09/12/07 19:47
15	16G8341	L0709052-06 A 10X	7	1	10		09/12/07 20:01
16	16G8342	L0709123-06 A 10X	7	1	10		09/12/07 20:15
17	16G8343	L0709123-07 A 10X	7	1	10		09/12/07 20:29
18	16G8344	L0709123-08 A 10X	7	1	10		09/12/07 20:43
19	16G8345	L0709123-09 A 10X	7	1	10		09/12/07 20:57
20	16G8346	L0709123-10 A 10X	7	1	10		09/12/07 21:11
21	16G8347	L0709124-03 A 10X	7	1	10		09/12/07 21:25
22	16G8348	L0709124-05 A 10X	7	1	10		09/12/07 21:39
23	16G8349	WG249952-03 50umol/mol STD	NA	1	1	STD18652	09/12/07 21:53
24	16G8350	L0709124-06 A 10X	7	1	10		09/12/07 22:07
25	16G8351	L0709124-07 A 10X	7	1	10		09/12/07 22:21
26	16G8352	L0709124-08 A 10X	7	1	10		09/12/07 22:35
27	16G8353	WG249952-04 50umol/mol STD	NA	1	1	STD18652	09/12/07 22:49

Comments

Seq.	Rerun	Dil.	Reason	Analytes
5	X	100	Over Calibration Range	CO_2
File ID: 16G8331				

Approved: September 18, 2007

Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 091207
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 7

Maintenance Log ID: 20855

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: STD18652

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG249953

Comments

Seq.	Rerun	Dil.	Reason	Analytes
6	X	100	Over Calibration Range	CO2
File ID: 16G8332				
7	X	100	Over Calibration Range	CO2
File ID: 16G8333				
11	X	50	Over Calibration Range	CO2
File ID: 16G8337				
13	X	50	Over Calibration Range	CO2
File ID: 16G8339				
14	X	50	Over Calibration Range	CO2
File ID: 16G8340				
15	X	50	Over Calibration Range	CO2
File ID: 16G8341				
16	X	100	Over Calibration Range	CO2
File ID: 16G8342				
17	X	100	Over Calibration Range	CO2
File ID: 16G8343				
20	X	50	Over Calibration Range	CO2
File ID: 16G8346				
24	X			
File ID: 16G8350				
	RERUN FOR CO2			
25	X			
File ID: 16G8351				
	RERUN FOR CO2			
26	X			
File ID: 16G8352				
	RERUN FOR CO2			
27				

Approved: September 18, 2007

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 091207
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 7

Maintenance Log ID: 20855

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: STD18652

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG249953

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 16G8353				
	CO2 FAILS			

Approved: September 18, 2007

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 091307
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 7

Maintenance Log ID: 20858

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: NA

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG250034

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G8354	WG250033-01 50umol/mol STD	NA	1	1	STD18652	09/13/07 12:28
2	16G8355	WG250034-01 BLANK	NA	1	1		09/13/07 12:51
3	16G8356	WG250034-02 20umol/mol LCS	NA	1	1	STD18652	09/13/07 13:05
4	16G8357	WG250034-03 20umol/mol LCS DUP	NA	1	1	STD18652	09/13/07 13:19
5	16G8358	L0709123-01 B 100X	NA	1	100		09/13/07 14:13
6	16G8359	L0709123-02 B 100X	NA	1	100		09/13/07 14:27
7	16G8360	L0709123-03 B 100X	NA	1	100		09/13/07 14:42
8	16G8361	L0709124-02 B 50X	NA	1	50		09/13/07 14:56
9	16G8362	L0709052-04 B 50X	NA	1	50		09/13/07 15:10
10	16G8363	L0709052-05 B 50X	NA	1	50		09/13/07 15:24
11	16G8364	L0709052-06 B 50X	NA	1	50		09/13/07 15:38
12	16G8365	WG250033-02 50umol/mol STD	NA	1	1	STD18652	09/13/07 16:03
13	16G8366	L0709123-06 B 100X	NA	1	100		09/13/07 16:17
14	16G8367	L0709123-07 B 100X	NA	1	100		09/13/07 16:31
15	16G8368	L0709123-10 B 50X	NA	1	50		09/13/07 16:45
16	16G8369	L0709124-05 B 50X	NA	1	50		09/13/07 16:59
17	16G8370	L0709124-06 B 100X	NA	1	100		09/13/07 17:13
18	16G8371	L0709124-07 B 50X	NA	1	50		09/13/07 17:27
19	16G8372	L0709124-08 B 50X	NA	1	50		09/13/07 17:41
20	16G8373	WG250033-03 50umol/mol STD	NA	1	1	STD18652	09/13/07 17:55

Comments

Seq.	Rerun	Dil.	Reason	Analytes
13	X		Check Standard Failure	
File ID: 16G8366				
14	X		Check Standard Failure	
File ID: 16G8367				
15	X		Check Standard Failure	
File ID: 16G8368				
16	X		Check Standard Failure	
File ID: 16G8369				

Approved: September 18, 2007

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 091307
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 7

Maintenance Log ID: 20858

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: NA

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG250034

Comments

Seq.	Rerun	Dil.	Reason	Analytes
17	X		Check Standard Failure	
File ID: 16G8370				
18	X		Check Standard Failure	
File ID: 16G8371				
19	X		Check Standard Failure	
File ID: 16G8372				
20	X		Check Standard Failure	
File ID: 16G8373				
	CO2 FAILS			

Approved: September 18, 2007

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00114450

Analytical Method: RSK175 AAB#: WG249953

Login Number: L0709052

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW20-FD	09/05/07	09/06/07	09/12/07	14	7.40	09/12/07	14	7.40	
12WW20	09/05/07	09/06/07	09/12/07	14	7.39	09/12/07	14	7.39	
12WW21	09/05/07	09/06/07	09/12/07	14	7.32	09/12/07	14	7.32	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 877215
Report generated 09/18/2007 13:19

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00114451

Analytical Method: RSK175 AAB#: WG250034

Login Number: L0709052

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW21	09/05/07	09/06/07	09/13/07	14	8.14	09/13/07	14	8.14	
12WW20-FD	09/05/07	09/06/07	09/13/07	14	8.21	09/13/07	14	8.21	
12WW20	09/05/07	09/06/07	09/13/07	14	8.20	09/13/07	14	8.20	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 877215
Report generated 09/18/2007 13:19

SURROGATE STANDARDS

00114452

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

METHOD BLANK SUMMARY

Login Number: L0709052
Work Group: WG249953
Blank File ID: 16G8328
Blank Sample ID: WG249953-01
Prep Date: 09/12/07 16:43
Instrument ID: HP16
Analyzed Date: 09/12/07 16:43
Method: RSK175
Analyst: FJB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG249953-02	16G8329	09/12/07 16:57	01
LCS2	WG249953-03	16G8330	09/12/07 17:11	01
12WW20	L0709052-04	16G8339	09/12/07 19:33	DL01
12WW20-FD	L0709052-05	16G8340	09/12/07 19:47	DL01
12WW21	L0709052-06	16G8341	09/12/07 20:01	DL01

KEMRON FORMS - Modified 01/31/2007
Version 1.5 PDF File ID: 876672
Report generated 09/18/2007 13:19

METHOD BLANK SUMMARY

Login Number: L0709052
Work Group: WG250034
Blank File ID: 16G8355
Blank Sample ID: WG250034-01
Prep Date: 09/13/07 12:51
Instrument ID: HP16
Analyzed Date: 09/13/07 12:51
Method: RSK175
Analyst: FJB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG250034-02	16G8356	09/13/07 13:05	01
LCS2	WG250034-03	16G8357	09/13/07 13:19	01
12WW20	L0709052-04	16G8362	09/13/07 15:10	DL02
12WW20-FD	L0709052-05	16G8363	09/13/07 15:24	DL02
12WW21	L0709052-06	16G8364	09/13/07 15:38	DL02

KEMRON Environmental Services

METHOD BLANK REPORT

00114455

Login Number:L0709052 Prep Date:09/12/07 16:43 Sample ID:WG249953-01
Instrument ID:HP16 Run Date:09/12/07 16:43 Prep Method:5021
File ID:16G8328 Analyst:FJB Method:RSK175
Workgroup (AAB#):WG249953 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HP16-08-JAN-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Methane	0.250	0.50	0.290	1	J
Ethene	0.250	0.50	0.250	1	U
Ethane	0.250	0.50	0.250	1	U
Carbon Dioxide	250	500	250	1	U

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 876673
Report generated 09/18/2007 13:19

METHOD BLANK REPORT

Login Number: L0709052 Prep Date: 09/13/07 12:51 Sample ID: WG250034-01
Instrument ID: HP16 Run Date: 09/13/07 12:51 Prep Method: 5021
File ID: 16G8355 Analyst: FJB Method: RSK175
Workgroup (AAB#): WG250034 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HP16-08-JAN-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Methane	0.250	0.50	0.250	1	U
Ethene	0.250	0.50	0.250	1	U
Ethane	0.250	0.50	0.250	1	U
Carbon Dioxide	250	500	250	1	U

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 876673
Report generated 09/18/2007 13:19

KEMRON Environmental Services

00114457

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0709052 Analyst:FJB Prep Method:5021
Instrument ID:HP16 Matrix:Water Method:RSK175
Workgroup (AAB#):WG249953 Units:ug/L
QC Key:STD Lot #:STD18652

Sample ID:WG249953-02 LCS File ID:16G8329 Run Date:09/12/2007 16:57
Sample ID:WG249953-03 LCS2 File ID:16G8330 Run Date:09/12/2007 17:11

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Methane	34.3	31.7	92.5	34.3	32.4	94.7	2.32	56 - 140	40	
Ethene	59.9	54.6	91.2	59.9	56.3	94.0	3.07	56 - 140	40	
Ethane	64.2	59.1	92.1	64.2	60.5	94.3	2.39	56 - 137	40	
Carbon Dioxide	1410	884	62.7	1410	829	58.9	6.36	50 - 150	40	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 876670
Report generated 09/18/2007 13:19

KEMRON Environmental Services

00114458

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0709052 Analyst:FJB Prep Method:5021
Instrument ID:HP16 Matrix:Water Method:RSK175
Workgroup (AAB#):WG250034 Units:ug/L
QC Key:STD Lot #:STD18652

Sample ID:WG250034-02 LCS File ID:16G8356 Run Date:09/13/2007 13:05
Sample ID:WG250034-03 LCS2 File ID:16G8357 Run Date:09/13/2007 13:19

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Methane	34.3	33.2	96.9	34.3	35.3	103	6.31	56 - 140	40	
Ethene	59.9	58.1	97.0	59.9	62.9	105	7.92	56 - 140	40	
Ethane	64.2	62.3	97.1	64.2	66.7	104	6.74	56 - 137	40	
Carbon Dioxide	1410	1920	136	1410	843	59.8	78.0	50 - 150	40	#

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 876670
Report generated 09/18/2007 13:19

INITIAL CALIBRATION SUMMARY

Login Number: L0709052 **Instrument ID:** HP16

Analytical Method: RSK175 **Initial Calibration Date:** 08-JAN-07 16:52

ICAL Workgroup: WG231016 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
carbon dioxide		3063	21.6		0.999
ethane		157300	15.9	0.999	
ethene		156800	21.1	0.999	
methane		111400	70.0	0.999	

R = Correlation coefficient; 0.995 minimum

R^2 = Coefficient of determination; 0.99 minimum

INITIAL CALIBRATION DATA

00114460

Login Number: L0709052
Analytical Method: RSK175
Instrument ID: HP16
Initial Calibration Date: 08-JAN-07 16:52
Column ID: F

Analyte	WG231016-01			WG231016-02			WG231016-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
carbon dioxide	50.0	193826.000	3877	100	354261.000	3543	200	527788.000	2639
ethane	0.100	21151.0000	211500	1.00	156994.000	157000	10.0	1466086.00	146600
ethene	0.100	23051.0000	230500	1.00	150346.000	150300	10.0	1436526.00	143700
methane	0.100	28696.0000	287000	1.00	102622.000	102600	10.0	785304.000	78530

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 877560
Report generated 09/18/2007 13:19

KEMRON Environmental Services

INITIAL CALIBRATION DATA

00114461

Login Number: L0709052 **Instrument ID:** HP16

Analytical Method: RSK175 **Initial Calibration Date:** 08-JAN-07 16:52

Column ID: F

Analyte	WG231016-04			WG231016-06			WG231016-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
carbon dioxide	300	722371.000	2408	500	1155791.00	2312	1000	2874182.00	2874
ethane	20.0	2721136.00	136100	100	14910718.0	149100	200	28920601.0	144600
ethene	20.0	2678018.00	133900	100	14417593.0	144200	200	28265113.0	141300
methane	20.0	1459030.00	72950	100	7868122.00	78680	200	15414754.0	77070

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 877560
Report generated 09/18/2007 13:19

INITIAL CALIBRATION DATA

Login Number: L0709052
Instrument ID: HP16
Analytical Method: RSK175
Initial Calibration Date: 08-JAN-07 16:52
Column ID: F

Analyte	WG231016-08		
	CONC	RESP	RF
carbon dioxide	2000	7581941.00	3791
ethane	300	46954497.0	156500
ethene	300	46020766.0	153400
methane	300	24903631.0	83010

KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00114463

Login Number:L0709052 Run Date:01/08/2007 Sample ID:WG231016-09

Instrument ID:HP16 Run Time:17:06 Method:RSK175

File ID:16G5778 Analyst:JLS QC Key:STD

ICal Workgroup:WG231016 Cal ID: HP16 - 08-JAN-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
methane		34.3	31.5	ug/L	74300	8.10	30	
ethene		59.9	53.8	ug/L	134000	10.1	30	
ethane		64.2	57.7	ug/L	137000	10.0	30	
carbon dioxide		1410	741	ug/L	1180	47.4	60	

* Exceeds %D Limit

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 877216
Report generated 09/18/2007 13:19

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114464

Login Number:L0709052 Run Date:09/12/2007 Sample ID:WG249952-01
Instrument ID:HP16 Run Time:16:10 Method:RSK175
File ID:16G8327 Analyst:FJB QC Key:STD
Workgroup (AAB#):WG249953 Cal ID: HP16 - 08-JAN-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	73.5	ug/L	69400	14.1	25	
ethene		150	131	ug/L	130000	12.6	25	
ethane		160	139	ug/L	132000	13.6	25	
carbon dioxide		1880	2420	ug/L	3260	28.7	60	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 877217
Report generated 09/18/2007 13:19

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114465

Login Number: L0709052 Run Date: 09/12/2007 Sample ID: WG249952-02

Instrument ID: HP16 Run Time: 19:19 Method: RSK175

File ID: 16G8338 Analyst: FJB QC Key: STD

Workgroup (AAB#): WG249953 Cal ID: HP16 - 08-JAN-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	84.5	ug/L	79800	1.30	25	
ethene		150	147	ug/L	146000	2.07	25	
ethane		160	158	ug/L	150000	1.28	25	
carbon dioxide		1880	2010	ug/L	2630	6.93	60	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 877217
Report generated 09/18/2007 13:19

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114466

Login Number: L0709052 Run Date: 09/12/2007 Sample ID: WG249952-03
Instrument ID: HP16 Run Time: 21:53 Method: RSK175
File ID: 16G8349 Analyst: FJB QC Key: STD
Workgroup (AAB#): WG249953 Cal ID: HP16 - 08-JAN-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	86.4	ug/L	81600	0.861	25	
ethene		150	148	ug/L	147000	1.21	25	
ethane		160	159	ug/L	151000	0.905	25	
carbon dioxide		1880	1120	ug/L	1370	40.5	60	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 877217
Report generated 09/18/2007 13:19

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114467

Login Number:L0709052 Run Date:09/13/2007 Sample ID:WG250033-01
Instrument ID:HP16 Run Time:12:28 Method:RSK175
File ID:16G8354 Analyst:FJB QC Key:STD
Workgroup (AAB#):WG250034 Cal ID: HP16 - 08-JAN-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	77.3	ug/L	73000	9.70	25	
ethene		150	136	ug/L	135000	9.24	25	
ethane		160	146	ug/L	139000	8.97	25	
carbon dioxide		1880	1330	ug/L	1660	29.2	60	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 877217
Report generated 09/18/2007 13:19

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114468

Login Number: L0709052 Run Date: 09/13/2007 Sample ID: WG250033-02
Instrument ID: HP16 Run Time: 16:03 Method: RSK175
File ID: 16G8365 Analyst: FJB QC Key: STD
Workgroup (AAB#): WG250034 Cal ID: HP16 - 08-JAN-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	85.8	ug/L	81000	0.177	25	
ethene		150	154	ug/L	153000	2.53	25	
ethane		160	163	ug/L	155000	1.76	25	
carbon dioxide		1880	1220	ug/L	1500	35.3	60	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 877217
Report generated 09/18/2007 13:19

2.2 General Chemistry Data

2.2.1 Method 9056

2.2.1.1 Summary Data

LABORATORY REPORT

L0709052

09/24/07 08:27

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP

P.O. Number: 200328

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW20	L0709052-04	300.0	10	06-SEP-07
12WW20	L0709052-04	300.0	30	06-SEP-07
12WW20-FD	L0709052-05	300.0	10	06-SEP-07
12WW20-FD	L0709052-05	300.0	30	06-SEP-07
12WW21	L0709052-06	300.0	10	06-SEP-07
12WW21	L0709052-06	300.0	200	06-SEP-07

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114473

Sample Number: **L0709052-04**
Client ID: **12WW20**
Matrix: **Water**
Workgroup Number: **WG249542**
Collect Date: **09/05/2007 10:15**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **10**
Units: **mg/L**

Instrument: **IC1**
Prep Date: **09/06/2007 11:53**
Cal Date: **09/05/2007 10:51**
Run Date: **09/06/2007 11:53**
File ID: **I10906071153.07**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Chloride	16887-00-6	239	I	2.00	1.00
Nitrate	14797-55-8		U	6.00	1.00
Nitrite	14797-65-0		U	4.00	1.00
Sulfate	14808-79-8	141		10.0	5.00

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114474

Sample Number: **L0709052-04**
Client ID: **12WW20**
Matrix: **Water**
Workgroup Number: **WG249542**
Collect Date: **09/05/2007 10:15**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **30**
Units: **mg/L**

Instrument: **IC1**
Prep Date: **09/06/2007 13:55**
Cal Date: **09/05/2007 10:51**
Run Date: **09/06/2007 13:55**
File ID: **I10906071355.14**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Chloride	16887-00-6	249		6.00	3.00
Nitrate	14797-55-8		U	18.0	3.00
Nitrite	14797-65-0		U	12.0	3.00
Sulfate	14808-79-8	139		30.0	15.0

U Not detected at or above adjusted sample detection limit

Report Number: **L0709052**

Report Date : **September 24, 2007**

00114475

Sample Number: **L0709052-05**
Client ID: **12WW20-FD**
Matrix: **Water**
Workgroup Number: **WG249542**
Collect Date: **09/05/2007 10:15**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **10**
Units: **mg/L**

Instrument: **IC1**
Prep Date: **09/06/2007 12:10**
Cal Date: **09/05/2007 10:51**
Run Date: **09/06/2007 12:10**
File ID: **I10906071210.08**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Chloride	16887-00-6	239	I	2.00	1.00
Nitrate	14797-55-8		U	6.00	1.00
Nitrite	14797-65-0		U	4.00	1.00
Sulfate	14808-79-8	142		10.0	5.00

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L0709052**

Report Date : **September 24, 2007**

00114476

Sample Number: **L0709052-05**
Client ID: **12WW20-FD**
Matrix: **Water**
Workgroup Number: **WG249542**
Collect Date: **09/05/2007 10:15**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **30**
Units: **mg/L**

Instrument: **IC1**
Prep Date: **09/06/2007 14:47**
Cal Date: **09/05/2007 10:51**
Run Date: **09/06/2007 14:47**
File ID: **I10906071447.17**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Chloride	16887-00-6	244		6.00	3.00
Nitrate	14797-55-8		U	18.0	3.00
Nitrite	14797-65-0		U	12.0	3.00
Sulfate	14808-79-8	137		30.0	15.0

U Not detected at or above adjusted sample detection limit

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114477

Sample Number: **L0709052-06**
Client ID: **12WW21**
Matrix: **Water**
Workgroup Number: **WG249542**
Collect Date: **09/05/2007 12:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **10**
Units: **mg/L**

Instrument: **IC1**
Prep Date: **09/06/2007 12:27**
Cal Date: **09/05/2007 10:51**
Run Date: **09/06/2007 12:27**
File ID: **I10906071227.09**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Chloride	16887-00-6	1020	I	2.00	1.00
Nitrate	14797-55-8		U	6.00	1.00
Nitrite	14797-65-0		U	4.00	1.00
Sulfate	14808-79-8	370		10.0	5.00

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114478

Sample Number: **L0709052-06**
Client ID: **12WW21**
Matrix: **Water**
Workgroup Number: **WG249542**
Collect Date: **09/05/2007 12:20**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **200**
Units: **mg/L**

Instrument: **IC1**
Prep Date: **09/06/2007 17:06**
Cal Date: **09/05/2007 10:51**
Run Date: **09/06/2007 17:06**
File ID: **I10906071706.25**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Chloride	16887-00-6	1560		40.0	20.0
Nitrate	14797-55-8		U	120	20.0
Nitrite	14797-65-0		U	80.0	20.0
Sulfate	14808-79-8	387		200	100

U Not detected at or above adjusted sample detection limit

2.2.1.2 QC Summary Data

The concentrations (ppm) of the calibration standards and the resulting area counts are used to determine the equation of a linear or quadratic plot.
The slope and y-intercept of that line are used to calculate the quantity of the analyzed unkown samples.
Amount(ppm) = [(slope)(area count of unknown) + y-intercept](dilution)
(The slope is the amt/area also identified as the CF or calibration factor)

KEMRON Environmental Services

Instrument Run Log

Instrument: IC1 Dataset: 090507 9056 CURVE IC1.S

Analyst1: DSF Analyst2: NA

Method: 300/9056 SOP: IC1 Rev: 7

Maintenance Log ID: 20705

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG249377

Internal STD: NA Surrogate STD: NA Calibration STD STD19580

Comments: This is a method 300/9056 Calibration Curve.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I10905070924.01	WG249377-01 STD \#1	1	1		09/05/07 09:24
2	I10905070941.02	WG249377-02 STD \#2	1	1		09/05/07 09:41
3	I10905070959.03	WG249377-03 STD \#3	1	1		09/05/07 09:59
4	I10905071016.04	WG249377-04 STD \#4	1	1		09/05/07 10:16
5	I10905071034.05	WG249377-05 STD \#5	1	1		09/05/07 10:34
6	I10905071051.06	WG249377-06 STD \#6	1	1		09/05/07 10:51
7	I10905071108.07	WG249377-07 ALT STD	1	1		09/05/07 11:08
8	I10905071126.08	ELUENT	1	1		09/05/07 11:26
9	I10905071143.09	DI WATER	1	1		09/05/07 11:43

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Page: 1 Approved: 06-SEP-07

KEMRON Environmental Services

Instrument Run Log

Instrument: IC1 Dataset: 090607 9056 IC1.SEQ

Analyst1: DSF Analyst2: NA

Method: 300/9056 SOP: IC1 Rev: 7

Maintenance Log ID: 20735

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG249542

Internal STD: NA Surrogate STD: NA Calibration STD STD19580

Comments: L0709052 samples were analyzed for Cl, NO2, NO3 and SO4.
L0709078 samples were analyzed for Cl only.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I10906070829.01	ELUENT	1	1		09/06/07 08:29
2	I10906070846.02	DI WATER	1	1		09/06/07 08:46
3	I10906070904.03	WG249543-01 ANION CCV	1	1		09/06/07 09:04
4	I10906070921.04	WG249543-02 ANION CCB	1	1		09/06/07 09:21
5	I10906070939.05	WG249542-01 ANION BLANK	1	1		09/06/07 09:39
6	I10906070956.06	WG249542-02 ANION LCS	1	1		09/06/07 09:56
7	I10906071153.07	L0709052-04 (Cl, NO2, NO3, SO4) RS 1/10	1	10		09/06/07 11:53
8	I10906071210.08	L0709052-05 (Cl, NO2, NO3, SO4) DS 1/10	1	10		09/06/07 12:10
9	I10906071227.09	L0709052-06 (Cl, NO2, NO3, SO4) REF 1/10	1	10		09/06/07 12:27
10	I10906071245.10	WG249542-04 DUP 052-06 1/10	1	10		09/06/07 12:45
11	I10906071302.11	WG249542-05 MS 052-06 1/10	1	10		09/06/07 13:02
12	I10906071320.12	WG249542-06 MSD 052-06 1/10	1	10		09/06/07 13:20
13	I10906071337.13	DI WATER (Column Rinse) (NR)	1	1		09/06/07 13:37
14	I10906071355.14	L0709052-04 RR Cl 1/30	1	30		09/06/07 13:55
15	I10906071412.15	WG249543-03 ANION CCV	1	1		09/06/07 14:12
16	I10906071429.16	WG249543-04 ANION CCB	1	1		09/06/07 14:29
17	I10906071447.17	L0709052-05 RR Cl 1/30	1	30		09/06/07 14:47
18	I10906071504.18	L0709052-06 RR Cl 1/100	1	100		09/06/07 15:04
19	I10906071522.19	L0709078-01 (Cl Only) 1/50	2	50		09/06/07 15:22
20	I10906071539.20	L0709078-02 (Cl Only) 1/100	2	100		09/06/07 15:39
21	I10906071556.21	L0709078-03 (Cl Only) 1/100	2	100		09/06/07 15:56
22	I10906071614.22	L0709078-04 (Cl Only) 1/50	2	50		09/06/07 16:14
23	I10906071631.23	L0709078-05 (Cl Only) 1/60	2	60		09/06/07 16:31
24	I10906071649.24	L0709078-06 (Cl Only) 1/40	2	40		09/06/07 16:49
25	I10906071706.25	L0709052-06 RR Cl 1/200	1	200		09/06/07 17:06
26	I10906071723.26	WG249543-05 ANION CCV	1	1		09/06/07 17:23
27	I10906071741.27	WG249543-06 ANION CCB	1	1		09/06/07 17:41

Comments

Seq.	Rerun	Dil.	Reason	Analytes
7	X	30	Over Calibration Range	Chloride
	Sample ran at initial dilution for high Cl and SO4 screen results. Needed further dilution for Cl over calibration range.			
8	X	30	Over Calibration Range	Chloride
	Sample ran at initial dilution for high Cl and SO4 screen results. Needed further dilution for Cl over calibration range.			
9	X	100	Over Calibration Range	Chloride

Page: 1 Approved: 14-SEP-07

KEMRON Environmental Services

Instrument Run Log

Instrument: IC1 Dataset: 090607 9056 IC1.SEQ

Analyst1: DSF Analyst2: NA

Method: 300/9056 SOP: IC1 Rev: 7

Maintenance Log ID: 20735

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG249542

Internal STD: NA Surrogate STD: NA STD19580

Comments

Seq.	Rerun	Dil.	Reason	Analytes
	Sample ran at initial dilution for high Cl and SO4 screen results. Needed further dilution for Cl over calibration range.			
11				
	The MS/MSD was below the %Recovery advisory limit for chloride, nitrite and sulfate.			
18	X	200	Over Calibration Range	Chloride
19		50	Elevated Analyte	Chloride
	Sample analyzed at a dilution only for very high pre-run screen results for chloride. This is done to prevent damage to the analytical columns.			
20		100	Elevated Analyte	Chloride
	Sample analyzed at a dilution only for very high pre-run screen results for chloride. This is done to prevent damage to the analytical columns.			
21		100	Elevated Analyte	Chloride
	Sample analyzed at a dilution only for very high pre-run screen results for chloride. This is done to prevent damage to the analytical columns.			
22		50	Elevated Analyte	Chloride
	Sample analyzed at a dilution only for very high pre-run screen results for chloride. This is done to prevent damage to the analytical columns.			
23		60	Elevated Analyte	Chloride
	Sample analyzed at a dilution only for very high pre-run screen results for chloride. This is done to prevent damage to the analytical columns.			
24		40	Elevated Analyte	Chloride
	Sample analyzed at a dilution only for very high pre-run screen results for chloride. This is done to prevent damage to the analytical columns.			

Page: 2 Approved: 14-SEP-07

KEMRON Environmental Services
Data Checklist

Date: 05-SEP-2007
Analyst: DSF
Analyst: NA
Method: 300/9056
Instrument: IC1
Curve Workgroup: WG249377
Runlog ID: 18069
Analytical Workgroups: THIS IS A METHOD 300/9056 CALIBRATION CURVE

ANALYTICAL	
System Performance Check	
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	X
Window standard (FID)	NA
Initial Calibration	
Average RF	X
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	
% D/% Drift	X
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	NA
TCL hits	NA
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	
Recoveries	NA
Surrogate recoveries	NA
MS/MSD/Sample duplicates	
Recoveries	NA
%RPD	NA
Samples	
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	DSF
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
05-SEP-2007
Debra S. Frederick

Secondary Reviewer:
06-SEP-2007
Michael Cochran

Generated: SEP-06-2007 19:33:04

KEMRON Environmental Services
Data Checklist

Date: 06-SEP-2007
Analyst: DSF
Analyst: NA
Method: 300/9056
Instrument: IC1
Curve Workgroup: NA
Runlog ID: 18106
Analytical Workgroups: L0709052, L0709078

ANALYTICAL	
System Performance Check	
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	X
Window standard (FID)	NA
Initial Calibration	
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	
% D/% Drift	X
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	X
Special standards	NA
Blanks	X
TCL hits	NA
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	
Recoveries	X
%RPD	X
Samples	
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	X
Check for completeness	X
Primary Reviewer	DSF
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
07-SEP-2007
Debra S. Frederick

Secondary Reviewer:
14-SEP-2007
Michael Cochran

Generated: SEP-14-2007 13:59:54

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00114486

Analytical Method: 300.0 AAB#: WG249542

Login Number: L0709052

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW21	09/05/07	09/06/07	09/06/07	2	1.00	09/06/07	28	1.00	
12WW20	09/05/07	09/06/07	09/06/07	2	1.07	09/06/07	28	1.07	
12WW20-FD	09/05/07	09/06/07	09/06/07	2	1.19	09/06/07	28	1.19	
12WW20-FD	09/05/07	09/06/07	09/06/07	2	1.08	09/06/07	28	1.08	
12WW21	09/05/07	09/06/07	09/06/07	2	1.20	09/06/07	28	1.20	
12WW20	09/05/07	09/06/07	09/06/07	2	1.15	09/06/07	28	1.15	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 869076
Report generated 09/17/2007 12:13

METHOD BLANK SUMMARY

Login Number: L0709052
Work Group: WG249542
Blank File ID: I10906070939.05
Blank Sample ID: WG249542-01
Prep Date: 09/06/07 09:39
Instrument ID: IC1
Analyzed Date: 09/06/07 09:39
Method: 300.0
Analyst: DSF

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG249542-02	I10906070956.06	09/06/07 09:56	01
12WW20	L0709052-04	I10906071153.07	09/06/07 11:53	DL01
12WW20-FD	L0709052-05	I10906071210.08	09/06/07 12:10	DL01
12WW21	L0709052-06	I10906071227.09	09/06/07 12:27	DL01
DUP	WG249542-04	I10906071245.10	09/06/07 12:45	DL01
12WW20	L0709052-04	I10906071355.14	09/06/07 13:55	DL02
12WW20-FD	L0709052-05	I10906071447.17	09/06/07 14:47	DL02
12WW21	L0709052-06	I10906071706.25	09/06/07 17:06	DL02

KEMRON FORMS - Modified 01/31/2007
Version 1.5 PDF File ID: 869077
Report generated 09/17/2007 12:13

KEMRON Environmental Services

METHOD BLANK REPORT

00114488

Login Number:L0709052 Prep Date:09/06/07 09:39 Sample ID:WG249542-01
Instrument ID:IC1 Run Date:09/06/07 09:39 Prep Method:300.0
File ID:I10906070939.05 Analyst:DSF Method:300.0
Workgroup (AAB#):WG249542 Matrix:Water Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID:IC1-05-SEP-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0.100	1	U
Nitrate	0.100	0.600	0.100	1	U
Nitrite	0.100	0.400	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 869078
Report generated 09/17/2007 12:13

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00114489

Login Number: L0709052 Run Date: 09/06/2007 Sample ID: WG249542-02
Instrument ID: IC1 Run Time: 09:56 Prep Method: 300.0
File ID: I10906070956.06 Analyst: DSF Method: 300.0
Workgroup (AAB#): WG249542 Matrix: Water Units: mg/L
QC Key: STD Lot#: STD19580 Cal ID: IC1-05-SEP-07

Analytes	Expected	Found	% Rec	LCS Limits	Q
Chloride	6.00	6.00	100	90 - 110	
Nitrate	4.07	4.07	100	90 - 110	
Nitrite	3.65	3.53	96.5	90 - 110	
Sulfate	30.0	30.0	100	90 - 110	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 869079
Report generated 09/17/2007 12:13

00114490

DUPLICATE (DUP)

Sample Ref:L0709052-06 Cal ID: IC1- Worknum:WG249542
Instrument ID:IC1 Method:9056
Sample ID:WG249542-03 File ID:I10906071227.09 Dil:10 Matrix:WATER
Duplicate ID:WG249542-04 File ID:I10906071245.10 Dil:10 Units:mg/L

Analyte	Sample	Duplicate	RPD	RPD Limit	Q
Chloride	1020	1020	0.173	20	
Nitrate	ND	ND	0	20	
Nitrite	ND	ND	0	20	
Sulfate	370	371	0.197	20	

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 03/06/2006
Version 1.5 PDF File ID: 869081
Report generated 09/17/2007 12:13

KEMRON Environmental Services

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00114491

Loginnum:L0709052 Cal ID:IC1- Worknum:WG249542

Instrument ID:IC1 Contract #:DACA56-94-D-0020 Method:300.0

Parent ID:WG249542-03 File ID:I10906071227.09 Dil:10 Matrix:WATER

Sample ID:WG249542-05 MS File ID:I10906071302.11 Dil:10 Units:mg/L

Sample ID:WG249542-06 MSD File ID:I10906071320.12 Dil:10

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Chloride	1020	6.00	984	-532	6.00	985	-527	0.0325	90 - 110	20	*
Nitrate	ND	4.07	4.07	100	4.07	3.99	98.1	1.99	90 - 110	20	
Nitrite	ND	3.65	2.13	58.3	3.65	2.10	57.5	1.42	90 - 110	20	*
Sulfate	370	30.0	379	28.5	30.0	378	27.1	0.108	90 - 110	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 12/08/2006
Version 1.5 PDF File ID: 869080
Report generated 09/17/2007 12:13

INITIAL CALIBRATION SUMMARY

Login Number: L0709052 **Instrument ID:** IC1

Analytical Method: 300.0 **Initial Calibration Date:** 05-SEP-07 10:51

ICAL Workgroup: WG249377 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Chloride		4.681	5.21		
Nitrate		1.932	6.29		
Nitrite		2.152	3.15		
Sulfate		5.976	8.18		

R = Correlation coefficient; 0.995 minimum

R^2 = Coefficient of determination; 0.99 minimum

This method always uses quadratic calibration model (R^2)

KEMRON Environmental Services

INITIAL CALIBRATION DATA

00114493

Login Number: L0709052

Analytical Method: 300.0

Instrument ID: IC1

Initial Calibration Date: 05-SEP-07 10:51

Column ID: F

Analyte	WG249377-01			WG249377-02			WG249377-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloride	0.200	0.0410000000	4.878	2.00	0.404000000	4.950	4.00	0.834000000	4.796
Nitrate	0.136	0.0650000000	2.085	1.36	0.667000000	2.032	2.71	1.37300000	1.974
Nitrite	0.122	0.0570000000	2.137	1.22	0.541000000	2.251	2.44	1.10500000	2.204
Sulfate	1.00	0.152000000	6.579	10.0	1.56400000	6.394	20.0	3.27100000	6.114

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 876343
Report generated 09/17/2007 12:13

KEMRON Environmental Services

INITIAL CALIBRATION DATA

00114494

Login Number: L0709052

Analytical Method: 300.0

Instrument ID: IC1

Initial Calibration Date: 05-SEP-07 10:51

Column ID: F

Analyte	WG249377-04			WG249377-05			WG249377-06		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloride	6.00	1.29700000	4.626	8.00	1.77300000	4.512	12.0	2.77700000	4.321
Nitrate	4.07	2.14900000	1.892	5.42	2.94400000	1.842	8.13	4.60600000	1.766
Nitrite	3.65	1.69700000	2.153	4.87	2.30900000	2.110	7.31	3.54800000	2.059
Sulfate	30.0	5.13800000	5.839	40.0	7.09100000	5.641	60.0	11.3380000	5.292

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 876343
Report generated 09/17/2007 12:13

KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00114495

Login Number:L0709052 Run Date:09/05/2007 Sample ID:WG249377-07

Instrument ID:IC1 Run Time:11:08 Method:300.0

File ID:I10905071108.07 Analyst:DSF QC Key:STD

ICal Workgroup:WG249377 Cal ID: IC1 - 05-SEP-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloride		6.00	6.06	mg/L	4.59	1.10	10	
Nitrate		4.07	4.12	mg/L	1.87	1.40	10	
Nitrite		3.65	3.55	mg/L	2.14	2.80	10	
Sulfate		30.0	30.2	mg/L	5.81	0.600	10	

* Exceeds %D Limit

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 876344
Report generated 09/17/2007 12:13

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00114496

Login Number:L0709052 Run Date:09/06/2007 Sample ID:WG249543-02
Instrument ID:IC1 Run Time:09:21 Method:300.0
File ID:I10906070921.04 Analyst:DSF Units:mg/L
Workgroup (AAB#):WG249542 Cal ID: IC1 -

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 869083
Report generated 09/17/2007 12:13

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00114497

Login Number:L0709052 Run Date:09/06/2007 Sample ID:WG249543-04
Instrument ID:IC1 Run Time:14:29 Method:300.0
File ID:I10906071429.16 Analyst:DSF Units:mg/L
Workgroup (AAB#):WG249542 Cal ID: IC1 -

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 869083
Report generated 09/17/2007 12:13

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00114498

Login Number:L0709052 Run Date:09/06/2007 Sample ID:WG249543-06
Instrument ID:IC1 Run Time:17:41 Method:300.0
File ID:I10906071741.27 Analyst:DSF Units:mg/L
Workgroup (AAB#):WG249542 Cal ID: IC1 -

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 869083
Report generated 09/17/2007 12:13

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114499

Login Number:L0709052 Run Date:09/06/2007 Sample ID:WG249543-01
Instrument ID:IC1 Run Time:09:04 Method:300.0
File ID:I10906070904.03 Analyst:DSF QC Key:STD
Workgroup (AAB#):WG249542 Cal ID: IC1 - 05-SEP-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	6.02	mg/L	4.63	0.267	10	
Nitrate		4.07	4.06	mg/L	1.90	0.0787	10	
Nitrite		3.65	3.51	mg/L	2.17	3.84	10	
Sulfate		30.0	30.0	mg/L	5.85	0	10	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 869082
Report generated 09/17/2007 12:13

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114500

Login Number:L0709052 Run Date:09/06/2007 Sample ID:WG249543-03
Instrument ID:IC1 Run Time:14:12 Method:300.0
File ID:I10906071412.15 Analyst:DSF QC Key:STD
Workgroup (AAB#):WG249542 Cal ID: IC1 - 05-SEP-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	5.96	mg/L	4.67	0.633	10	
Nitrate		4.07	4.05	mg/L	1.90	0.325	10	
Nitrite		3.65	3.52	mg/L	2.16	3.57	10	
Sulfate		30.0	29.9	mg/L	5.88	0.423	10	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 869082
Report generated 09/17/2007 12:13

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114501

Login Number:L0709052 Run Date:09/06/2007 Sample ID:WG249543-05
Instrument ID:IC1 Run Time:17:23 Method:300.0
File ID:I10906071723.26 Analyst:DSF QC Key:STD
Workgroup (AAB#):WG249542 Cal ID: IC1 - 05-SEP-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	5.97	mg/L	4.66	0.450	10	
Nitrate		4.07	4.06	mg/L	1.90	0.275	10	
Nitrite		3.65	3.53	mg/L	2.16	3.35	10	
Sulfate		30.0	30.0	mg/L	5.86	0.157	10	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 869082
Report generated 09/17/2007 12:13

2.2.2 Alkalinity Data

2.2.2.1 Summary Data

LABORATORY REPORT

L0709052

09/24/07 08:27

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP

P.O. Number: 200328

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW20	L0709052-04	310.2	1	06-SEP-07
12WW20-FD	L0709052-05	310.2	1	06-SEP-07
12WW21	L0709052-06	310.2	1	06-SEP-07

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114505

Sample Number: **L0709052-04**
Client ID: **12WW20**
Matrix: **Water**
Workgroup Number: **WG249548**
Collect Date: **09/05/2007 10:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **310.2**
Analytical Method: **310.2**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **SMARTCHEM**
Prep Date: **09/07/2007 12:56**
Cal Date: **09/07/2007 12:46**
Run Date: **09/07/2007 12:56**
File ID: **SC070907002.025**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Alkalinity, Total		41.2		10.0	5.00

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114506

Sample Number: **L0709052-05**
Client ID: **12WW20-FD**
Matrix: **Water**
Workgroup Number: **WG249548**
Collect Date: **09/05/2007 10:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **310.2**
Analytical Method: **310.2**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **SMARTCHEM**
Prep Date: **09/07/2007 12:57**
Cal Date: **09/07/2007 12:46**
Run Date: **09/07/2007 12:57**
File ID: **SC070907002.026**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Alkalinity, Total		**43.3**		**10.0**	**5.00**

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114507

Sample Number: **L0709052-06**
Client ID: **12WW21**
Matrix: **Water**
Workgroup Number: **WG249548**
Collect Date: **09/05/2007 12:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **310.2**
Analytical Method: **310.2**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **SMARTCHEM**
Prep Date: **09/07/2007 12:57**
Cal Date: **09/07/2007 12:46**
Run Date: **09/07/2007 12:57**
File ID: **SC070907002.027**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Alkalinity, Total		111		10.0	5.00

2.2.2.2 QC Summary Data

Example Alkalinity (Colormetric) Calculations

(absorbance - intercept)/(slope * dilution) = mg/L

where:

absorbance = reading from the spectrophotometer
intercept = calculated from calibration standard absorbencies
slope = calculated from calibration standard absorbencies
dilution = dilution of the distillate in decimal form (ex. 1/5 dilution = 0.2)

KEMRON Environmental Services
Data Checklist

Date: 07-SEP-2007
Analyst: DIH
Analyst: NA
Method: ALK
Instrument: SC
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG249548

Calibration/Linearity	9/7/2007
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DIH
Secondary Reviewer	DR
Comments	

Primary Reviewer:
07-SEP-2007

Secondary Reviewer:
17-SEP-2007

Generated: SEP-17-2007 19:54:13

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00114511

Analytical Method: 310.2 AAB#: WG249548

Login Number: L0709052

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW20-FD	09/05/07	09/06/07	09/07/07	14	2.11	09/07/07	14	2.11	
12WW21	09/05/07	09/06/07	09/07/07	14	2.03	09/07/07	14	2.03	
12WW20	09/05/07	09/06/07	09/07/07	14	2.11	09/07/07	14	2.11	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 869942
Report generated 09/07/2007 14:16

METHOD BLANK SUMMARY

Login Number: L0709052
Work Group: WG249548
Blank File ID: SC070907002.010
Blank Sample ID: WG249548-01
Prep Date: 09/07/07 12:47
Instrument ID: SMARTCHEM
Analyzed Date: 09/07/07 12:47
Method: 310.2
Analyst: DIH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG249548-02	SC070907002.011	09/07/07 12:47	01
LCS2	WG249548-03	SC070907002.012	09/07/07 12:48	01
12WW20	L0709052-04	SC070907002.025	09/07/07 12:56	01
12WW20-FD	L0709052-05	SC070907002.026	09/07/07 12:57	01
12WW21	L0709052-06	SC070907002.027	09/07/07 12:57	01
DUP	WG249548-05	SC070907002.028	09/07/07 12:58	01

KEMRON Environmental Services

METHOD BLANK REPORT

00114513

Login Number:L0709052 Prep Date:09/07/07 12:47 Sample ID:WG249548-01
Instrument ID:SMARTCHEM Run Date:09/07/07 12:47 Prep Method:310.2
File ID:SC070907002.010 Analyst:DIH Method:310.2
Workgroup (AAB#):WG249548 Matrix:Water Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID:SMARTC-07-SEP-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Alkalinity, Total	5.00	10.0	5.00	1	U

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 869944
Report generated 09/07/2007 14:16

KEMRON Environmental Services

00114514

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0709052 Analyst:DIH Prep Method:310.2
Instrument ID:SMARTCHEM Matrix:Water Method:310.2
Workgroup (AAB#):WG249548 Units:mg/L
QC Key:STD Lot #:STD21047

Sample ID:WG249548-02 LCS File ID:SC070907002.011 Run Date:09/07/2007 12:47
Sample ID:WG249548-03 LCS2 File ID:SC070907002.012 Run Date:09/07/2007 12:48

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Alkalinity, Total	200	177	88.4	200	205	103	14.8	85 - 115	25	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 869945
Report generated 09/07/2007 14:16

2.2.2.3 Raw Data

KEMRON ENVIRONMENTAL SERVICES

WORKGROUP: WG249548

SMARTCHEM RUN LOG

Daily Check

- [x] Lamp On
- [x] Probe Rinse Full
- [x] DI Water > ½ Full
- [x] Wash Solution > ½ Full
- [ ] NO3 Reagent bottle connected / purged
- [ ] NO3 pH adj to pH 5-9
- [x] WBL Run
- [x] Reagents Full
- [x] Dilution H_2O Full
- [ ] Waste Container Check

1) **Workgroup Plan #** 20070907002
2) **Workgroup Plan #** _____
3) **Workgroup Plan #** _____

Analyte	1	2	3
User Prepared Curve	NH		
SC Prepared Curve			
Position			
1-1 ICV 250			
1-2 BLK			
1-3 LCS200			
1-4 LCSDUP			
1-5 08-811601			
1-6 08-839-02	1/4		color
1-7 03	↓		↓
1-8 05	↓		↓
1-9 06	↓		↓
1-10 12	↓		↓
1-11 13	↓		↓
1-12 09-015-02	1/4		↓
1-13 03	↓	1/10	↓
1-14 04	1/50		
1-15 09-052-04			
1-16 05			
1-17 06			
1-18 DUP052-06			
1-19			
1-20			
1-21			
1-22			
2-1			
2-2			
2-3			

Analyte	1	2	3
Position			
2-4			
2-5			
2-6			
2-7			
2-8			
2-9			
2-10			
2-11			
2-12			
2-13			
2-14			
2-15			
2-16			
2-17			
2-18			
2-19			
2-20			
2-21			
2-22			
2-23			
2-24			
2-25			
2-26			
3-1			
3-2			

NOTES:
* Run NO2 std on NO3 runs
* LCS/LCS Dup all parameters
* MS/MSD (NO3, TKN, NH3)

DCN#70874

Approved: September 17, 2007

KEMRON ENVIRONMENTAL SERVICES

WORKGROUP: WG249548

SMARTCHEM RUN LOG

Analyte		1	2	3
Position				
3-3				
3-4				
3-5				
3-6				
3-7				
3-8				
3-9				
3-10				
3-11				
3-12				
3-13				
3-14				
3-15				

Analyte		1	2	3
Position				
3-16				
3-17				
3-18				
3-19				
3-20				
3-21				
3-22				
3-23				
3-24				
3-25				
3-26				
3-27				
3-28				

☐ Chloride	EPA 325.2/SM 4500-Cl⁻ E	☐ Ammonia	EPA 350.1/SM 4500-NH3 B
☐ Sulfate	EPA 375.4	☐ TKN	EPA 351.2
☑ Alkalinity	EPA 310.2	☐ Phos	EPA 365.4
☐ Nitrate-Nitrite	EPA 353.2/SM 4500-NO3 F		

Analyte	AIK		
SOP & Revision	K3102		
Curve Stock (SC made)	std 20568		
Curve ID (user made)			
ICV	std 21798		
CCV	std 21352		
LCS	std 21799		
MS	Dilution N/A		

Comments: _____

Analyst: Deanna Jason Date: 9/7/06

DCN#70874

Deanna Roberts

Approved: September 17, 2007

KEMRON ENVIRONMENTAL
SMARTCHEM REPORT
UNITS: MG/L

Method : WALK - EPA 310.2 Alkalinity

Smp#/[Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
DIL-1	RBL	0.00	0.5693	0.00		12:40:05 PM
DIL-1	RBL	0.00	0.5500	0.00		12:40:23 PM
DIL-1	RBL	0.00	0.5760	0.00		12:41:35 PM
DIL-1	Std-1	0.00	-0.0053	0.00		12:41:53 PM
SR5-1	Std-2	10.00	-0.0168	0.00		12:42:47 PM
SR5-2	Std-3	20.00	-0.0247	0.00		12:43:05 PM
SR5-3	Std-4	50.00	-0.0758	0.00		12:43:59 PM
SR5-4	Std-5	100.00	-0.1548	0.00		12:44:17 PM
SR5-5	Std-6	200.00	-0.3459	0.00		12:45:11 PM
SR5-6	Std-7	250.00	-0.3968	0.00		12:45:29 PM
SR5-7	Std-8	300.00	-0.4445	0.00		12:46:23 PM
1	ICV 250	237.47	-0.3758	0.00		12:46:41 PM
2	WG249548-01 BLANK	-4.08	0.0170	0.00	INV,><,LL	12:47:35 PM
3	WG249548-02 LCS	176.86	-0.2903	0.00		12:47:53 PM
4	WG249548-03 LCSDUP	205.23	-0.3311	0.00		12:48:47 PM
5	L0708816-01	59.65	-0.1029	0.00		12:49:05 PM
6	L0708839-02 (4)	206.01	-0.3322	0.00		12:49:59 PM
7	L0708839-03 (4)	127.63	-0.2157	0.00		12:50:17 PM
8	L0708839-05 (4)	209.56	-0.3372	0.00		12:51:11 PM
9	L0708839-06 (4)	149.78	-0.2499	0.00		12:51:29 PM
10	L0708839-12 (4)	209.48	-0.3371	0.00		12:52:23 PM
ST-2	CCV1 (200 mg/L)	219.29	-0.3508	109.64		12:52:41 PM
ST-3	CCB (0 mg/L)	-1.15	0.0112	0.00	INV,><,LL	12:53:35 PM
11	L0708839-13 (4)	122.87	-0.2082	0.00		12:53:53 PM
12	L0709015-02 (4)	224.12	-0.3575	0.00		12:54:47 PM
13	L0709015-03 (10)	172.71	-0.2842	0.00		12:55:05 PM
14	L0709015-04 (50)	202.89	-0.3278	0.00		12:55:59 PM
15	L0709052-04	41.18	-0.0698	0.00		12:56:17 PM
16	L0709052-05	43.32	-0.0737	0.00		12:57:11 PM
17	L0709052-06	111.02	-0.1893	0.00		12:57:29 PM
18	WG249548-05 DUP	106.01	-0.1812	0.00		12:58:23 PM
19	ID 19	-2.05	0.0130	0.00	INV,><,LL	12:58:41 PM

Report Date :09/07/2007 **Run Date :9/7/2007** **Operator : WESTCO** **Plan # :20070907002**

Plan Description : ALK-B-DIH/9/8/2007

Approved: September 17, 2007

KEMRON ENVIRONMENTAL
SMARTCHEM REPORT
UNITS: MG/L

Method : WALK - EPA 310.2 Alkalinity

Smp#/[Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
20	ID 20	1.55	0.0058	0.00	INV,><	12:59:35 PM
ST-2	CCV1 (200 mg/L)	204.87	-0.3306	102.44		12:59:53 PM
ST-3	CCB (0 mg/L)	-1.80	0.0124	0.00	INV,><,LL	1:00:47 PM

Report Date :09/07/2007 **Run Date :9/7/2007** **Operator : WESTCO** **Plan # :20070907002**

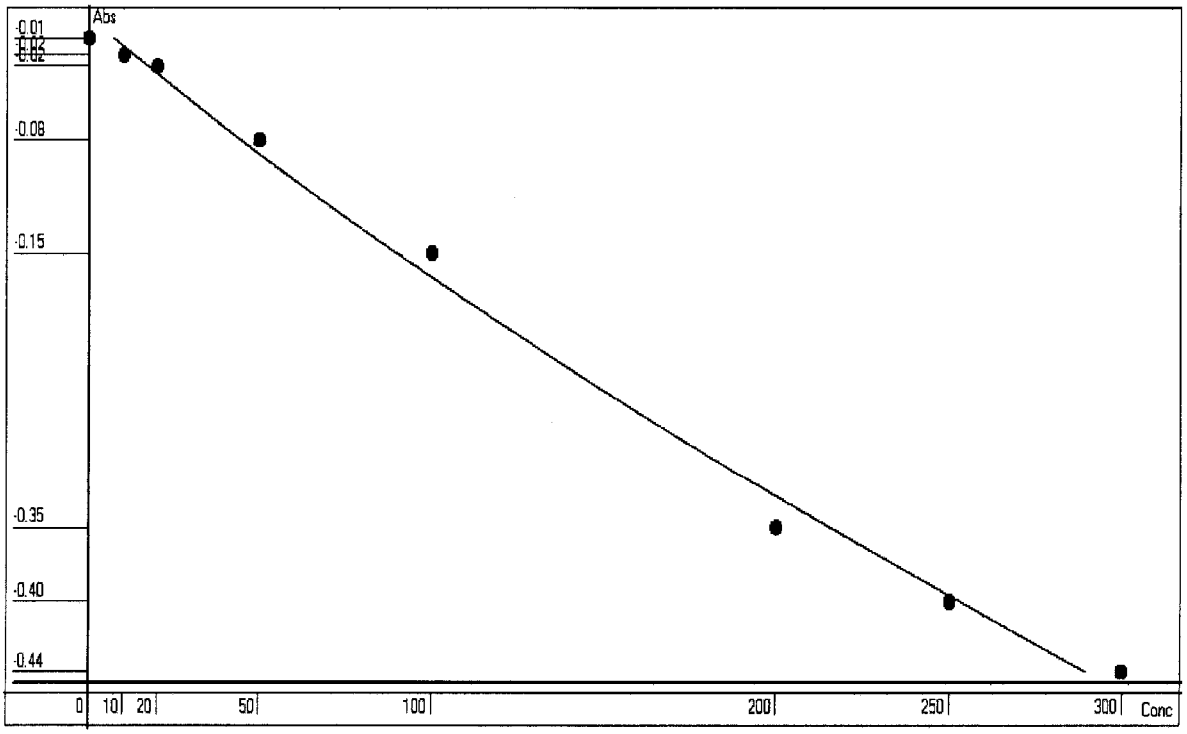
Plan Description : ALK-B-DIH/9/8/2007

Approved: September 17, 2007

Calibrant Report - WALK -

Calib Lot #:010104 Exp Date:1/1/2010 User:KEMRON

Plan # : 20070907002 Description : [ALK-B-DIH/9/8/2007]



Point	OD	Conc	Recalc Conc	% Error
1	-0.0053	0	7.1321	713.21
2	-0.0168	10	13.0208	30.21
3	-0.0247	20	17.1130	-14.44
4	-0.0758	50	44.5040	-10.99
5	-0.1548	100	89.9917	-10.01
6	-0.3459	200	215.8034	7.90
7	-0.3968	250	253.0788	1.23
8	-0.4445	300	289.4484	-3.52

Conc= +305.6672*Abso^2 -505.3076*Abso +4.4454 R^2=0.9941

RBL
0.5727
0

Report Date 9/7/2007 Run Date 9/7/2007

Approved: September 17, 2007

2.2.3 Total Organic Carbon Data

2.2.3.1 Summary Data

LABORATORY REPORT

L0709052

09/24/07 08:27

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP

P.O. Number: 200328

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW20	L0709052-04	415.1	1	06-SEP-07
12WW20	L0709052-04	415.1	1	06-SEP-07
12WW20-FD	L0709052-05	415.1	1	06-SEP-07
12WW20-FD	L0709052-05	415.1	1	06-SEP-07
12WW21	L0709052-06	415.1	1	06-SEP-07
12WW21	L0709052-06	415.1	1	06-SEP-07

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114524

Sample Number: **L0709052-04**
Client ID: **12WW20**
Matrix: **Water**
Workgroup Number: **WG249733**
Collect Date: **09/05/2007 10:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **09/20/2007 16:44**
Cal Date: **09/20/2007 11:15**
Run Date: **09/20/2007 16:44**
File ID: **TC09-20-2007.12**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Organic Carbon		1.96		1.00	0.500

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114525

Sample Number: **L0709052-04**
Client ID: **12WW20**
Matrix: **Water**
Workgroup Number: **WG249733**
Collect Date: **09/05/2007 10:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **09/20/2007 16:44**
Cal Date: **09/20/2007 11:15**
Run Date: **09/20/2007 16:44**
File ID: **TC09-20-2007.12**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Inorganic Carbon			U	1.00	0.500

U Not detected at or above adjusted sample detection limit

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114526

Sample Number: **L0709052-05**
Client ID: **12WW20-FD**
Matrix: **Water**
Workgroup Number: **WG249733**
Collect Date: **09/05/2007 10:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **09/20/2007 16:58**
Cal Date: **09/20/2007 11:15**
Run Date: **09/20/2007 16:58**
File ID: **TC09-20-2007.13**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Organic Carbon		1.91		1.00	0.500

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114527

Sample Number: **L0709052-05**
Client ID: **12WW20-FD**
Matrix: **Water**
Workgroup Number: **WG249733**
Collect Date: **09/05/2007 10:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **09/20/2007 16:58**
Cal Date: **09/20/2007 11:15**
Run Date: **09/20/2007 16:58**
File ID: **TC09-20-2007.13**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Inorganic Carbon			U	1.00	0.500

U Not detected at or above adjusted sample detection limit

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114528

Sample Number: **L0709052-06**
Client ID: **12WW21**
Matrix: **Water**
Workgroup Number: **WG249733**
Collect Date: **09/05/2007 12:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **09/20/2007 17:14**
Cal Date: **09/20/2007 11:15**
Run Date: **09/20/2007 17:14**
File ID: **TC09-20-2007.14**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Organic Carbon		2.40		1.00	0.500

Report Number: **L0709052**
Report Date : **September 24, 2007**

00114529

Sample Number: **L0709052-06**
Client ID: **12WW21**
Matrix: **Water**
Workgroup Number: **WG249733**
Collect Date: **09/05/2007 12:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **09/20/2007 17:14**
Cal Date: **09/20/2007 11:15**
Run Date: **09/20/2007 17:14**
File ID: **TC09-20-2007.14**

Analyte	CAS. Number	Result	Qual	PQL	SQL
Total Inorganic Carbon			U	1.00	0.500

U Not detected at or above adjusted sample detection limit

2.2.3.2 QC Summary Data

Total Organic Carbon Example Calculations
(Direct Readout Parameter)

(Readout)/(dilution) = mg/L

where:

Readout = direct readout from the instrument
dilution = dilution in decimal form (ex. 1/5 dilution = 0.2)

KEMRON Environmental Services
Data Checklist

Date: 20-SEP-2007
Analyst: DIH
Analyst: NA
Method: TOC
Instrument: TOC
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG250624 WG249733

Calibration/Linearity	9/20/2007
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DIH
Secondary Reviewer	
Comments	

Primary Reviewer:
22-SEP-2007

Secondary Reviewer:

Generated: SEP-22-2007 09:14:57

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00114533

Analytical Method: 415.1 AAB#: WG249733

Login Number: L0709052

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW20	09/05/07	09/06/07	09/20/07	28	15.3	09/20/07	28	15.3	
12WW21	09/05/07	09/06/07	09/20/07	28	15.2	09/20/07	28	15.2	
12WW20-FD	09/05/07	09/06/07	09/20/07	28	15.3	09/20/07	28	15.3	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 881632
Report generated 09/22/2007 08:56

METHOD BLANK SUMMARY

Login Number: L0709052
Work Group: WG249733
Blank File ID: TC09-20-2007.04
Blank Sample ID: WG249733-01
Prep Date: 09/20/07 14:40
Instrument ID: TOC-VWP
Analyzed Date: 09/20/07 14:40
Method: 415.1
Analyst: DIH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG249733-02	TC09-20-2007.05	09/20/07 14:55	01
LCS2	WG249733-03	TC09-20-2007.06	09/20/07 15:21	01
12WW20	L0709052-04	TC09-20-2007.12	09/20/07 16:44	01
12WW20	L0709052-04	TC09-20-2007.12	09/20/07 16:44	01
12WW20-FD	L0709052-05	TC09-20-2007.13	09/20/07 16:58	01
12WW20-FD	L0709052-05	TC09-20-2007.13	09/20/07 16:58	01
12WW21	L0709052-06	TC09-20-2007.14	09/20/07 17:14	01
12WW21	L0709052-06	TC09-20-2007.14	09/20/07 17:14	01
DUP	WG249733-05	TC09-20-2007.29	09/20/07 20:45	DL01

KEMRON Environmental Services

METHOD BLANK REPORT

00114535

Login Number:L0709052 Prep Date:09/20/07 14:40 Sample ID:WG249733-01
Instrument ID:TOC-VWP Run Date:09/20/07 14:40 Prep Method:415.1
File ID:TC09-20-2007.04 Analyst:DIH Method:415.1
Workgroup (AAB#):WG249733 Matrix:Water Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID:TOC-VW-20-SEP-07

Analytes	SQL	PQL	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U

SQL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 881634
Report generated 09/22/2007 08:57

KEMRON Environmental Services

00114536

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0709052 Analyst:DIH Prep Method:415.1
Instrument ID:TOC-VWP Matrix:Water Method:415.1
Workgroup (AAB#):WG249733 Units:mg/L
QC Key:STD Lot #:STD20119

Sample ID:WG249733-02 LCS File ID:TC09-20-2007.05 Run Date:09/20/2007 14:55
Sample ID:WG249733-03 LCS2 File ID:TC09-20-2007.06 Run Date:09/20/2007 15:21

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	24.8	99.0	25.0	24.6	98.5	0.567	85 - 115	15	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 881635
Report generated 09/22/2007 08:57

2.2.3.3 Raw Data

TC/TIC curve

KEMRON ENVIRONMENTAL SERVICES

WG#: _____

Total Organic Carbon

MAKE DAILY

CCV (TOC): _____ ($\frac{10}{200}(1000) = 50\ mg/L$) ($\frac{2}{200}(1000) = 10\ mg/L$) see

CCV (TIC): _____ ($\frac{5}{200}(1000) = 25\ mg/L$) below

LCS (TOC): _____ ($\frac{5}{200}(1000) = 25\ mg/L$)

MS (TOC): _____

Calibration Curve Date: _____

☑ EPA 415.1 / SM5310-C TOC / TOC-4 / TOC-D / TOCLOW
☐ SW846 9060 TOC-14 / TOC-44

SOP: K 415 Rev. 11
Instrument: Shimadza TOC-VWP/ASI

DAILY CHECK

☑ drain reservoir filled
☑ ASI water bottle full
☑ dilution water bottle full

☑ 3rd bottle full
☑ sufficient gas
☑ sufficient persulfate

☑ sufficient acid waste container

Position	Sample ID	Dilution
1	TC curve	
2	TC ICV	
3	TIC curve	
4	TIC ICV	
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

Position	Sample ID	Dilution
26	Curve std	
27	TOC STD20564	
28	TIC STD19573	
29		
30		
31		
32	ICV	
33	TOC STD22000	
34	TIC STD21999	
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		

Position	Sample ID	Dilution
51		
52	see SOP	
~~53~~		
54		
55		
56		
57		
58	5/200(1000)=25	
59	5/200(1000)=25	
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		

Analyst: Deanna Bass Date: 9/20/07 Time: _____

DCN#71098

	Analysi	Sample Name	Result	Status	Date / Time
1	TC	TCCURVE		Compl	09/20/2007 10:34:22 AM
2	TC	TC ICV	TC:25.48mg/L	Compl	09/20/2007 10:42:08 AM
3	IC	TICCURVE		Compl	09/20/2007 11:35:13 AM
4	IC	TIC ICV	IC:25.46mg/L	Compl	09/20/2007 11:45:12 AM

Instr.Information

System	TOCVW ASI
Detector	Wet Chemical

Cal. Curve

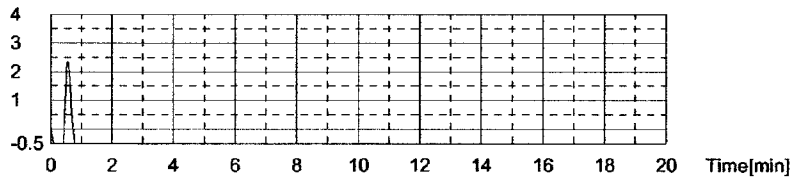
Sample Name:	TCCURVE
Sample ID:	Untitled
Cal. Curve:	TCCURVE-09-20-2007.2007_09_20_09_52_49.cal
Status	Completed

Type	Anal.
Standard	TC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	5.121	500uL	1	*******		09/20/2007 09:56:41 AM

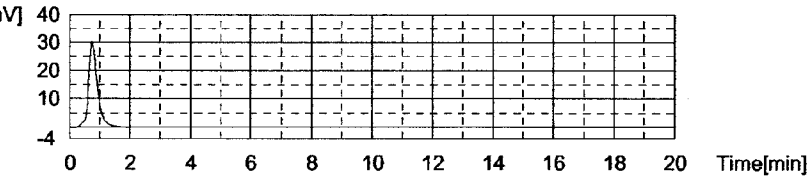
Acid Add. 0.000%
Mean Area 5.121



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	62.42	500uL	1	*******		09/20/2007 10:04:03 AM

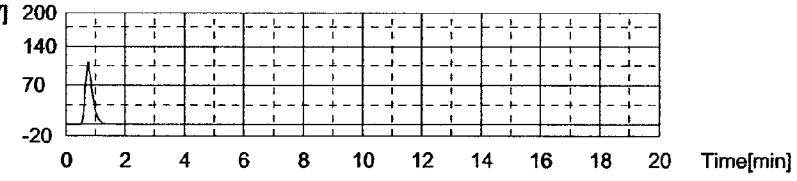
Acid Add. 0.000%
Mean Area 62.42



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	192.7	500uL	1	*******		09/20/2007 10:11:04 AM

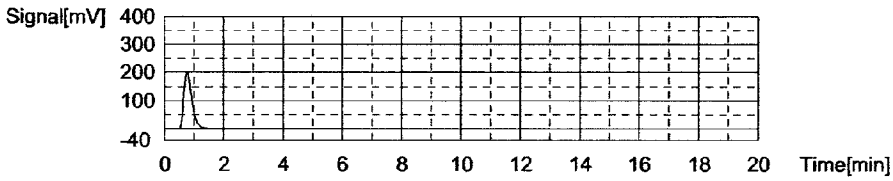
Acid Add. 0.000%
Mean Area 192.7



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	388.4	500uL	1	*******		09/20/2007 10:18:22 AM

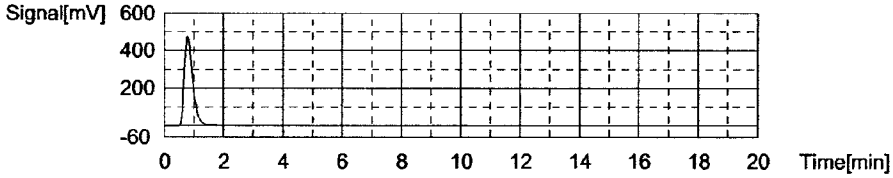
Acid Add. 0.000%
Mean Area 388.4



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	956.8	500uL	1	*******		09/20/2007 10:26:06 AM

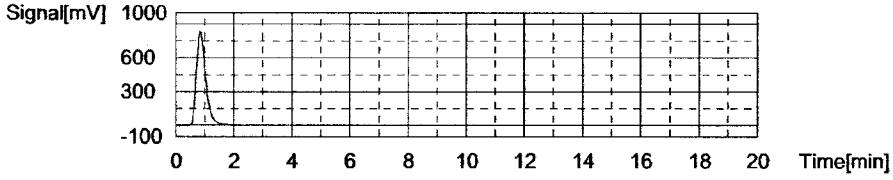
Acid Add. 0.000%
Mean Area 956.8



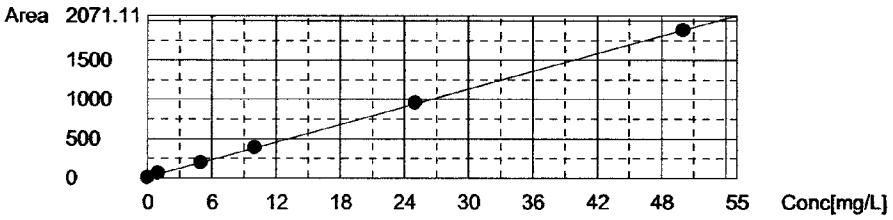
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1879	500uL	1	*******		09/20/2007 10:34:22 AM

Acid Add. 0.000%
Mean Area 1879



Slope: 37.38
Intercept 13.80
r^2 0.999865
Zero Shift No



Sample

Sample Name: TC ICV
Sample ID: Untitled
Origin: TCCURVE-09-20-2007.cal
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TC	1.000	TC:25.48mg/L

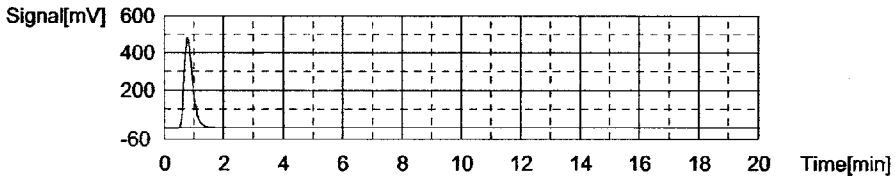
102%

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	966.4	25.48mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 10:42:08 AM

Mean Area 966.4
Mean Conc. 25.48mg/L



Cal. Curve

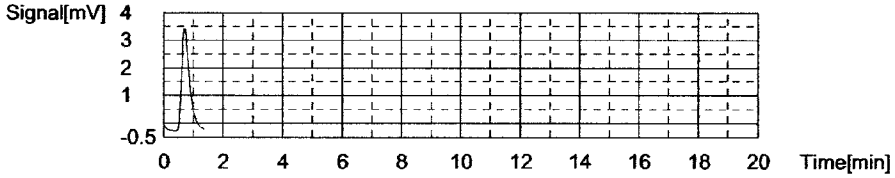
Sample Name: TICCURVE
Sample ID: Untitled
Cal. Curve: TICCURVE-09-20-2007.2007_09_20_10_42_08.cal
Status Completed

Type	Anal.
Standard	IC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	6.797	500uL	1	*******		09/20/2007 10:46:30 AM

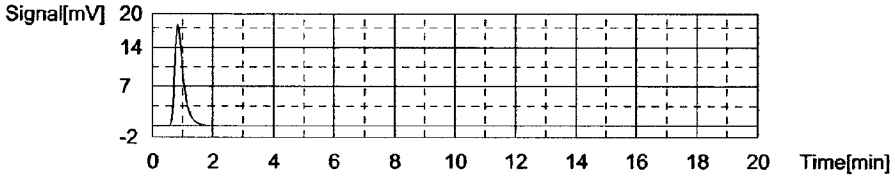
Acid Add. 10.00%
Mean Area 6.797



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	35.38	500uL	1	*******		09/20/2007 10:55:41 AM

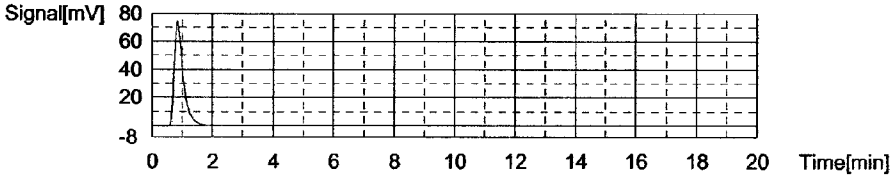
Acid Add. 10.00%
Mean Area 35.38



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	150.8	500uL	1	*******		09/20/2007 11:05:19 AM

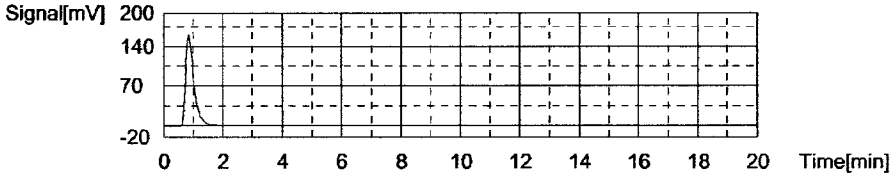
Acid Add. 10.00%
Mean Area 150.8



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	312.4	500uL	1	*******		09/20/2007 11:15:01 AM

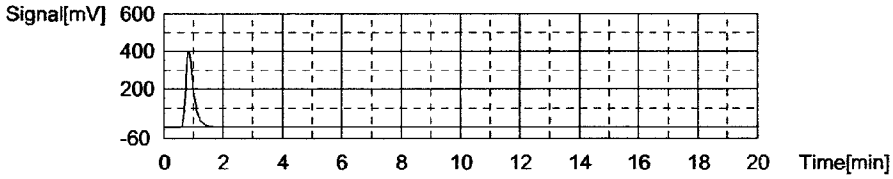
Acid Add. 10.00%
Mean Area 312.4



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	748.5	500uL	1	*******		09/20/2007 11:25:01 AM

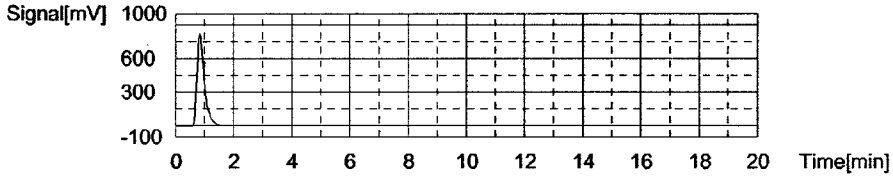
Acid Add. 10.00%
Mean Area 748.5



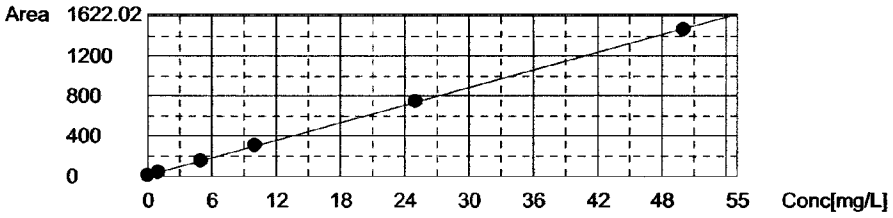
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1470	500uL	1	*******		09/20/2007 11:35:13 AM

Acid Add. 10.00%
Mean Area 1470



Slope: 29.30
Intercept 9.610
r^2 0.999871 ✓
Zero Shift No



Sample

Sample Name: TIC ICV
Sample ID: Untitled
Origin: TICCURVE-09-20-2007.cal
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	IC	1.000	IC:25.46mg/L

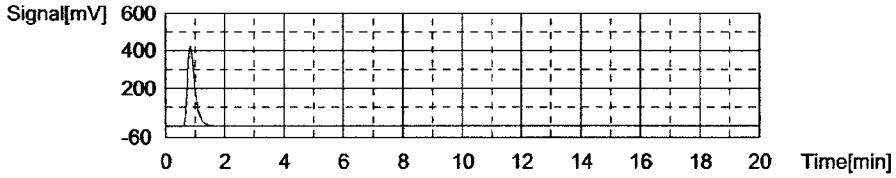
10270

1. Det

Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	755.7	25.46mg/L	500ul	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 11:45:12 AM

Mean Area 755.7
Mean Conc. 25.46mg/L



KEMRON ENVIRONMENTAL SERVICES

WORKGROUP: WG249733

250624

WG#: _____

Total Organic Carbon

MAKE DAILY

CCV (TOC): STD 20564 ($^{10}/_{200}$ (1000) = 50 mg/L) ($^{2}/_{200}$ (1000) = 10 mg/L)

LCS (TOC): STD 22000 ($^{5}/_{200}$ (1000) = 25 mg/L)

CCV (TIC): STD 19573 ($^{5}/_{200}$ (1000) = 25 mg/L)

MS (TOC): 0.4/40 (100c) = 10

Calibration Curve Date: 9/20/07

☑ EPA 415.1 / SM5310-C TOC / TOC-4 / TOC-D / TOCLOW
☐ SW846 9060 TOC-14 / TOC-44

SOP: K 4151 Rev. 11

Instrument: Shimadza TOC-VWP/ASI

DAILY CHECK

☑ drain reservoir filled
☑ ASI water bottle full
☑ dilution water bottle full

☑ 3rd bottle full
☑ sufficient gas
☑ sufficient persulfate

☑ sufficient acid
☐ waste container

Position	Sample ID	Dilution
1	CCV 50	
2	CCV 10	
3	TIC 25	
4	BLK	
5	LCS 25	
6	LCSDUP	
7	09-035-01	
8	02	
9	09-113-01	
10	02	
11	03	
12	09-052-04	
13	05	
14	06	
15	CCV	
16	CCB	
17	09-059-01	
18	09-087-01	1/2 CL
19	09-136-01	
20	09-128-01	1/10 HCL
21	02	|
22	03	|
23	04	|
24	05	|
25	MS 06	↓

Position	Sample ID	Dilution
26	MSD 07	1/10 HCL
27	CCV	
28	CCB	
29	DUP 128 05	1/10 HCL
30	09-129-01	1/1250 **
31	02	1/10 HCL
32	03	↓
33	09-180-01	
34	BLK	
35	~~CCV~~ LCS	
36	~~CCB~~/BLK LCSDUP	
37	~~LCS~~ 09-123-01	
38	~~LCSDUP~~ 02	
39	CCV	
40	CCB	
41	09-123-03	
42	DUP 03 ~~04~~	
43	MS 04	
44	MSD 05	
45	06	
46	07	
47	08	
48	09	
49	10	
50	11	

Position	Sample ID	Dilution
51	CCV	
52	CCB	
53	09-123-12	
54	13	
55	09-124-01	
56	02	
57	03	
58	~~05~~	
59	~~06~~	
60	~~07~~	
61	~~08~~	
62	09	
63	CCV	* Volume Low
64	CCB	
65	09-124-10	
66	CCV	
67	CCB	
68		
69		
70		
71		
72		
73		
74		
75		

Analyst: Deanna Hesson Date: 9/20/07 Time: _____

** pot. permang.
* 128, 129 preserved w/HCL diluted to reduce CL interference

DCN#70905

	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TOC	CCV 50	!!Error!! TOC:49.20mg/L TC:49.10mg/L IC:-0.1027	Compl	09/20/2007 02:01:12 PM	1
2	TOC	CCV 10	TOC:9.785mg/L TC:9.804mg/L IC:0.01912mg/L	Compl	09/20/2007 02:15:15 PM	2
3	TOC	TIC 25	!!Error!! TOC:-1.247mg/L TC:23.76mg/L IC:25.01m	Compl	09/20/2007 02:30:37 PM	3
4	TOC	WG249733-01 BLANK	!!Error!! TOC:-0.07842mg/L TC:-0.2027mg/L IC:-0	Compl	09/20/2007 02:40:23 PM	0
5	TOC	WG249733-02 LCS	!!Error!! TOC:24.76mg/L TC:24.66mg/L IC:-0.09733	Compl	09/20/2007 02:55:01 PM	5
6	TOC	WG249733-03 LCSDUP	!!Error!! TOC:24.62mg/L TC:24.57mg/L IC:-0.05569	Compl	09/20/2007 03:21:43 PM	6
7	TOC	L0709035-01	!!Error!! TOC:3.217mg/L TC:3.213mg/L IC:-0.00467	Compl	09/20/2007 03:35:39 PM	7
8	TOC	L0709035-02	!!Error!! TOC:9.391mg/L TC:9.376mg/L IC:-0.01470	Compl	09/20/2007 03:50:03 PM	8
9	TOC	L0709113-01	!!Error!! TOC:1.305mg/L TC:1.266mg/L IC:-0.03907	Compl	09/20/2007 04:03:44 PM	9
10	TOC	L0709113-02	!!Error!! TOC:0.3884mg/L TC:0.3595mg/L IC:-0.028	Compl	09/20/2007 04:17:07 PM	10
11	TOC	L0709113-03	!!Error!! TOC:0.4021mg/L TC:0.3726mg/L IC:-0.029	Compl	09/20/2007 04:30:35 PM	11
12	TOC	L0709052-04	TOC:1.961mg/L TC:1.984mg/L IC:0.02322mg/L	Compl	09/20/2007 04:44:48 PM	12
13	TOC	L0709052-05	TOC:1.910mg/L TC:1.970mg/L IC:0.06008mg/L	Compl	09/20/2007 04:58:58 PM	13
14	TOC	L0709052-06	TOC:2.404mg/L TC:2.450mg/L IC:0.04677mg/L	Compl	09/20/2007 05:14:46 PM	14
15	TOC	CCV	!!Error!! TOC:49.20mg/L TC:49.10mg/L IC:-0.1022	Compl	09/20/2007 05:29:29 PM	15
16	TOC	CCB	!!Error!! TOC:-0.07449mg/L TC:-0.2187mg/L IC:-0	Compl	09/20/2007 05:39:18 PM	0
17	TOC	L0709059-01	!!Error!! TOC:0.3510mg/L TC:0.2918mg/L IC:-0.059	Compl	09/20/2007 05:52:49 PM	17
18	TOC	L0709087-01 (2)	!!Error!! TOC:21.26mg/L TC:21.21mg/L IC:-0.05218	Compl	09/20/2007 06:08:50 PM	18
19	TOC	L0709136-01	!!Error!! TOC:0.6700mg/L TC:0.6024mg/L IC:-0.067	Compl	09/20/2007 06:22:23 PM	19
20	TOC	L0709128-01 (10)	!!Error!! TOC:1.152mg/L TC:1.118mg/L IC:-0.03395	Compl	09/20/2007 06:36:11 PM	20
21	TOC	L0709128-02 (10)	!!Error!! TOC:1.632mg/L TC:1.605mg/L IC:-0.02757	Compl	09/20/2007 06:57:37 PM	21
22	TOC	L0709128-03 (10)	!!Error!! TOC:1.647mg/L TC:1.594mg/L IC:-0.05303	Compl	09/20/2007 07:11:27 PM	22
23	TOC	L0709128-04 (10)	!!Error!! TOC:1.233mg/L TC:1.184mg/L IC:-0.04883	Compl	09/20/2007 07:25:19 PM	23
24	TOC	L0709128-05 (10) ok	!!Error!! TOC:0.8667mg/L TC:0.8372mg/L IC:-0.029	Compl	09/20/2007 07:39:00 PM	24
25	TOC	L0709128-06 (10) MS	!!Error!! TOC:0.6258mg/L TC:0.5874mg/L IC:-0.038	Compl	09/20/2007 07:52:39 PM	25
26	TOC	L0709128-07 (10) MSD	!!Error!! TOC:0.8899mg/L TC:0.8410mg/L IC:-0.048	Compl	09/20/2007 08:06:25 PM	26
27	TOC	CCV	!!Error!! TOC:50.00mg/L TC:49.90mg/L IC:-0.09774	Compl	09/20/2007 08:21:27 PM	27
28	TOC	CCB	!!Error!! TOC:-0.05430mg/L TC:-0.2097mg/L IC:-0	Compl	09/20/2007 08:31:14 PM	0
29	TOC	WG249733-05 (10) DUP	!!Error!! TOC:1.050mg/L TC:1.005mg/L IC:-0.04429	Compl	09/20/2007 08:45:00 PM	29
30	TOC	L0709129-01 (1250)	!!Error!! TOC:0.4174mg/L TC:0.3766mg/L IC:-0.040	Compl	09/20/2007 08:58:33 PM	30
31	TOC	L0709129-02 (10)	!!Error!! TOC:0.2188mg/L TC:0.1690mg/L IC:-0.049	Compl	09/20/2007 09:12:05 PM	31
32	TOC	L0709129-03 (10)	!!Error!! TOC:0.5126mg/L TC:0.4608mg/L IC:-0.051	Compl	09/20/2007 09:25:47 PM	32
33	TOC	L0709180-01	TOC:7.046mg/L TC:14.24mg/L IC:7.191mg/L	Compl	09/20/2007 09:40:47 PM	33
34	TOC	WG249733-06 BLANK	!!Error!! TOC:-0.1066mg/L TC:-0.2115mg/L IC:-0.1	Compl	09/20/2007 09:50:40 PM	0
35	TOC	-02 LCS	!!Error!! TOC:25.13mg/L TC:25.07mg/L IC:-0.0592	Compl	09/20/2007 10:05:05 PM	35
36	TOC	-03 LCSDUP	!!Error!! TOC:24.91mg/L TC:24.84mg/L IC:-0.06852	Compl	09/20/2007 10:19:24 PM	36
37	TOC	L0709123-01	TOC:2.391mg/L TC:14.25mg/L IC:11.86mg/L	Compl	09/20/2007 10:34:12 PM	37
38	TOC	L0709123-02	TOC:1.306mg/L TC:13.96mg/L IC:12.66mg/L	Compl	09/20/2007 10:48:43 PM	38
39	TOC	CCV	!!Error!! TOC:50.08mg/L TC:50.06mg/L IC:-0.02177	Compl	09/20/2007 11:03:25 PM	39
40	TOC	CCB	!!Error!! TOC:-0.07021mg/L TC:-0.2037mg/L IC:-0	Compl	09/20/2007 11:12:51 PM	0
41	TOC	L0709123-03	TOC:1.263mg/L TC:12.68mg/L IC:11.42mg/L	Compl	09/20/2007 11:27:04 PM	41
42	TOC	WG249733-05 DUP	TOC:0.08655mg/L TC:8.015mg/L IC:7.928mg/L	Compl	09/20/2007 11:40:44 PM	42
43	TOC	L0709123-04 MS	TOC:9.592mg/L TC:16.28mg/L IC:6.689mg/L	Compl	09/20/2007 11:54:38 PM	43
44	TOC	L0709123-05 MSD	TOC:13.92mg/L TC:20.85mg/L IC:6.935mg/L	Compl	09/21/2007 12:08:13 AM	44
45	TOC	L0709123-06	TOC:3.215mg/L TC:14.92mg/L IC:11.71mg/L	Compl	09/21/2007 12:21:46 AM	45
46	TOC	L0709123-07	TOC:4.013mg/L TC:15.84mg/L IC:11.83mg/L	Compl	09/21/2007 12:35:16 AM	46
47	TOC	L0709123-08	TOC:0.2498mg/L TC:0.4673mg/L IC:0.2174mg/L	Compl	09/21/2007 12:47:16 AM	47
48	TOC	L0709123-09	TOC:0.5806mg/L TC:1.649mg/L IC:1.068mg/L	Compl	09/21/2007 12:59:27 AM	48
49	TOC	L0709123-10	TOC:0.5288mg/L TC:3.788mg/L IC:3.259mg/L	Compl	09/21/2007 01:11:41 AM	49
50	TOC	L0709123-11	TOC:0.7159mg/L TC:3.224mg/L IC:2.508mg/L	Compl	09/21/2007 01:23:46 AM	50
51	TOC	CCV	!!Error!! TOC:48.34mg/L TC:48.27mg/L IC:-0.07784	Compl	09/21/2007 01:36:50 AM	51
52	TOC	CCB	!!Error!! TOC:-0.03727mg/L TC:-0.1722mg/L IC:-0	Compl	09/21/2007 01:45:39 AM	0
53	TOC	L0709123-12	TOC:0.6208mg/L TC:3.435mg/L IC:2.814mg/L	Compl	09/21/2007 01:57:32 AM	53
54	TOC	L0709123-13	TOC:1.952mg/L TC:3.940mg/L IC:1.988mg/L	Compl	09/21/2007 02:09:35 AM	54
55	TOC	L0709124-01	TOC:1.819mg/L TC:3.207mg/L IC:1.388mg/L	Compl	09/21/2007 02:21:32 AM	55
56	TOC	L0709124-02	TOC:0.3328mg/L TC:1.494mg/L IC:1.161mg/L	Compl	09/21/2007 02:33:17 AM	56
57	TOC	L0709124-03	TOC:1.227mg/L TC:1.744mg/L IC:0.5178mg/L	Compl	09/21/2007 02:45:18 AM	57
58	TOC	L0709124-05	TOC:0.5905mg/L TC:2.804mg/L IC:2.213mg/L	Compl	09/21/2007 02:57:09 AM	58
59	TOC	L0709124-06	TOC:0.2982mg/L TC:2.726mg/L IC:2.428mg/L	Compl	09/21/2007 03:09:09 AM	59
60	TOC	L0709124-07	TOC:0.4825mg/L TC:1.380mg/L IC:0.8970mg/L	Compl	09/21/2007 03:20:46 AM	60
61	TOC	L0709124-08	TOC:0.6566mg/L TC:2.541mg/L IC:1.885mg/L	Compl	09/21/2007 03:32:41 AM	61
62	TOC	L0709124-09	TOC:1.098mg/L TC:1.521mg/L IC:0.4236mg/L	Compl	09/21/2007 03:44:33 AM	62
63	TOC	CCV *	!!Error!! TOC:35.82mg/L TC:35.75mg/L IC:-0.07853	Compl	09/21/2007 03:57:10 AM	63
64	TOC	CCB	!!Error!! TOC:-0.05418mg/L TC:-0.1734mg/L IC:-0	Compl	09/21/2007 04:06:02 AM	0
65	TOC	L0709124-10	TOC:1.127mg/L TC:1.695mg/L IC:0.5683mg/L	Compl	09/21/2007 04:18:00 AM	65
66	TOC	CCV	!!Error!! TOC:47.33mg/L TC:47.25mg/L IC:-0.07627	Compl	09/21/2007 04:31:10 AM	1
67	TOC	CCB	!!Error!! TOC:-0.04063mg/L TC:-0.1631mg/L IC:-0	Compl	09/21/2007 04:39:56 AM	0

Instr.Information

System TOCVW ASI
Detector Wet Chemical

Sample

Sample Name: CCV 50
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

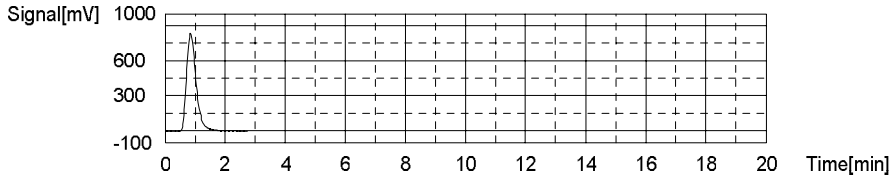
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:49.20mg/L TC:49.10mg/L IC:-0.1027mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1849	49.10mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 01:56:06 PM

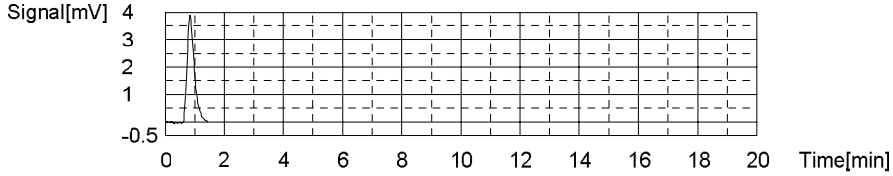
Mean Area 1849
Mean Conc. 49.10mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.602	-0.1027mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 02:01:12 PM

Mean Area 6.602
Mean Conc. -0.1027mg/L



Sample

Sample Name: CCV 10
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

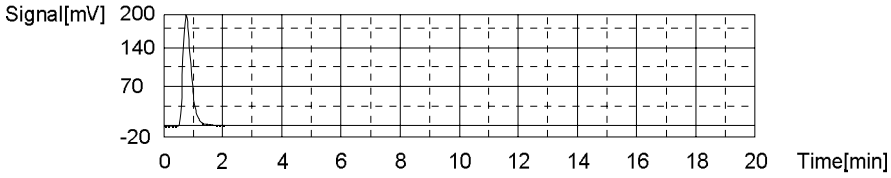
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:9.785mg/L TC:9.804mg/L IC:0.01912mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	380.3	9.804mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 02:10:08 PM

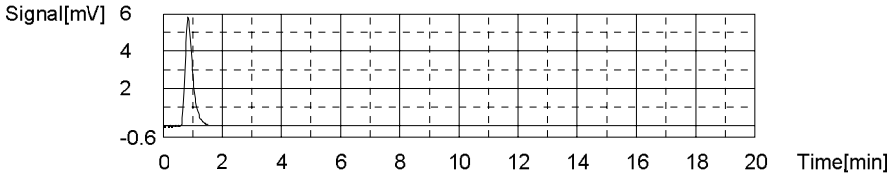
Mean Area 380.3
Mean Conc. 9.804mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.17	0.01912mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 02:15:15 PM

Mean Area 10.17
Mean Conc. 0.01912mg/L



Sample

Sample Name: TIC 25
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

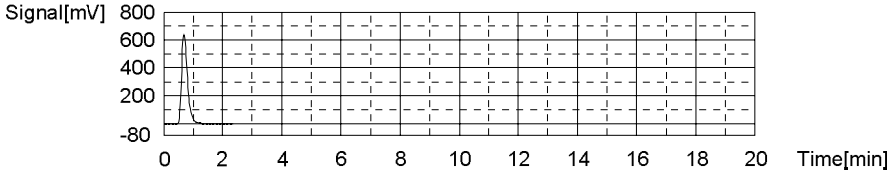
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-1.247mg/L TC:23.76mg/L IC:25.01mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	902.1	23.76mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 02:24:28 PM

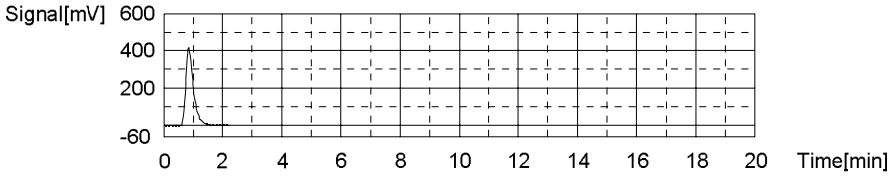
Mean Area 902.1
Mean Conc. 23.76mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	742.4	25.01mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 02:30:37 PM

Mean Area 742.4
Mean Conc. 25.01mg/L



Sample

Sample Name: WG249733-01 BLANK
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

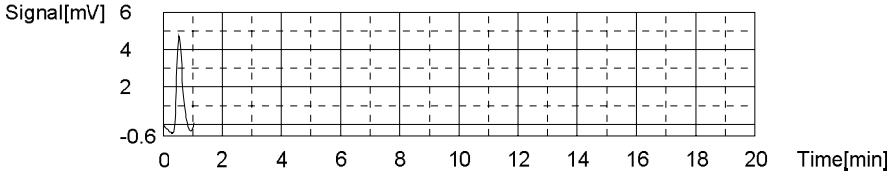
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.07842mg/L TC:-0.2027mg/L IC:-0.1243mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.226	-0.2027mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 02:36:07 PM

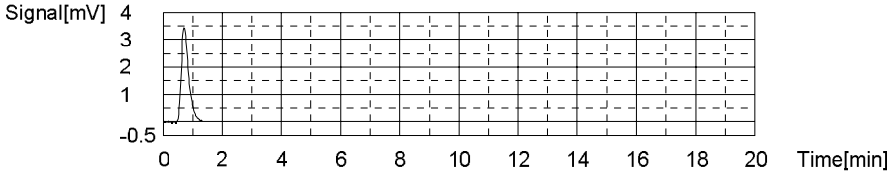
Mean Area 6.226
Mean Conc. -0.2027mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.968	-0.1243mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 02:40:23 PM

Mean Area 5.968
Mean Conc. -0.1243mg/L



Sample

Sample Name: WG249733-02 LCS
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

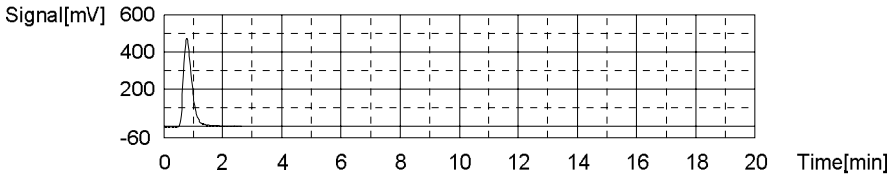
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.76mg/L TC:24.66mg/L IC:-0.09733mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	935.6	24.66mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 02:49:54 PM

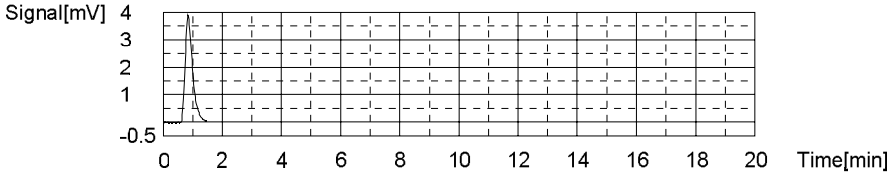
Mean Area 935.6
Mean Conc. 24.66mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.758	-0.09733mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 02:55:01 PM

Mean Area 6.758
Mean Conc. -0.09733mg/L



Sample

Sample Name: WG249733-03 LCSDUP
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

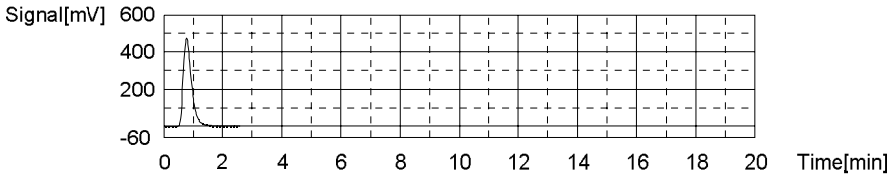
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.62mg/L TC:24.57mg/L IC:-0.05569mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	932.2	24.57mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 03:16:35 PM

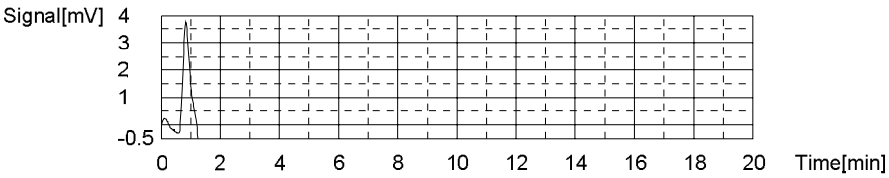
Mean Area 932.2
Mean Conc. 24.57mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.978	-0.05569mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 03:21:43 PM

Mean Area 7.978
Mean Conc. -0.05569mg/L



Sample

Sample Name: L0709035-01
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

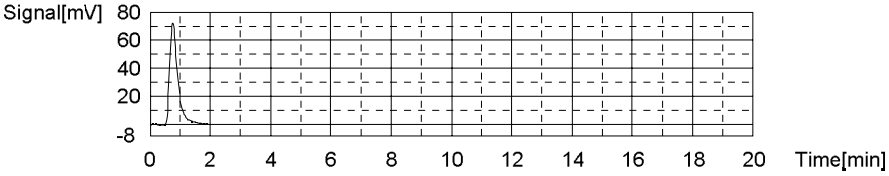
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:3.217mg/L TC:3.213mg/L IC:-0.00467mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	133.9	3.213mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 03:30:31 PM

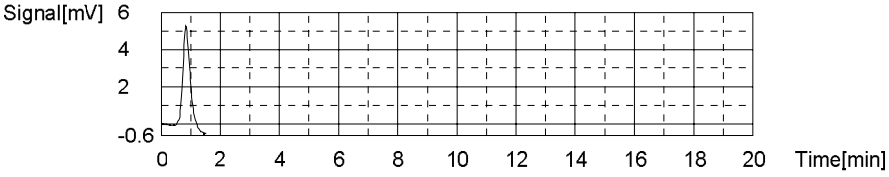
Mean Area 133.9
Mean Conc. 3.213mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.473	-0.00467mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 03:35:39 PM

Mean Area 9.473
Mean Conc. -0.00467mg/L



Sample

Sample Name: L0709035-02
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

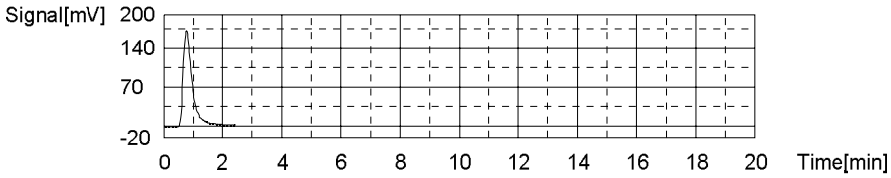
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:9.391mg/L TC:9.376mg/L IC:-0.01470mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	364.3	9.376mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 03:44:58 PM

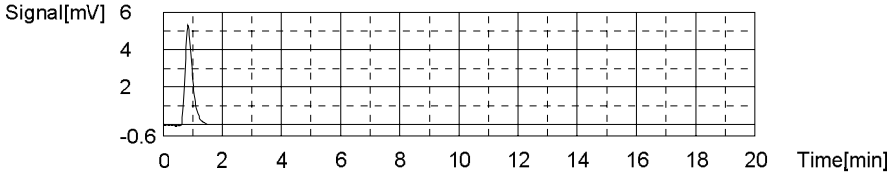
Mean Area 364.3
Mean Conc. 9.376mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.179	-0.01470mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 03:50:03 PM

Mean Area 9.179
Mean Conc. -0.01470mg/L



Sample

Sample Name: L0709113-01
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

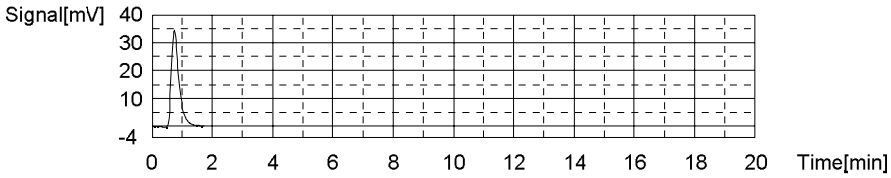
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:1.305mg/L TC:1.266mg/L IC:-0.03907mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	61.11	1.266mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 03:58:38 PM

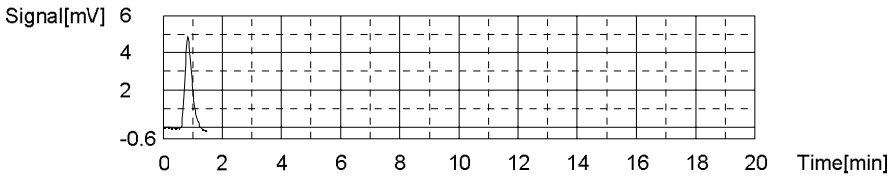
Mean Area 61.11
Mean Conc. 1.266mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.465	-0.03907mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 04:03:44 PM

Mean Area 8.465
Mean Conc. -0.03907mg/L



Sample

Sample Name: L0709113-02
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

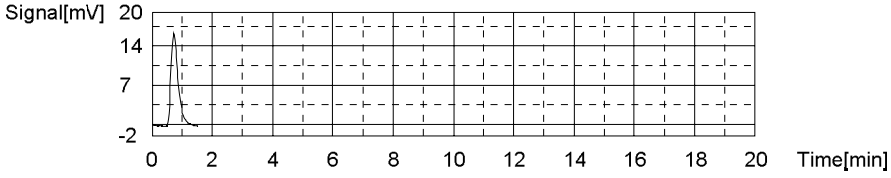
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.3884mg/L TC:0.3595mg/L IC:-0.02893mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	27.24	0.3595mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 04:12:07 PM

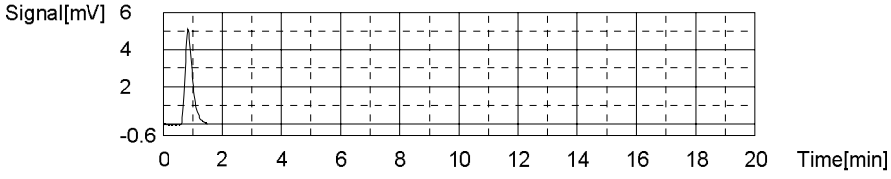
Mean Area 27.24
Mean Conc. 0.3595mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.762	-0.02893mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 04:17:07 PM

Mean Area 8.762
Mean Conc. -0.02893mg/L



Sample

Sample Name: L0709113-03
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

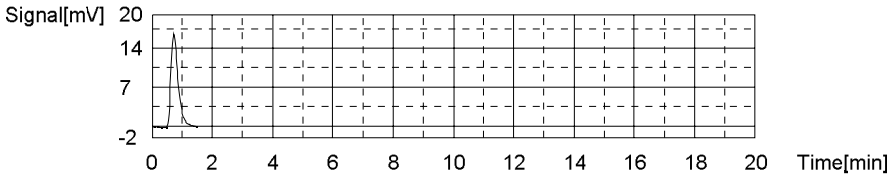
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.4021mg/L TC:0.3726mg/L IC:-0.02958mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	27.73	0.3726mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 04:25:29 PM

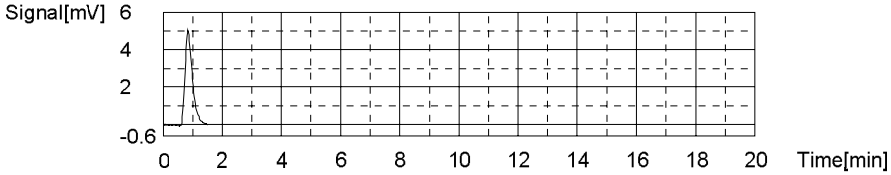
Mean Area 27.73
Mean Conc. 0.3726mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.743	-0.02958mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 04:30:35 PM

Mean Area 8.743
Mean Conc. -0.02958mg/L



Sample

Sample Name: L0709052-04
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

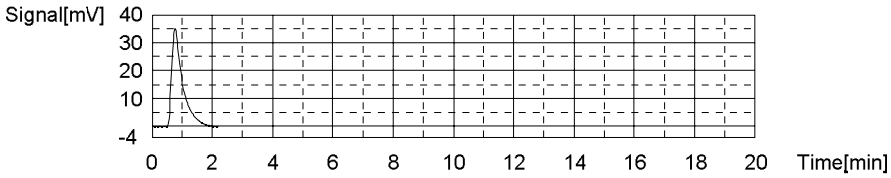
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.961mg/L TC:1.984mg/L IC:0.02322mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	87.96	1.984mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 04:39:40 PM

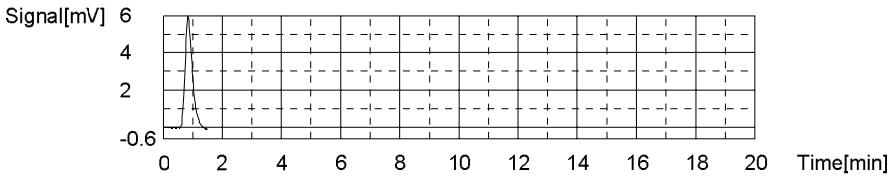
Mean Area 87.96
Mean Conc. 1.984mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.29	0.02322mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 04:44:48 PM

Mean Area 10.29
Mean Conc. 0.02322mg/L



Sample

Sample Name: L0709052-05
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

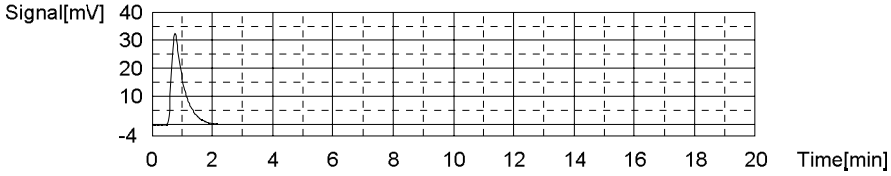
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.910mg/L TC:1.970mg/L IC:0.06008mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	87.45	1.970mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 04:53:52 PM

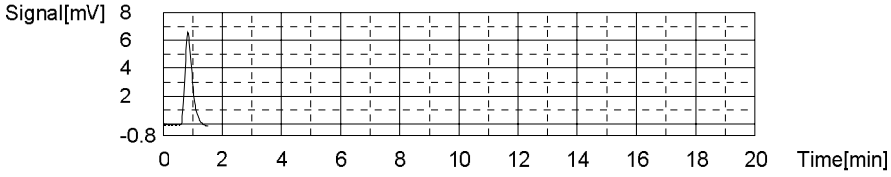
Mean Area 87.45
Mean Conc. 1.970mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	11.37	0.06008mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 04:58:58 PM

Mean Area 11.37
Mean Conc. 0.06008mg/L



Sample

Sample Name: L0709052-06
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

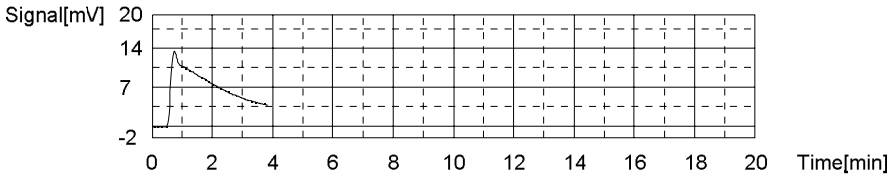
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.404mg/L TC:2.450mg/L IC:0.04677mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	105.4	2.450mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 05:09:39 PM

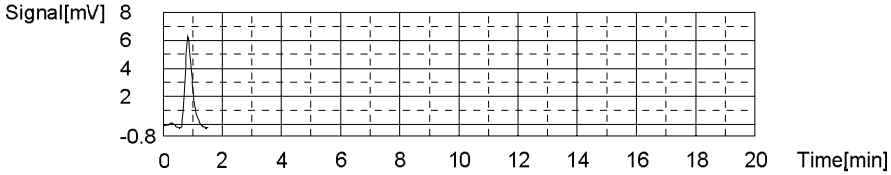
Mean Area 105.4
Mean Conc. 2.450mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.98	0.04677mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 05:14:46 PM

Mean Area 10.98
Mean Conc. 0.04677mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

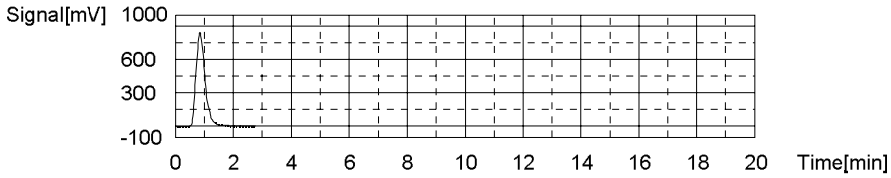
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:49.20mg/L TC:49.10mg/L IC:-0.1022mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1849	49.10mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 05:24:24 PM

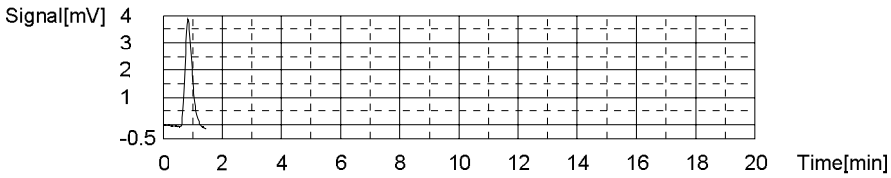
Mean Area 1849
Mean Conc. 49.10mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.616	-0.1022mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 05:29:29 PM

Mean Area 6.616
Mean Conc. -0.1022mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

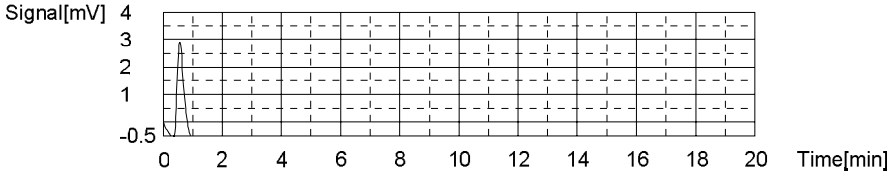
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.07449mg/L TC:-0.2187mg/L IC:-0.1442mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.628	-0.2187mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 05:35:06 PM

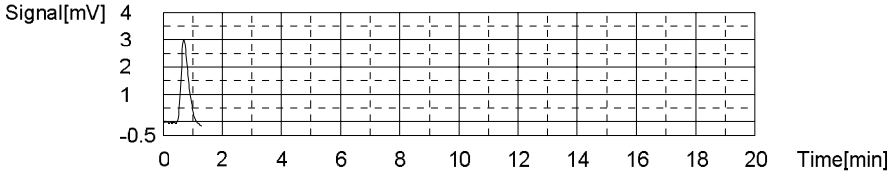
Mean Area 5.628
Mean Conc. -0.2187mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.384	-0.1442mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 05:39:18 PM

Mean Area 5.384
Mean Conc. -0.1442mg/L



Sample

Sample Name: L0709059-01
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

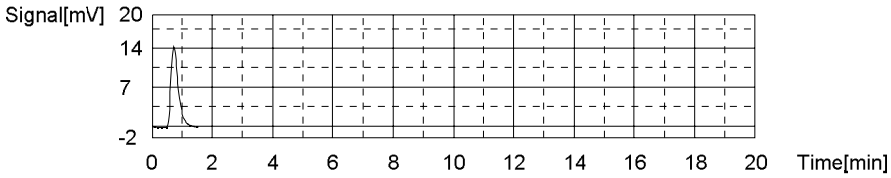
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.3510mg/L TC:0.2918mg/L IC:-0.05924mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	24.71	0.2918mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 05:47:43 PM

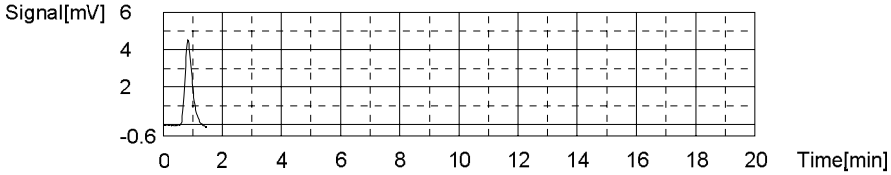
Mean Area 24.71
Mean Conc. 0.2918mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.874	-0.05924mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 05:52:49 PM

Mean Area 7.874
Mean Conc. -0.05924mg/L



Sample

Sample Name: L0709087-01 (2)
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

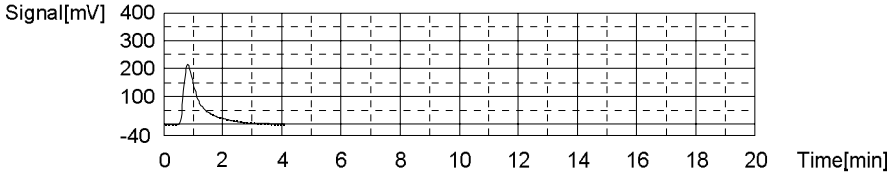
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:21.26mg/L TC:21.21mg/L IC:-0.05218mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	806.7	21.21mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 06:03:46 PM

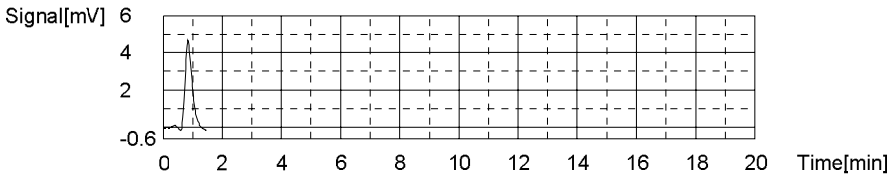
Mean Area 806.7
Mean Conc. 21.21mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.081	-0.05218mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 06:08:50 PM

Mean Area 8.081
Mean Conc. -0.05218mg/L



Sample

Sample Name: L0709136-01
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

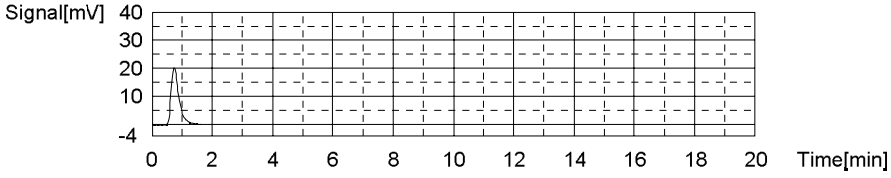
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.6700mg/L TC:0.6024mg/L IC:-0.06764mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	36.32	0.6024mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 06:17:19 PM

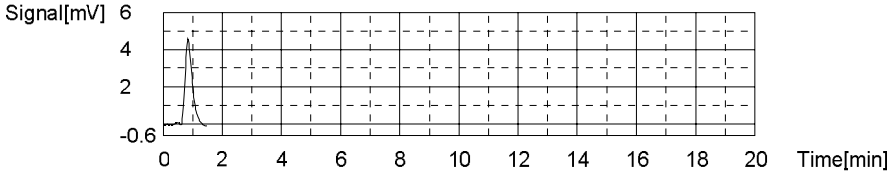
Mean Area 36.32
Mean Conc. 0.6024mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.628	-0.06764mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 06:22:23 PM

Mean Area 7.628
Mean Conc. -0.06764mg/L



Sample

Sample Name: L0709128-01 (10)
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

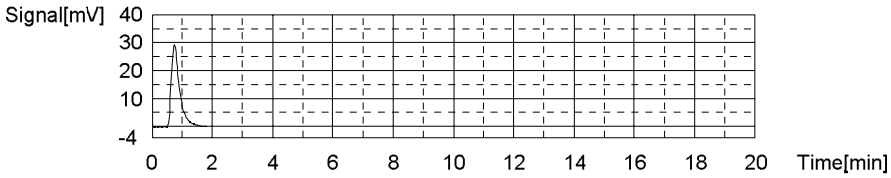
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:1.152mg/L TC:1.118mg/L IC:-0.03395mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	55.61	1.118mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 06:31:04 PM

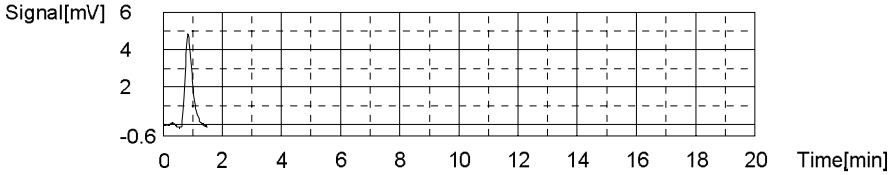
Mean Area 55.61
Mean Conc. 1.118mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.615	-0.03395mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 06:36:11 PM

Mean Area 8.615
Mean Conc. -0.03395mg/L



Sample

Sample Name: L0709128-02 (10)
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

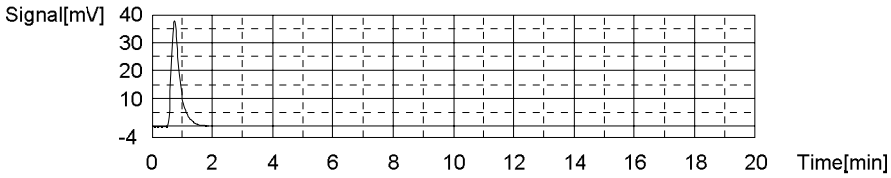
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:1.632mg/L TC:1.605mg/L IC:-0.02757mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	73.79	1.605mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 06:52:30 PM

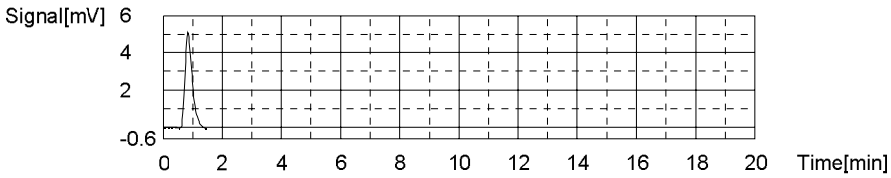
Mean Area 73.79
Mean Conc. 1.605mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.802	-0.02757mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 06:57:37 PM

Mean Area 8.802
Mean Conc. -0.02757mg/L



Sample

Sample Name: L0709128-03 (10)
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

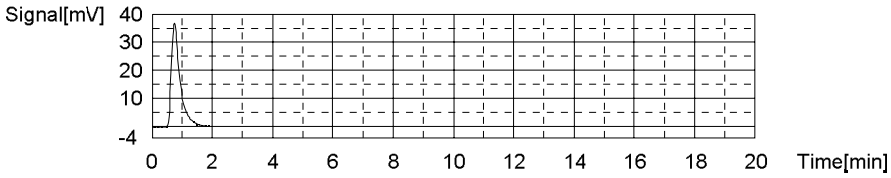
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:1.647mg/L TC:1.594mg/L IC:-0.05303mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	73.39	1.594mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 07:06:22 PM

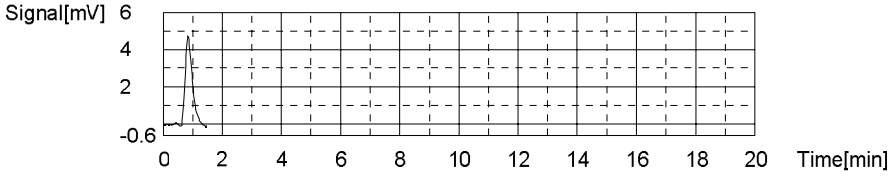
Mean Area 73.39
Mean Conc. 1.594mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.056	-0.05303mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 07:11:27 PM

Mean Area 8.056
Mean Conc. -0.05303mg/L



Sample

Sample Name: L0709128-04 (10)
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

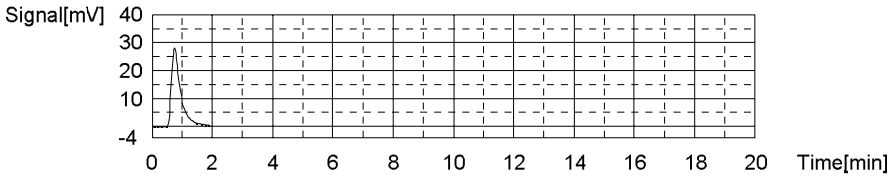
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:1.233mg/L TC:1.184mg/L IC:-0.04883mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	58.06	1.184mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 07:20:12 PM

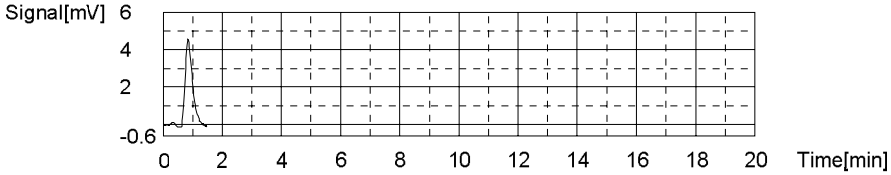
Mean Area 58.06
Mean Conc. 1.184mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.179	-0.04883mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 07:25:19 PM

Mean Area 8.179
Mean Conc. -0.04883mg/L



Sample

Sample Name: L0709128-05 (10)
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

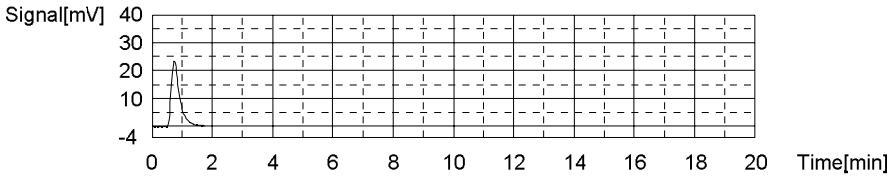
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.8667mg/L TC:0.8372mg/L IC:-0.02945mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	45.10	0.8372mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 07:33:54 PM

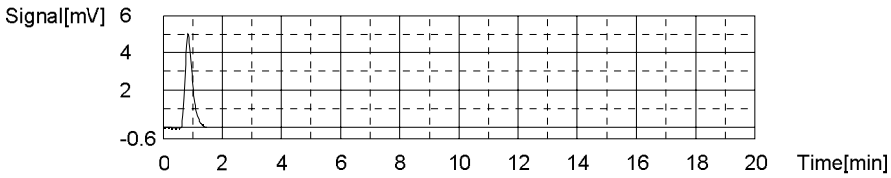
Mean Area 45.10
Mean Conc. 0.8372mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.747	-0.02945mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 07:39:00 PM

Mean Area 8.747
Mean Conc. -0.02945mg/L



Sample

Sample Name: L0709128-06 (10)
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

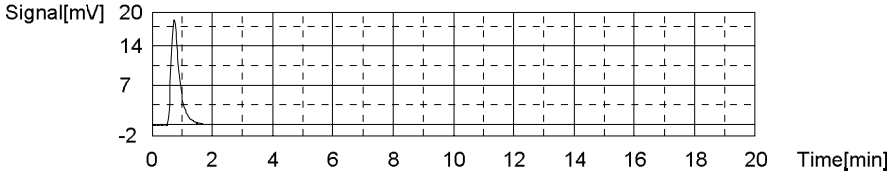
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.6258mg/L TC:0.5874mg/L IC:-0.03842mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	35.76	0.5874mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 07:47:33 PM

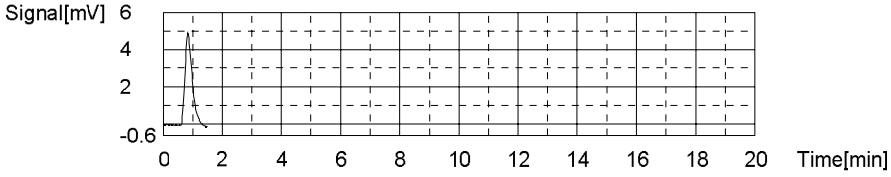
Mean Area 35.76
Mean Conc. 0.5874mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.484	-0.03842mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 07:52:39 PM

Mean Area 8.484
Mean Conc. -0.03842mg/L



Sample

Sample Name: L0709128-07 (10)
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

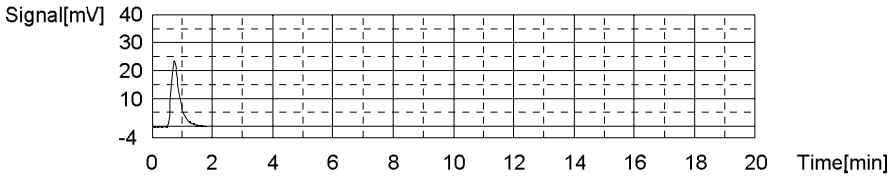
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.8899mg/L TC:0.8410mg/L IC:-0.04890mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	45.24	0.8410mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 08:01:19 PM

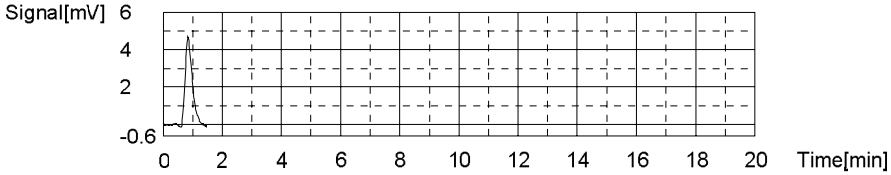
Mean Area 45.24
Mean Conc. 0.8410mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.177	-0.04890mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 08:06:25 PM

Mean Area 8.177
Mean Conc. -0.04890mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

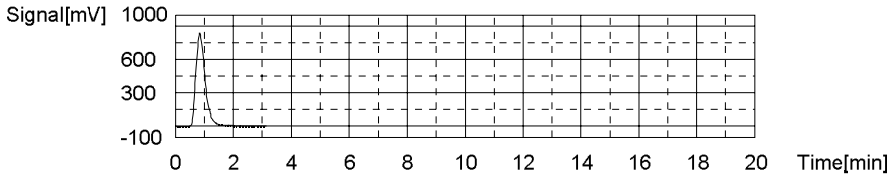
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:50.00mg/L TC:49.90mg/L IC:-0.09774mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1879	49.90mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 08:16:25 PM

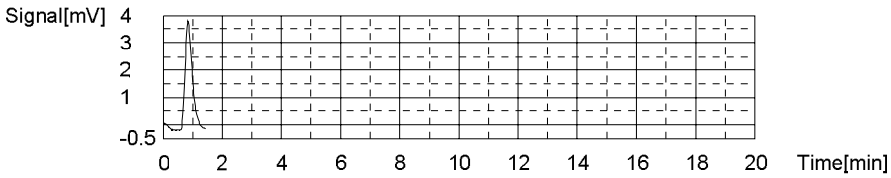
Mean Area 1879
Mean Conc. 49.90mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.746	-0.09774mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 08:21:27 PM

Mean Area 6.746
Mean Conc. -0.09774mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

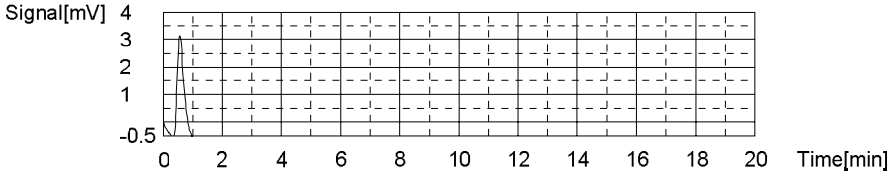
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.05430mg/L TC:-0.2097mg/L IC:-0.1554mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.964	-0.2097mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 08:27:05 PM

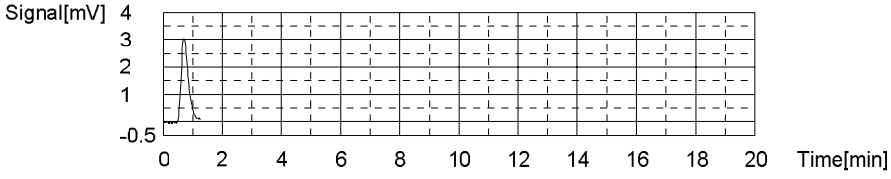
Mean Area 5.964
Mean Conc. -0.2097mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.056	-0.1554mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 08:31:14 PM

Mean Area 5.056
Mean Conc. -0.1554mg/L



Sample

Sample Name: WG249733-05 (10) DUP
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

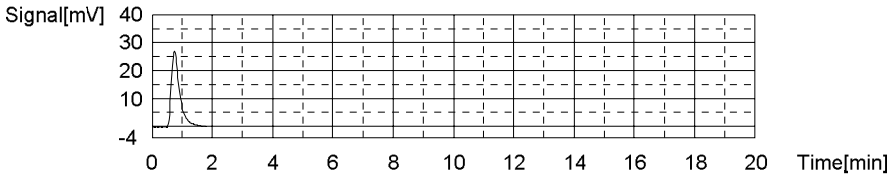
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:1.050mg/L TC:1.005mg/L IC:-0.04429mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	51.38	1.005mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 08:39:54 PM

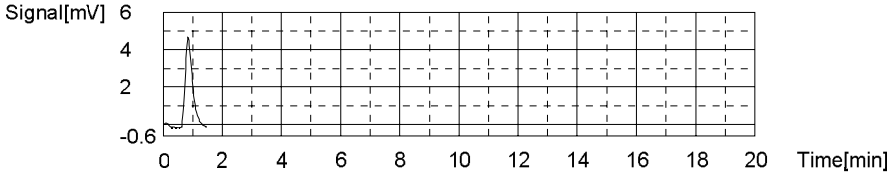
Mean Area 51.38
Mean Conc. 1.005mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.312	-0.04429mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 08:45:00 PM

Mean Area 8.312
Mean Conc. -0.04429mg/L



Sample

Sample Name: L0709129-01 (1250)
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

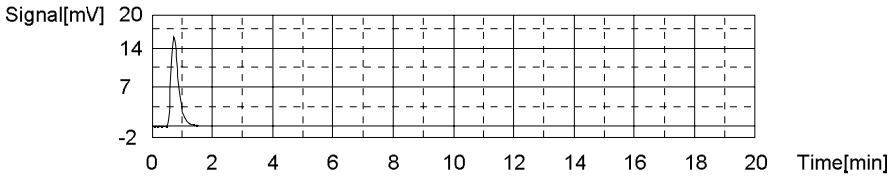
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.4174mg/L TC:0.3766mg/L IC:-0.04084mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	27.88	0.3766mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 08:53:25 PM

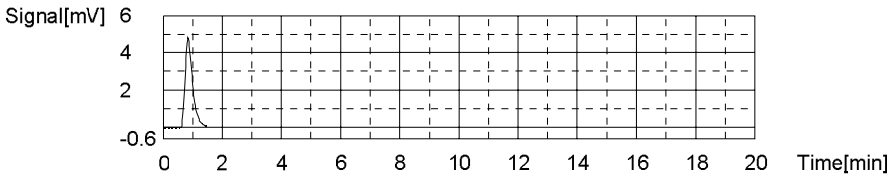
Mean Area 27.88
Mean Conc. 0.3766mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.413	-0.04084mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 08:58:33 PM

Mean Area 8.413
Mean Conc. -0.04084mg/L



Sample

Sample Name: L0709129-02 (10)
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

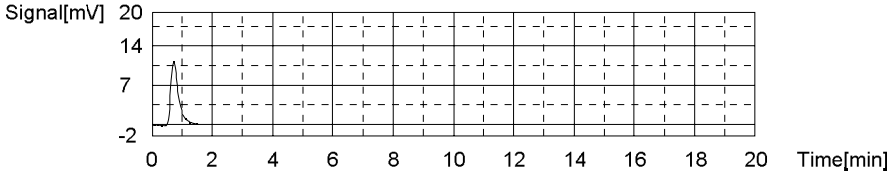
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.2188mg/L TC:0.1690mg/L IC:-0.04979mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	20.12	0.1690mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 09:07:01 PM

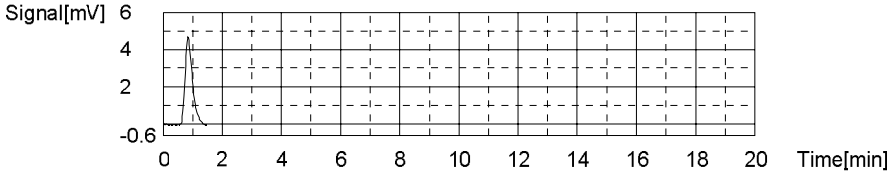
Mean Area 20.12
Mean Conc. 0.1690mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.151	-0.04979mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 09:12:05 PM

Mean Area 8.151
Mean Conc. -0.04979mg/L



Sample

Sample Name: L0709129-03 (10)
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

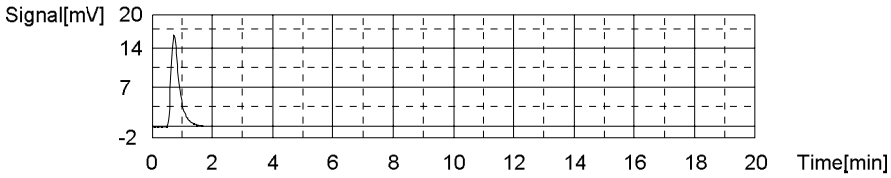
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.5126mg/L TC:0.4608mg/L IC:-0.05177mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	31.03	0.4608mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 09:20:41 PM

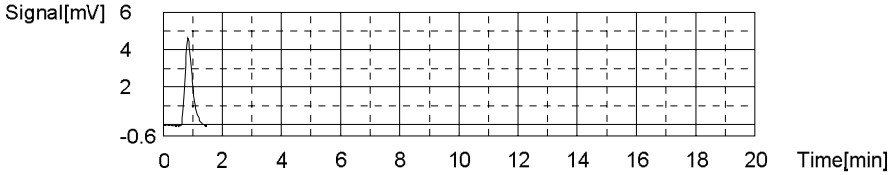
Mean Area 31.03
Mean Conc. 0.4608mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.093	-0.05177mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 09:25:47 PM

Mean Area 8.093
Mean Conc. -0.05177mg/L



Sample

Sample Name: L0709180-01
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

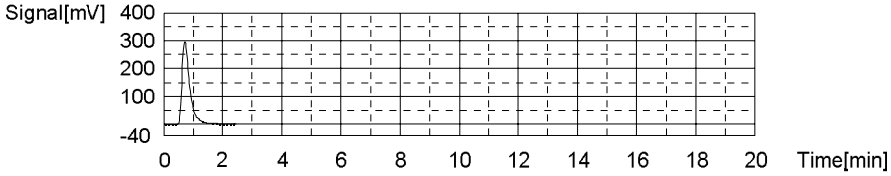
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:7.046mg/L TC:14.24mg/L IC:7.191mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	546.0	14.24mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 09:35:07 PM

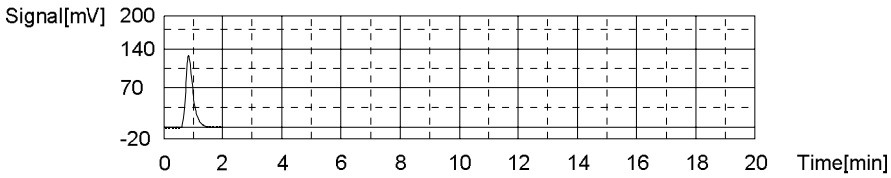
Mean Area 546.0
Mean Conc. 14.24mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	220.3	7.191mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 09:40:47 PM

Mean Area 220.3
Mean Conc. 7.191mg/L



Sample

Sample Name: BLANK
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

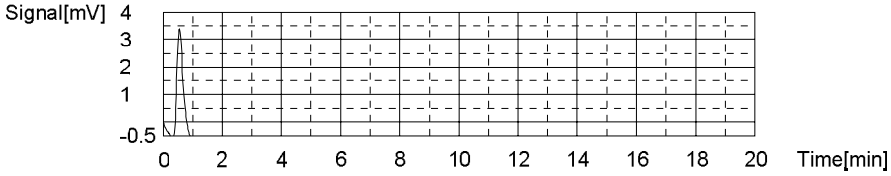
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.1066mg/L TC:-0.2115mg/L IC:-0.1049mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.899	-0.2115mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 09:46:22 PM

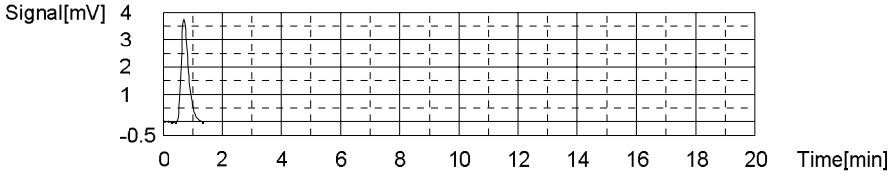
Mean Area 5.899
Mean Conc. -0.2115mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.536	-0.1049mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 09:50:40 PM

Mean Area 6.536
Mean Conc. -0.1049mg/L



Sample

Sample Name: LCS
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

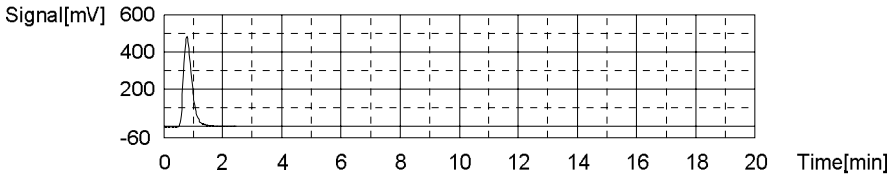
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:25.13mg/L TC:25.07mg/L IC:-0.05921mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	950.9	25.07mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 10:00:00 PM

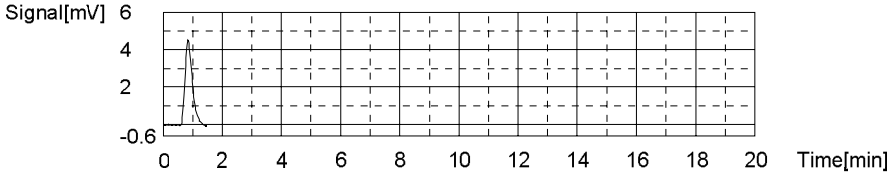
Mean Area 950.9
Mean Conc. 25.07mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.875	-0.05921mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 10:05:05 PM

Mean Area 7.875
Mean Conc. -0.05921mg/L



Sample

Sample Name: LCSDUP
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

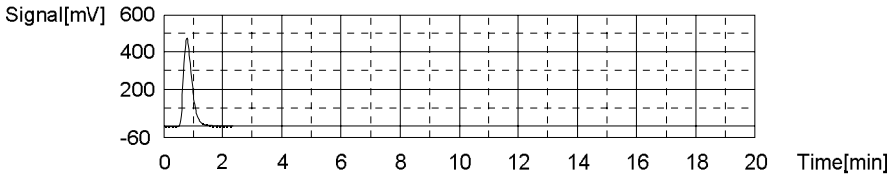
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.91mg/L TC:24.84mg/L IC:-0.06852mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	942.3	24.84mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 10:14:18 PM

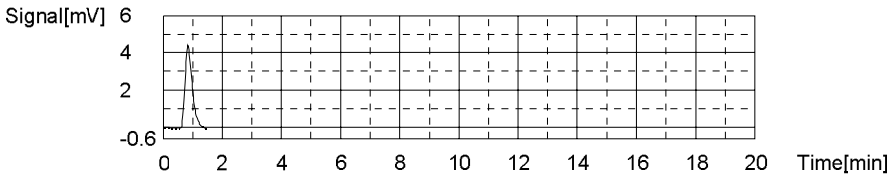
Mean Area 942.3
Mean Conc. 24.84mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.602	-0.06852mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 10:19:24 PM

Mean Area 7.602
Mean Conc. -0.06852mg/L



Sample

Sample Name: L0709123-01
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

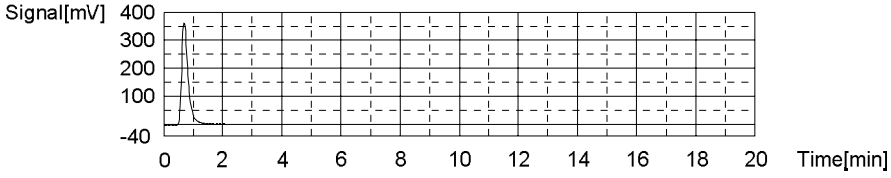
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.391mg/L TC:14.25mg/L IC:11.86mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	546.4	14.25mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 10:28:22 PM

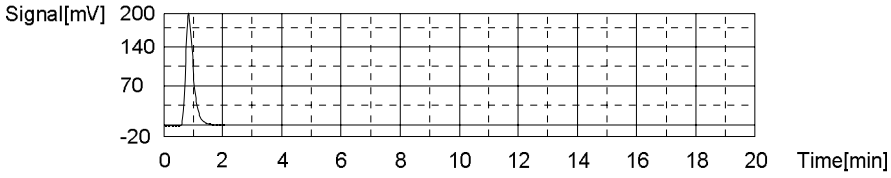
Mean Area 546.4
Mean Conc. 14.25mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	357.0	11.86mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 10:34:12 PM

Mean Area 357.0
Mean Conc. 11.86mg/L



Sample

Sample Name: L0709123-02
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

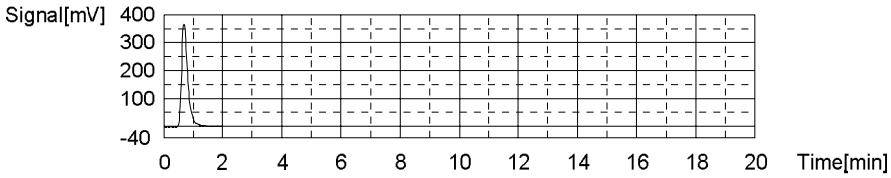
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.306mg/L TC:13.96mg/L IC:12.66mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	535.8	13.96mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 10:42:49 PM

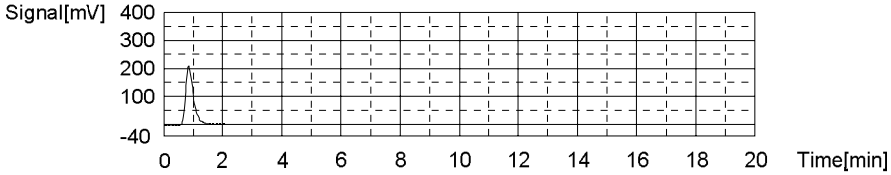
Mean Area 535.8
Mean Conc. 13.96mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	380.5	12.66mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 10:48:43 PM

Mean Area 380.5
Mean Conc. 12.66mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

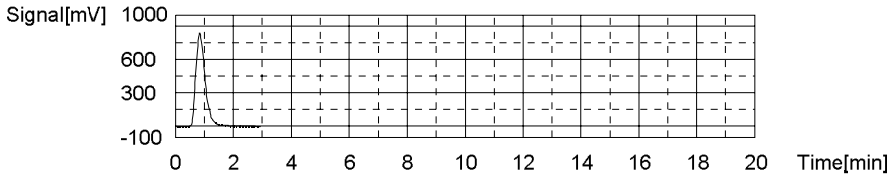
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:50.08mg/L TC:50.06mg/L IC:-0.02177mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1885	50.06mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 10:58:18 PM

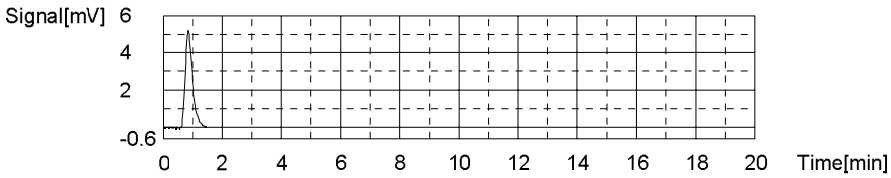
Mean Area 1885
Mean Conc. 50.06mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.972	-0.02177mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 11:03:25 PM

Mean Area 8.972
Mean Conc. -0.02177mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

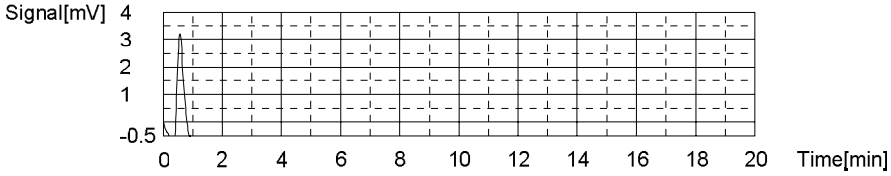
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.07021mg/L TC:-0.2037mg/L IC:-0.1334mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.191	-0.2037mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 11:08:36 PM

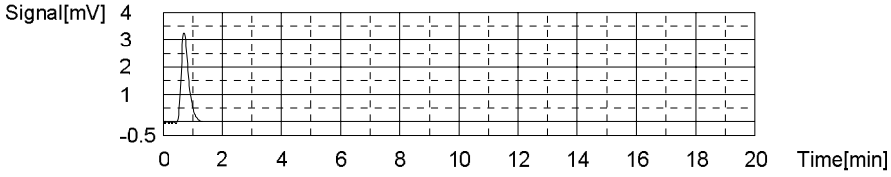
Mean Area 6.191
Mean Conc. -0.2037mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.700	-0.1334mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 11:12:51 PM

Mean Area 5.700
Mean Conc. -0.1334mg/L



Sample

Sample Name: L0709123-03
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

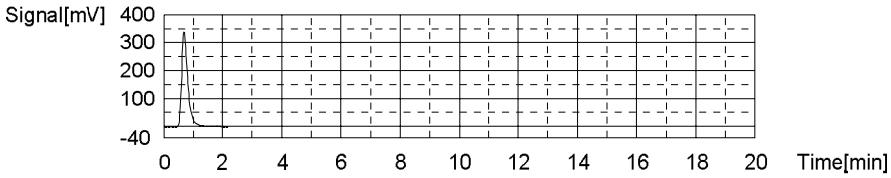
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.263mg/L TC:12.68mg/L IC:11.42mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	487.9	12.68mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 11:21:13 PM

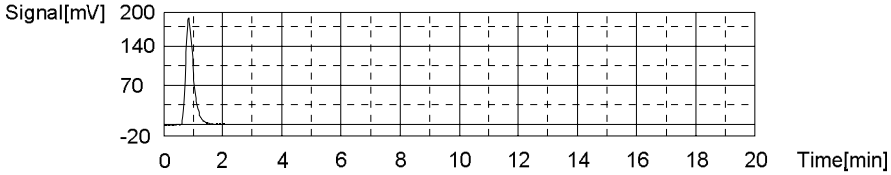
Mean Area 487.9
Mean Conc. 12.68mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	344.2	11.42mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 11:27:04 PM

Mean Area 344.2
Mean Conc. 11.42mg/L



Sample

Sample Name: DUP
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

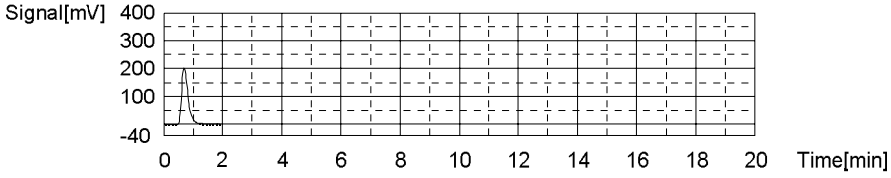
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.08655mg/L TC:8.015mg/L IC:7.928mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	313.4	8.015mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 11:35:04 PM

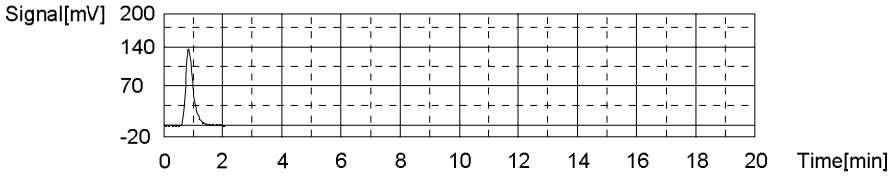
Mean Area 313.4
Mean Conc. 8.015mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	241.9	7.928mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 11:40:44 PM

Mean Area 241.9
Mean Conc. 7.928mg/L



Sample

Sample Name: L0709123-04 MS
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

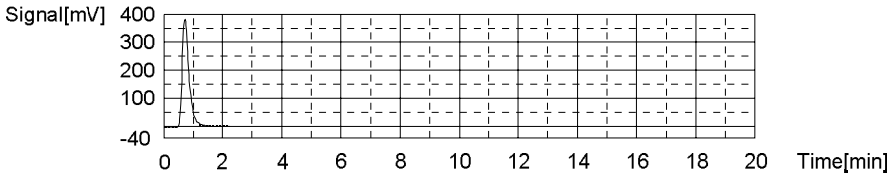
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:9.592mg/L TC:16.28mg/L IC:6.689mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	622.4	16.28mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/20/2007 11:49:09 PM

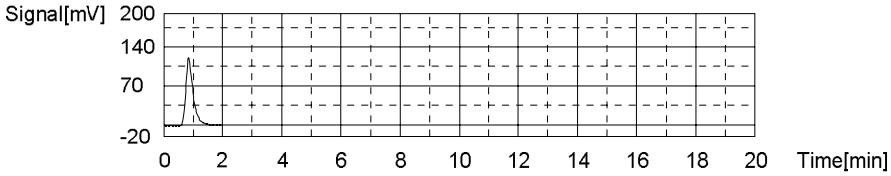
Mean Area 622.4
Mean Conc. 16.28mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	205.6	6.689mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/20/2007 11:54:38 PM

Mean Area 205.6
Mean Conc. 6.689mg/L



Sample

Sample Name: L0709123-05 MSD
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

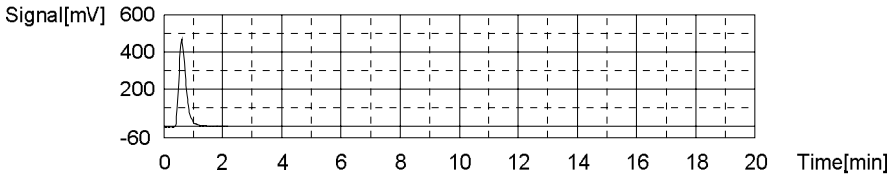
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:13.92mg/L TC:20.85mg/L IC:6.935mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	793.2	20.85mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 12:03:00 AM

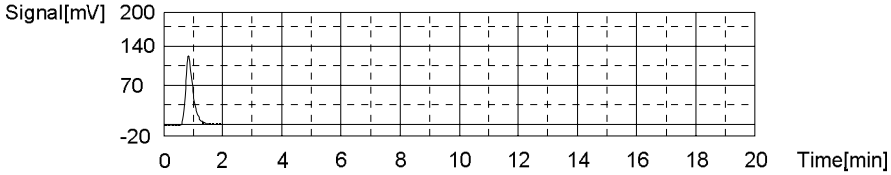
Mean Area 793.2
Mean Conc. 20.85mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	212.8	6.935mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 12:08:13 AM

Mean Area 212.8
Mean Conc. 6.935mg/L



Sample

Sample Name: L0709123-06
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

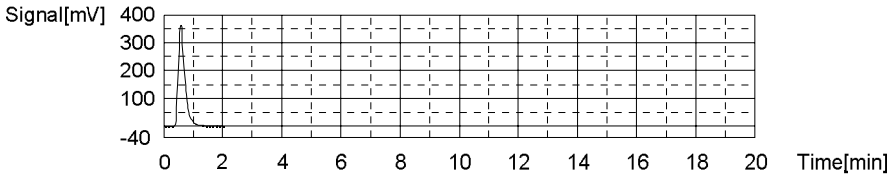
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.215mg/L TC:14.92mg/L IC:11.71mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	571.7	14.92mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 12:16:21 AM

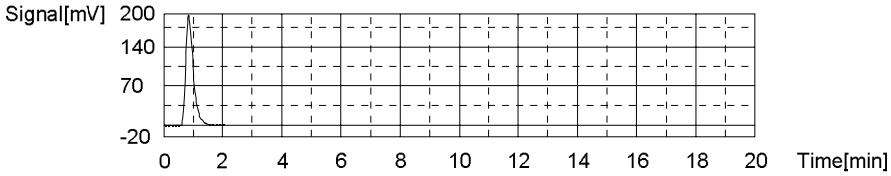
Mean Area 571.7
Mean Conc. 14.92mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	352.7	11.71mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 12:21:46 AM

Mean Area 352.7
Mean Conc. 11.71mg/L



Sample

Sample Name: L0709123-07
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

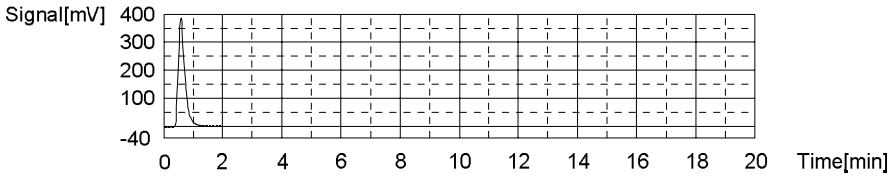
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.013mg/L TC:15.84mg/L IC:11.83mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	606.0	15.84mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 12:29:51 AM

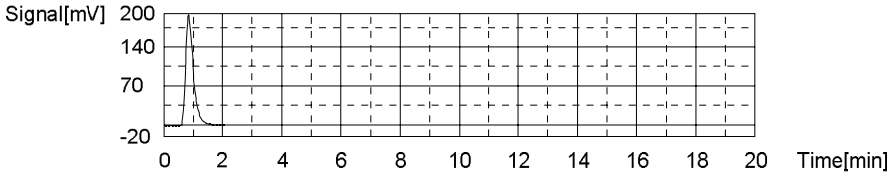
Mean Area 606.0
Mean Conc. 15.84mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	356.2	11.83mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 12:35:16 AM

Mean Area 356.2
Mean Conc. 11.83mg/L



Sample

Sample Name: L0709123-08
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

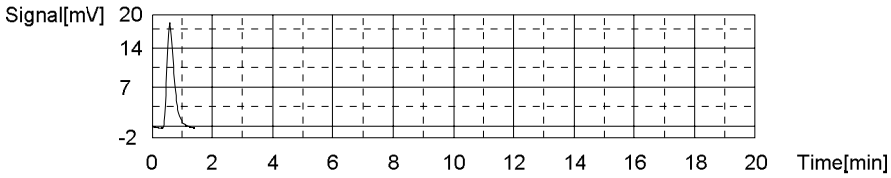
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.2498mg/L TC:0.4673mg/L IC:0.2174mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	31.27	0.4673mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 12:42:48 AM

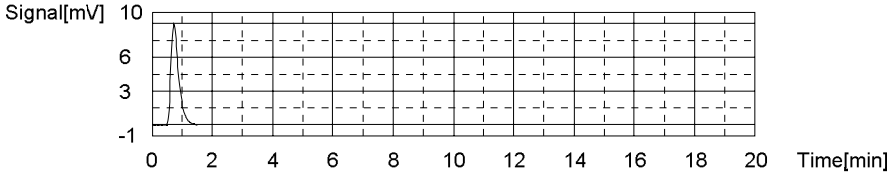
Mean Area 31.27
Mean Conc. 0.4673mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	15.98	0.2174mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 12:47:16 AM

Mean Area 15.98
Mean Conc. 0.2174mg/L



Sample

Sample Name: L0709123-09
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

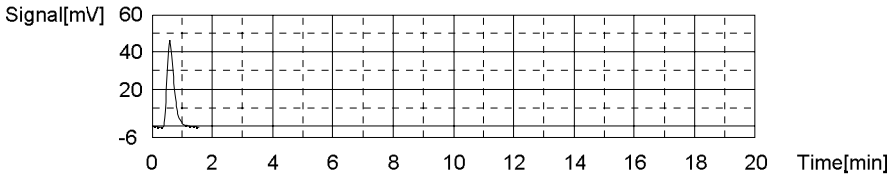
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.5806mg/L TC:1.649mg/L IC:1.068mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	75.44	1.649mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 12:54:48 AM

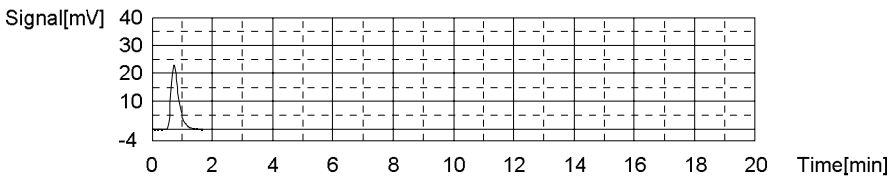
Mean Area 75.44
Mean Conc. 1.649mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	40.91	1.068mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 12:59:27 AM

Mean Area 40.91
Mean Conc. 1.068mg/L



Sample

Sample Name: L0709123-10
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

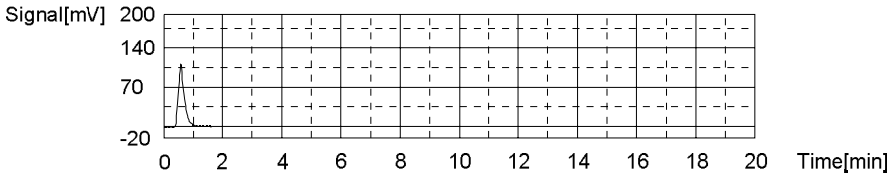
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.5288mg/L TC:3.788mg/L IC:3.259mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	155.4	3.788mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 01:06:55 AM

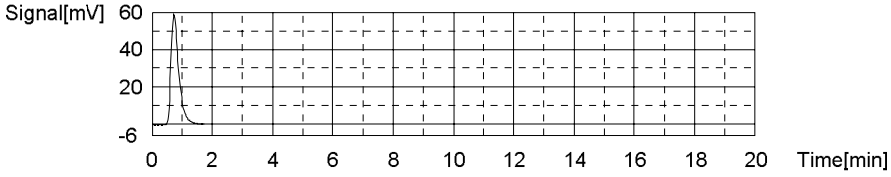
Mean Area 155.4
Mean Conc. 3.788mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	105.1	3.259mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 01:11:41 AM

Mean Area 105.1
Mean Conc. 3.259mg/L



Sample

Sample Name: L0709123-11
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

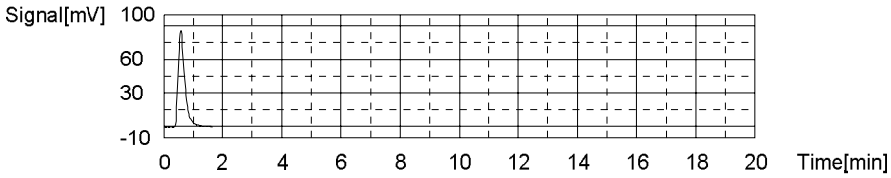
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.7159mg/L TC:3.224mg/L IC:2.508mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	134.3	3.224mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 01:19:12 AM

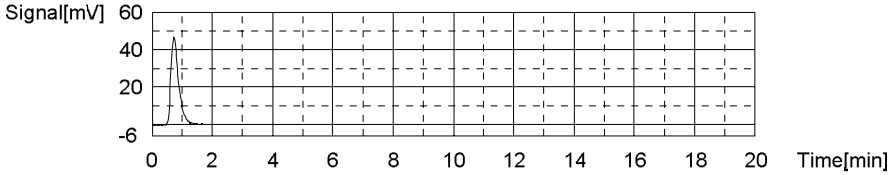
Mean Area 134.3
Mean Conc. 3.224mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	83.08	2.508mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 01:23:46 AM

Mean Area 83.08
Mean Conc. 2.508mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

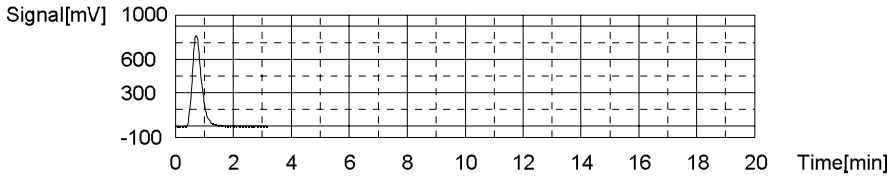
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:48.34mg/L TC:48.27mg/L IC:-0.07784mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1818	48.27mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 01:32:39 AM

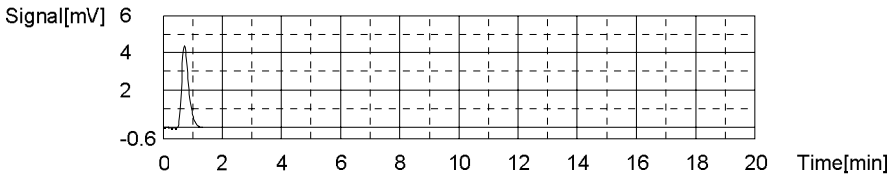
Mean Area 1818
Mean Conc. 48.27mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.329	-0.07784mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 01:36:50 AM

Mean Area 7.329
Mean Conc. -0.07784mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

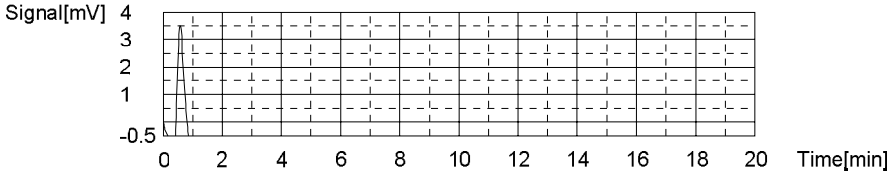
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.03727mg/L TC:-0.1722mg/L IC:-0.1350mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.365	-0.1722mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 01:41:57 AM

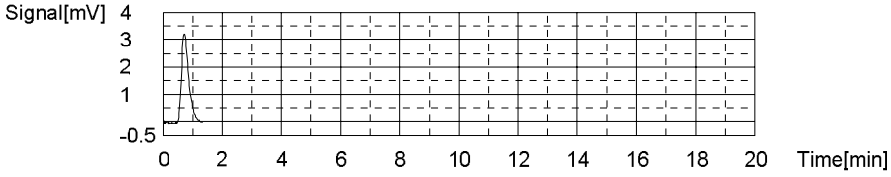
Mean Area 7.365
Mean Conc. -0.1722mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.655	-0.1350mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 01:45:39 AM

Mean Area 5.655
Mean Conc. -0.1350mg/L



Sample

Sample Name: L0709123-12
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

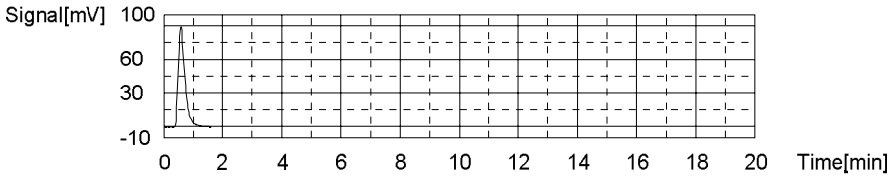
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.6208mg/L TC:3.435mg/L IC:2.814mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	142.2	3.435mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 01:53:01 AM

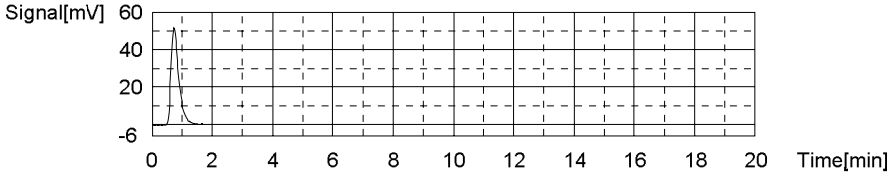
Mean Area 142.2
Mean Conc. 3.435mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	92.06	2.814mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 01:57:32 AM

Mean Area 92.06
Mean Conc. 2.814mg/L



Sample

Sample Name: L0709123-13
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

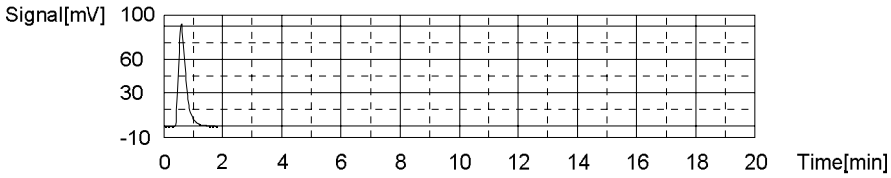
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.952mg/L TC:3.940mg/L IC:1.988mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	161.1	3.940mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 02:05:04 AM

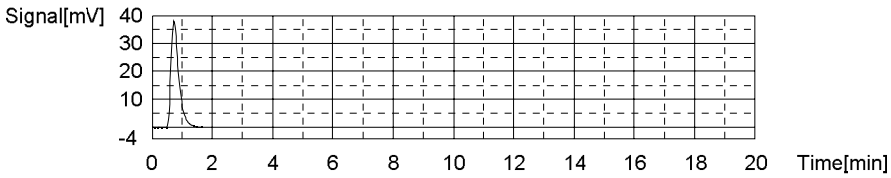
Mean Area 161.1
Mean Conc. 3.940mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	67.87	1.988mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 02:09:35 AM

Mean Area 67.87
Mean Conc. 1.988mg/L



Sample

Sample Name: L0709124-01
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

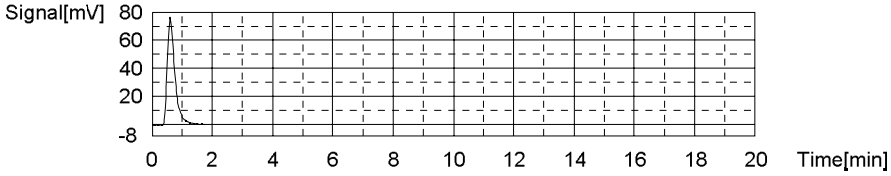
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.819mg/L TC:3.207mg/L IC:1.388mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	133.7	3.207mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 02:17:05 AM

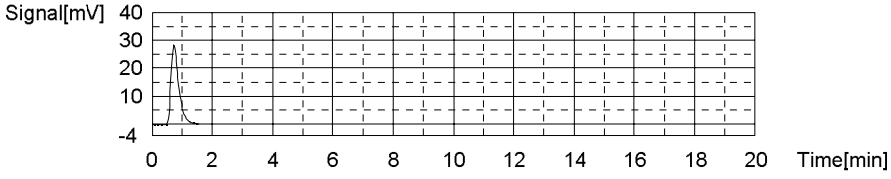
Mean Area 133.7
Mean Conc. 3.207mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	50.28	1.388mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 02:21:32 AM

Mean Area 50.28
Mean Conc. 1.388mg/L



Sample

Sample Name: L0709124-02
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

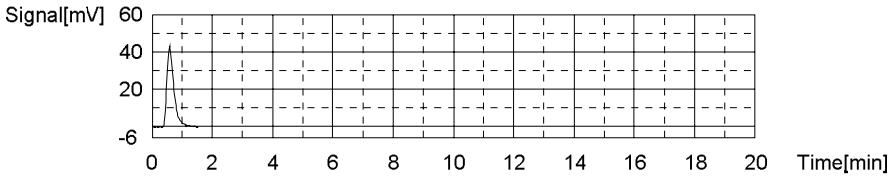
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.3328mg/L TC:1.494mg/L IC:1.161mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	69.66	1.494mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 02:28:48 AM

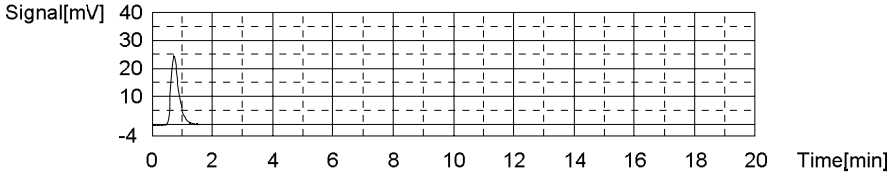
Mean Area 69.66
Mean Conc. 1.494mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	43.64	1.161mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 02:33:17 AM

Mean Area 43.64
Mean Conc. 1.161mg/L



Sample

Sample Name: L0709124-03
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

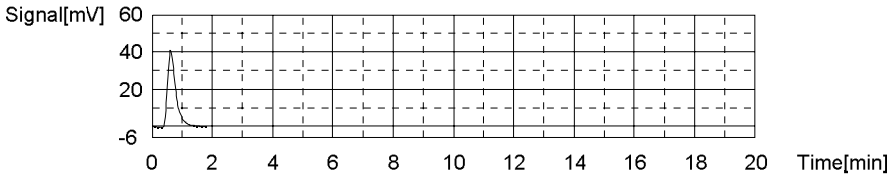
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.227mg/L TC:1.744mg/L IC:0.5178mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	79.01	1.744mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 02:40:56 AM

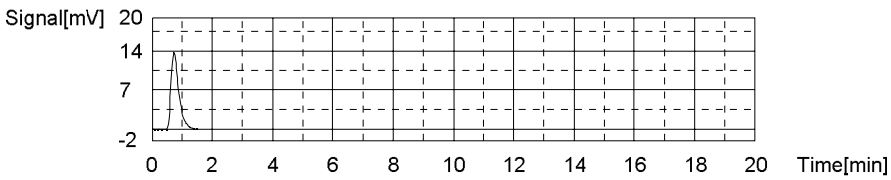
Mean Area 79.01
Mean Conc. 1.744mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	24.78	0.5178mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 02:45:18 AM

Mean Area 24.78
Mean Conc. 0.5178mg/L



Sample

Sample Name: L0709124-05
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

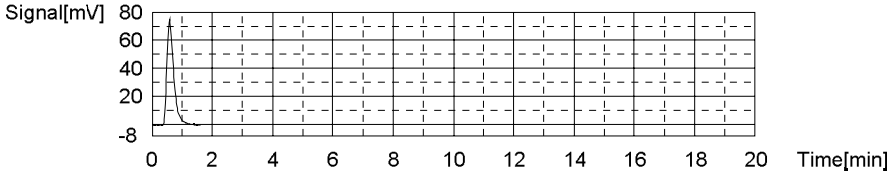
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.5905mg/L TC:2.804mg/L IC:2.213mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	118.6	2.804mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 02:52:40 AM

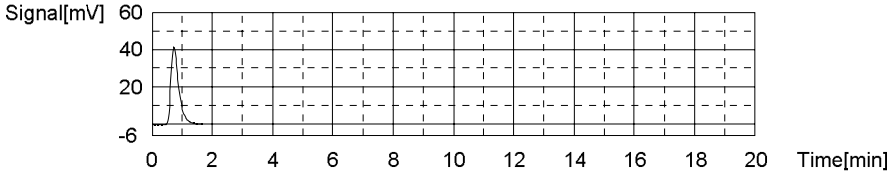
Mean Area 118.6
Mean Conc. 2.804mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	74.45	2.213mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 02:57:09 AM

Mean Area 74.45
Mean Conc. 2.213mg/L



Sample

Sample Name: L0709124-06
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

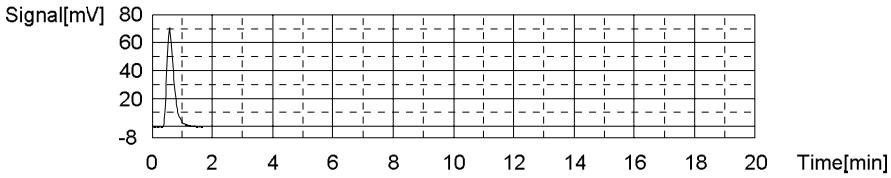
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.2982mg/L TC:2.726mg/L IC:2.428mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	115.7	2.726mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 03:04:40 AM

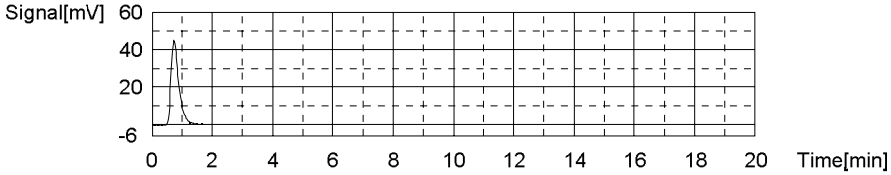
Mean Area 115.7
Mean Conc. 2.726mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	80.74	2.428mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 03:09:09 AM

Mean Area 80.74
Mean Conc. 2.428mg/L



Sample

Sample Name: L0709124-07
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

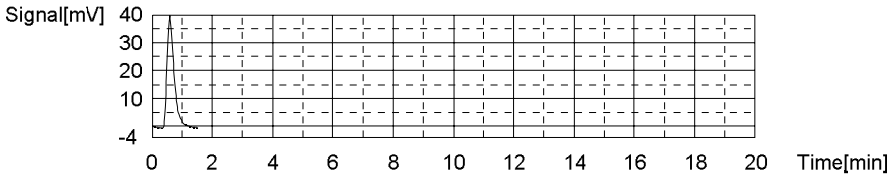
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.4825mg/L TC:1.380mg/L IC:0.8970mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	65.37	1.380mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 03:16:25 AM

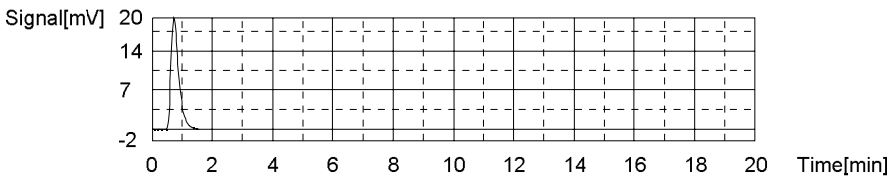
Mean Area 65.37
Mean Conc. 1.380mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	35.89	0.8970mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 03:20:46 AM

Mean Area 35.89
Mean Conc. 0.8970mg/L



Sample

Sample Name: L0709124-08
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

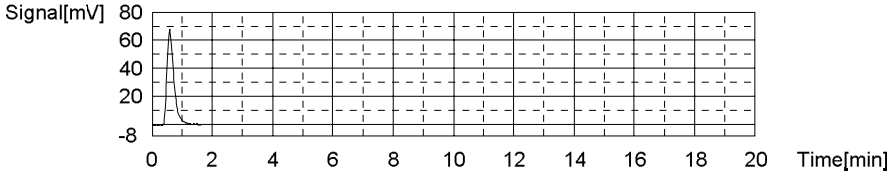
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.6566mg/L TC:2.541mg/L IC:1.885mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	108.8	2.541mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 03:28:16 AM

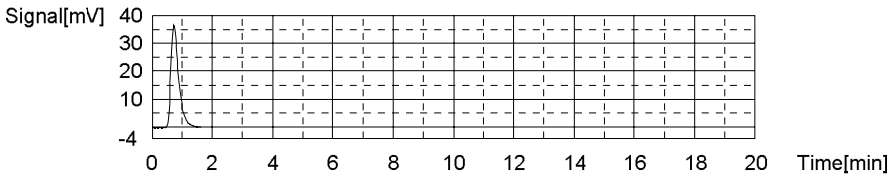
Mean Area 108.8
Mean Conc. 2.541mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	64.83	1.885mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 03:32:41 AM

Mean Area 64.83
Mean Conc. 1.885mg/L



Sample

Sample Name: L0709124-09
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

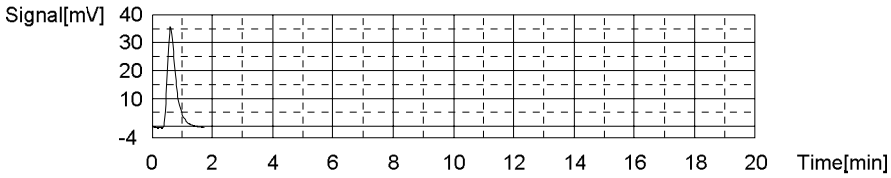
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.098mg/L TC:1.521mg/L IC:0.4236mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	70.67	1.521mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 03:40:17 AM

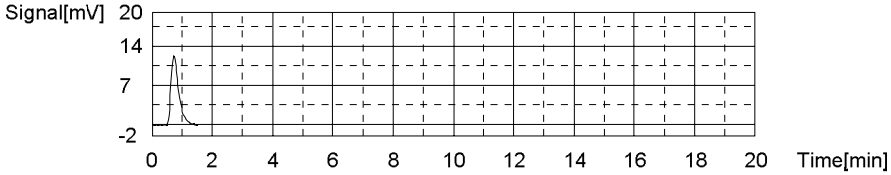
Mean Area 70.67
Mean Conc. 1.521mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	22.02	0.4236mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 03:44:33 AM

Mean Area 22.02
Mean Conc. 0.4236mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

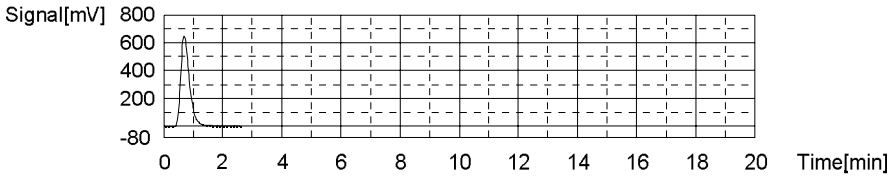
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:35.82mg/L TC:35.75mg/L IC:-0.07853mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1350	35.75mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 03:53:04 AM

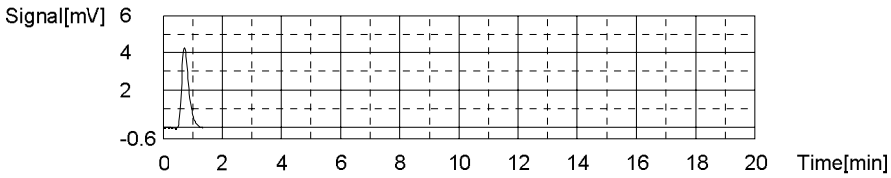
Mean Area 1350
Mean Conc. 35.75mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.309	-0.07853mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 03:57:10 AM

Mean Area 7.309
Mean Conc. -0.07853mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

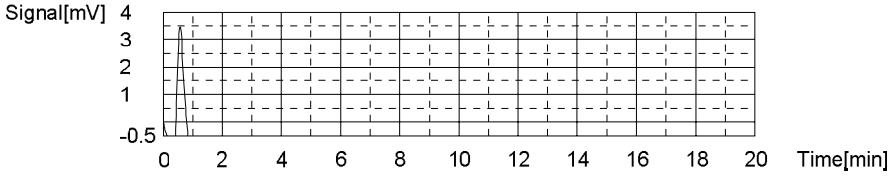
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.05418mg/L TC:-0.1734mg/L IC:-0.1192mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.321	-0.1734mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 04:02:19 AM

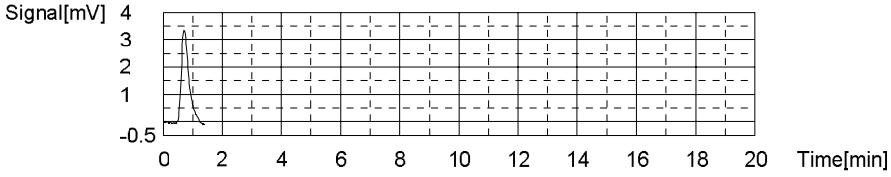
Mean Area 7.321
Mean Conc. -0.1734mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.116	-0.1192mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 04:06:02 AM

Mean Area 6.116
Mean Conc. -0.1192mg/L



Sample

Sample Name: L0709124-10
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

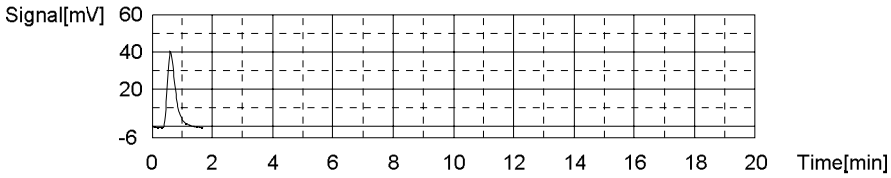
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.127mg/L TC:1.695mg/L IC:0.5683mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	77.17	1.695mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 04:13:37 AM

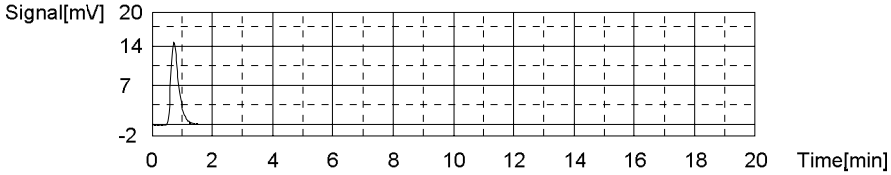
Mean Area 77.17
Mean Conc. 1.695mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	26.26	0.5683mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 04:18:00 AM

Mean Area 26.26
Mean Conc. 0.5683mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

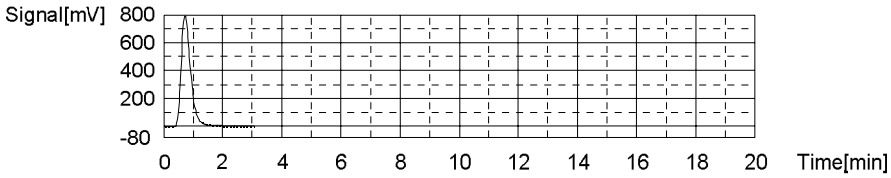
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:47.33mg/L TC:47.25mg/L IC:-0.07627mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1780	47.25mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 04:27:03 AM

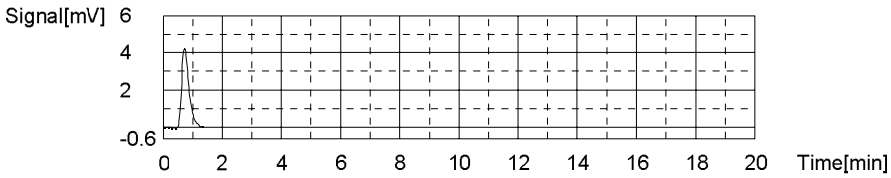
Mean Area 1780
Mean Conc. 47.25mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.375	-0.07627mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 04:31:10 AM

Mean Area 7.375
Mean Conc. -0.07627mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-20-2007.met
Status Completed
Chk. Result

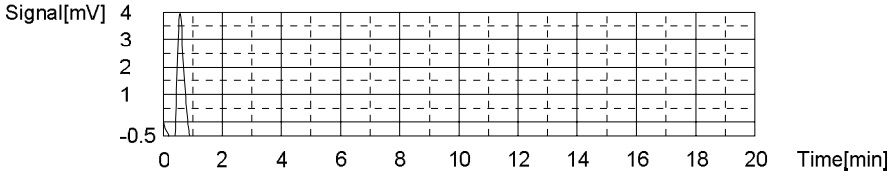
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.04063mg/L TC:-0.1631mg/L IC:-0.1225mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.705	-0.1631mg/L	500uL	1		TCCURVE-09-20-2007.2007_09_20_09_52_4	09/21/2007 04:36:17 AM

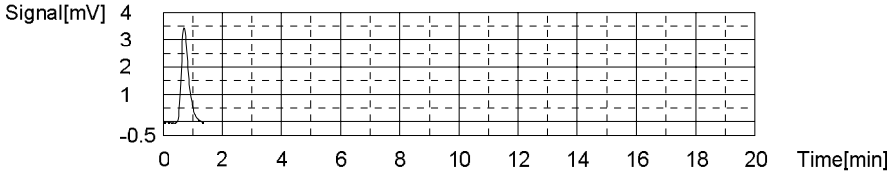
Mean Area 7.705
Mean Conc. -0.1631mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.020	-0.1225mg/L	500uL	1		TICCURVE-09-20-2007.2007_09_20_10_42_0	09/21/2007 04:39:56 AM

Mean Area 6.020
Mean Conc. -0.1225mg/L



3.0 Attachments

Kemron Environmental Services
Analyst Listing
September 24, 2007

AJF – AMANDA J. FICKIESEN
ALB – ANNIE L. BOCK
AML – ANTHONY M. LONG
ARA – ADRIAN R. ACHTERMANN
ASP – AARON S. PETRIE
BRG – BRENDA R. GREGORY
CAA – CASSIE A. AUGENSTEIN
CAF – CHERYL A. FLOWERS
CEB – CHAD E. BARNES
CLC – CHRYS L. CRAWFORD
CLW – CHARISSA L. WINTERS
CM – CHARLIE MARTIN
CMS – CRYSTAL M. STEPHENS
CPD – CHAD P. DAVIS
CSH – CHRIS S. HILL
DD – DIANE M. DENNIS
DDE – DEBRA D. ELLIOTT
DEL – DON E. LIGHTFRITZ
DEV – DAVID E. VANDENBERG
DGB – DOUGLAS G. BUTCHER
DIH – DEANNA I. HESSON
DLB – DAVID L. BUMGARNER
DLP – DOROTHY L. PAYNE
DLR – DIANNA L. RAUCH
DR – DEANNA ROBERTS
DRP – DAVE R. PITZER
DSF – DEBRA S. FREDERICK
DST – DENNIS S. TEPE
ECL – ERIC C. LAWSON
ED – EMILY E. DECKER
ERE – ERIN R. ELDER
FJB – FRANCES J. BOLDEN
HAV – HEMA VILASAGAR
HJR – HOLLY J. REED
JAB – JUANITA A. BECKER
JAL – JOHN A. LENT
JBK – JEREMY B. KINNEY
JCO – JOE C. OWENS
JDH – JUSTIN D. HESSON
JKP – JACQUELINE K. PARSONS
JKT – JANE K. THOMPSON
JWR – JOHN W. RICHARDS
JWS – JACK W. SHEAVES
JYH – JI Y. HU
KCZ – KEVIN C. ZUMBRO
KEB – KATHRYN E. BARNES
KHR – KIM H. RHODES
KJW – KATIE J. WIEFERICH
KRA – KATHY R. ALBERTSON
KRV – KATHRINE R. VICKERS
LKN – LINDA K. NEDEFF
LSB – LESLIE S. BUCINA
MDA – MIKE D. ALBERTSON
MDC – MICHAEL D. COCHRAN
MES – MARY E. SCHILLING
MKZ – MARILYN K. ZUMBRO
MLR – MARY L. ROCHOTTE
MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR
MSW – MATT S. WILSON
NJB – NATALIE J. BOOTH
PJM – PAUL J. MILLER
RAH – ROY A. HALSTEAD
RB – ROBERT BUCHANAN
REK – ROBERT E. KYER
RLF – RACHEL L. FRYE
RLK – ROBIN L. KLINGER
RNP – RICK N. PETTY
RWC – RODNEY W. CAMPBELL
SLM – STEPHANIE L. MOSSBURG
SLP – SHERI L. PFALZGRAF
SMH – SHAUNA M. HYDE
TDH – TRICIA D. HUCK
TMB – TIFFANY M. BAILEY
TMM – TAMMY M. MORRIS
VC – VICKI COLLIER
WFM – WALTER F. MARTIN

KEMRON Environmental Services

List of Valid Qualifiers

September 24, 2007

Qualkey: STD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
C	Confirmed by GC/MS
CG	Confluent growth
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
FL	Free Liquid
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit
ND,L	Not detected; sample reporting limit (RL) elevated due to interference
ND,S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria fail. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Undetected; the concentration is below the reported MDL.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

Chain of Custody

NO. 10221

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: KEMRON Address: 156 Starlite Dr. Marietta, OH. 45750 Contact: Stephanie Mossberg

Project Name: LHAAP Project Location: KARNACK, TX.

Project No.: 117591.0008A105 Project Contact: Kay Everett Project Telephone No.: 713-996-4421

Point of Contact: Kay Everett Telephone No.: 713-996-4421

Project Manager/Supervisor: Praveen Srivastav

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOC	Gases	TOC	Alkalinity	Anions			Remarks
1	12WW22	9/4/07	11:35			W	Groundwater, Site 12	3	3							
2	12WW23	9/4/07	2:00			W	Groundwater, Site 12	3	3							
3	12WW24	9/5/07	9:50			W	Groundwater, Site 12	3	3							
4	12WW20	9/5/07	10:15			W	Groundwater, Site 12	9	3	3	1	1	1			
5	12WW20-FD	9/5/07	10:15			W	Groundwater, Site 12	9	3	3	1	1	1			
6	12WW21	9/5/07	12:20			W	Groundwater, Site 12	9	3	3	1	1	1			
7																
8																
9																
10																

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
Scott Beesinger	9/5/07 3:00			
				FedEx Airbill No.:
		Laboratory	9/6/07 0945	Sampler's Signature: Scott Beesinger

TAT: ____ Standard ____ Rush Date ____ Seals Intact? ✓ Y ____ N Received Good Condition ✓ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_1
Rev. 03-19-07

KEMRON Environmental Services

SAMPLE RECEIPT FORM

156 Starlite Drive
Marietta, OH 45750
(740) 373-4071

Client:	Shaw - TX
Workorder Number:	B2705
Date Received:	09-6-07
Delivered by:	( ) Fedx (✓) UPS ( ) Client ( ) Courier **Time:** 0945
Opened by:	RLR
IR Temp Gun:	(✓) D ( ) G
Logged by:	L 9-52

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
1755	3	1Z 401 663 22 1006 3269	10221	Water

Inspection Checklist	Y	N	NA	Discrepancy ID
Were shipping coolers sealed?	✓			
Were custody seals intact?	✓			
Were cooler temperatures in range of 0 - 6?	✓			
Was ice present?	✓			
Were COC's received/information complete/signed/dated?		✓		(1)
Were sample containers and labels intact?		✓		(2) (3)
Were correct containers used?	✓			
Were correct preservatives used (water only)?	✓			
Were pH ranges acceptable?	✓			
Were VOA samples free of headspace?	✓			
Were samples received within EPA hold times?	✓			

Discrepancy/Comments/Other Problems

(1) 2 Trip Blanks, Rec'd - not listed on Chain.
(2) Broken Bottle (1 Bottle) 12WW23 9/4/07 @ 2:00
(3) 12WW24 9/4/07 Bottles have ~~wro~~ different time than Chain. Chain says 9:50 - VOA's say 8:50.

3 VOA's

Distribution

Name of KEMRON representative
Client/Company:
Person Contacted:
Date contacted:

Resolution/other comments:

KEMRON Environmental Services
Internal Chain of Custody Report

Login: L0709052
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 17-SEP-2007

Samplenum	Container ID	Products
L0709052-04	370570	RSK175EXT

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK

Samplenum	Container ID	Products
L0709052-02	370567	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Samplenum	Container ID	Products
L0709052-04	370571	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	L1	06-SEP-2007 10:47	BRG	
2	ANALYZ	L1	SEM	06-SEP-2007 11:22	DSF	ERE
3	STORE	SEM	A1	07-SEP-2007 10:50	ERE	DSF

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report

Login: L0709052
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 17-SEP-2007

Samplenum	Container ID	Products
L0709052-04	370572	ALK

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-SEP-2007 10:47	BRG	
2	ANALYZ	W1	WET	07-SEP-2007 07:51	DIH	ERE
3	STORE	WET	A1	10-SEP-2007 07:51	RLK	DIH

Samplenum	Container ID	Products
L0709052-05	370577	ALK

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-SEP-2007 10:47	BRG	
2	ANALYZ	W1	WET	07-SEP-2007 07:51	DIH	ERE
3	STORE	WET	A1	10-SEP-2007 07:51	RLK	DIH

Samplenum	Container ID	Products
L0709052-05	370575	RSK175EXT

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report

Login: L0709052
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 17-SEP-2007

Samplenum	Container ID	Products
L0709052-06	370580	RSK175EXT

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK

Samplenum	Container ID	Products
L0709052-06	370579	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:07	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:07	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:07	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Samplenum	Container ID	Products
L0709052-05	370578	TOC TIC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-SEP-2007 10:47	BRG	
2	ANALYZ	W1	WET	10-SEP-2007 07:57	DIH	RLK
3	STORE	WET	A1	21-SEP-2007 07:40	ERE	DIH

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report

Login: L0709052
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 17-SEP-2007

Samplenum	Container ID	Products
L0709052-01	370566	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Samplenum	Container ID	Products
L0709052-03	370568	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report
Login: L0709052
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 17-SEP-2007

Samplenum	Container ID	Products
L0709052-06	370581	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	L1	06-SEP-2007 10:48	BRG	
2	ANALYZ	L1	SEM	06-SEP-2007 11:22	DSF	ERE
3	STORE	SEM	A1	07-SEP-2007 10:50	ERE	DSF

Samplenum	Container ID	Products
L0709052-05	370576	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	L1	06-SEP-2007 10:47	BRG	
2	ANALYZ	L1	SEM	06-SEP-2007 11:22	DSF	ERE
3	STORE	SEM	A1	07-SEP-2007 10:50	ERE	DSF

Samplenum	Container ID	Products
L0709052-06	370582	ALK

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-SEP-2007 10:48	BRG	
2	ANALYZ	W1	WET	07-SEP-2007 07:51	DIH	ERE
3	STORE	WET	A1	10-SEP-2007 07:51	RLK	DIH

Samplenum	Container ID	Products
L0709052-06	370583	TOC TIC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-SEP-2007 10:48	BRG	
2	ANALYZ	W1	WET	10-SEP-2007 07:57	DIH	RLK
3	STORE	WET	A1	21-SEP-2007 07:40	ERE	DIH

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report

Login: L0709052
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 17-SEP-2007

Samplenum	Container ID	Products
L0709052-07	370584	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:48	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:07	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:48	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:07	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:41	RLK	KJW

Samplenum	Container ID	Products
L0709052-04	370573	TOC TIC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-SEP-2007 10:47	BRG	
2	ANALYZ	W1	WET	10-SEP-2007 07:57	DIH	RLK
3	STORE	WET	A1	21-SEP-2007 07:40	ERE	DIH

Samplenum	Container ID	Products
L0709052-04	370569	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:06	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services

Internal Chain of Custody Report

Login: L0709052
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 17-SEP-2007

Samplenum	Container ID	Products
L0709052-05	370574	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:07	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:07	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-SEP-2007 10:47	BRG	
2	ANALYZ	V1	ORG4	06-SEP-2007 12:07	MRT	RLK
3	STORE	ORG4	A1	20-SEP-2007 11:40	RLK	KJW

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

156 Starlite Drive, Marietta, OH 45750 • TEL 740-373-4071 • FAX 740-373-4835 • http://www.kemron.com

Laboratory Report Number: L0712553

Please find enclosed the analytical results for the samples you submitted to KEMRON Environmental Services.

Review and compilation of your report was completed by KEMRON's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box bleow at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Debra Elliott - Team Leader
delliott@kemron-lab.com

Amanda Fickiesen - Client Services Specialist
afickiesen@kemron-lab.com

Kathy Albertson - Team Chemist/Data Specialist
kalbertson@kemron-lab.com

Annie Brown - Client Services Specialist
abrown@kemron-lab.com

Stephanie Mossburg - Team Chemist/Data Specialist
smossburg@kemron-lab.com

Katie Barnes - Team Assistant
kbarnes@kemron-lab.com

Brenda Gregory - Client Services Specialist
bgregory@kemron-lab.com

Jacqueline Parsons - Team Assistant
jparsons@kemron-lab.com

Tony Long - Client Services Specialist
tlong@kemron-lab.com

This report was reviewed on January 07, 2008.

Stephanie Mossburg

STEPHANIE MOSSBURG - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the NELAP standards and other applicable contract terms and conditions. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of KEMRON Environmental Services.

This report was certified on January 07, 2008.

David E. Vandenberg

David Vandenberg - Vice President

FL DOH NELAP ID: E8755
This report contains a total of 219 pages.

Protecting Our Environmental Future

KEMRON REPORT L0712553
PREPARED FOR Shaw E I, Inc.
WORK ID: LONGHORN AAP KARNACK TX

1.0 Introduction 3
2.1 Volatiles Data 19
2.1.1 Volatiles GCMS Data (8260) 20
2.1.1.1 Summary Data 21
2.1.1.2 QC Summary Data 33
2.1.2 RSK 175 66
2.1.2.1 Summary Data 67
2.1.2.2 QC Summary Data 74
2.2 General Chemistry Data 110
2.2.1 Method 9056 111
2.2.1.1 Summary Data 112
2.2.1.2 QC Summary Data 119
2.2.2 Total Organic Carbon Data 144
2.2.2.1 Summary Data 145
2.2.2.2 QC Summary Data 155
2.2.2.3 Raw Data 162
3.0 Attachments 207

1.0 Introduction

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

KEMRON Login No.: L0712553

CHAIN OF CUSTODY: The chain of custody number was 10231.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 4 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 21-DEC-07
Stephanie Mossburg

Laboratory Data Package Cover Page

00114608

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

MICHAEL D. COCHRAN		Semivolatiles Lab Supervisor	December 28, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0712553
Project Name:	798-LONGHORN
Method:	9056
Prep Batch Number(s):	WG259510
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	December 27, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?	✓				
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	✓				
Were MS/MSD analyzed at the appropriate frequency?	✓				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				1

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?	✓				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				2
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0712553
Project Name:	798-LONGHORN
Method:	9056
Prep Batch Number(s):	WG259510
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	December 27, 2007

EXCEPTIONS REPORT
ER# - Description
1. The MS/MSD results were not associated with this sample delivery group.
2. Samples -01 thru -04 were analyzed at a dilution only due to high pre-run screen results for chloride and sulfate.

(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00114613

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna I. Hesson	Conventional Lab Supervisor	December 29, 2007
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0712553
Project Name:	798-LONGHORN
Method:	TOC
Prep Batch Number(s):	WG259266
Reviewer Name:	DEANNA I. HESSON
LRC Date:	December 29, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?	✓				
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	✓				
Were MS/MSD analyzed at the appropriate frequency?	✓				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?	✓				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0712553
Project Name:	798-LONGHORN
Method:	TOC
Prep Batch Number(s):	WG259266
Reviewer Name:	DEANNA I. HESSON
LRC Date:	December 29, 2007

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00114618

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	January 7, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0712553
Project Name:	798-LONGHORN
Method:	RSK175
Prep Batch Number(s):	259220, 259359
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	January 07, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT
ER# - Description
There were no exceptions.

Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

KEMRON ENVIRONMENTAL SERVICES
GC/MS VOLATILE ORGANICS

KEMRON Login No.: L0712553

METHOD

Preparation: SW-846 5030B

Analysis: SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds which yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: Vinyl acetate exceeded the upper advisory limit but was not detected above the reporting limit in the associated samples. All other acceptance criteria were met.

Matrix Spike: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Kemron recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Internal Standards: All acceptance criteria were met.

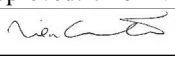
Surrogates: All acceptance criteria were met.

Samples: All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst: CMS

Approved: 04-JAN-08



LABORATORY REPORT

L0712553

01/07/08 16:15

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW20-121807	L0712553-01	8260B	1	19-DEC-07
12WW20-121807-FD	L0712553-02	8260B	1	19-DEC-07
12WW22-121807	L0712553-03	8260B	1	19-DEC-07
12WW21-121807	L0712553-04	8260B	1	19-DEC-07

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114628

Sample Number: **L0712553-01**
Client ID: **12WW20-121807**
Matrix: **Water**
Workgroup Number: **WG259428**
Collect Date: **12/18/2007 10:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **12/27/2007 03:39**
Cal Date: **12/01/2007 16:25**
Run Date: **12/27/2007 03:39**
File ID: **8M342769**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0	1.14		1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.844	J	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114629

Sample Number: **L0712553-01**
Client ID: **12WW20-121807**
Matrix: **Water**
Workgroup Number: **WG259428**
Collect Date: **12/18/2007 10:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **12/27/2007 03:39**
Cal Date: **12/01/2007 16:25**
Run Date: **12/27/2007 03:39**
File ID: **8M342769**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	1.19		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	110	86	118	
1,2-Dichloroethane-d4	106	80	120	
Toluene-d8	108	88	110	
4-Bromofluorobenzene	102	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114630

Sample Number: **L0712553-02**
Client ID: **12WW20-121807-FD**
Matrix: **Water**
Workgroup Number: **WG259428**
Collect Date: **12/18/2007 10:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **12/27/2007 04:09**
Cal Date: **12/01/2007 16:25**
Run Date: **12/27/2007 04:09**
File ID: **8M342770**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.785	J	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114631

Sample Number: **L0712553-02**
Client ID: **12WW20-121807-FD**
Matrix: **Water**
Workgroup Number: **WG259428**
Collect Date: **12/18/2007 10:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **12/27/2007 04:09**
Cal Date: **12/01/2007 16:25**
Run Date: **12/27/2007 04:09**
File ID: **8M342770**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	1.18		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	109	86	118	
1,2-Dichloroethane-d4	107	80	120	
Toluene-d8	108	88	110	
4-Bromofluorobenzene	102	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114632

Sample Number: **L0712553-03**
Client ID: **12WW22-121807**
Matrix: **Water**
Workgroup Number: **WG259428**
Collect Date: **12/18/2007 13:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **12/27/2007 04:39**
Cal Date: **12/01/2007 16:25**
Run Date: **12/27/2007 04:39**
File ID: **8M342771**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114633

Sample Number: **L0712553-03**
Client ID: **12WW22-121807**
Matrix: **Water**
Workgroup Number: **WG259428**
Collect Date: **12/18/2007 13:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **12/27/2007 04:39**
Cal Date: **12/01/2007 16:25**
Run Date: **12/27/2007 04:39**
File ID: **8M342771**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	111	86	118	
1,2-Dichloroethane-d4	108	80	120	
Toluene-d8	109	88	110	
4-Bromofluorobenzene	102	86	115	

U Not detected at or above adjusted sample detection limit

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114634

Sample Number: **L0712553-04**
Client ID: **12WW21-121807**
Matrix: **Water**
Workgroup Number: **WG259428**
Collect Date: **12/18/2007 15:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **12/27/2007 05:09**
Cal Date: **12/01/2007 16:25**
Run Date: **12/27/2007 05:09**
File ID: **8M342772**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114635

Sample Number: **L0712553-04**
Client ID: **12WW21-121807**
Matrix: **Water**
Workgroup Number: **WG259428**
Collect Date: **12/18/2007 15:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **12/27/2007 05:09**
Cal Date: **12/01/2007 16:25**
Run Date: **12/27/2007 05:09**
File ID: **8M342772**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	102	86	118	
1,2-Dichloroethane-d4	98.4	80	120	
Toluene-d8	103	88	110	
4-Bromofluorobenzene	102	86	115	

U Not detected at or above adjusted sample detection limit

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**
Dry weight correction:	
Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS8 Dataset: 120107
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 624 SOP: MSV10 Rev: 9
Method: 5030B SOP: PAT01 Rev: 10
Maintenance Log ID: 22033

Internal Standard: STD23364 Surrogate Standard: STD23318
CCV: STD23376 LCS: STD23377 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG257292

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	8M342086	BLANK	NA	1	1		12/01/07 10:05
2	8M342087	BLANK	NA	1	1		12/01/07 10:34
3	8M342088	WG257292-01 BFB 50ng STD 8260	NA	1	1	STD22851	12/01/07 11:20
4	8M342089	WG257292-02 0.30ug/L STD 8260	NA	1	1	STD23376	12/01/07 11:51
5	8M342090	WG257292-03 0.40ug/L STD 8260	NA	1	1	STD23376	12/01/07 12:24
6	8M342091	WG257292-04 1ug/L STD 8260	NA	1	1	STD23376	12/01/07 12:53
7	8M342092	WG257292-05 2ug/L STD 8260	NA	1	1	STD23376	12/01/07 13:24
8	8M342093	WG257292-06 5ug/L STD 8260	NA	1	1	STD23376	12/01/07 13:55
9	8M342094	WG257292-07 20ug/L STD 8260	NA	1	1	STD23376	12/01/07 14:25
10	8M342095	WG257292-08 50ug/L STD 8260	NA	1	1	STD23376	12/01/07 14:55
11	8M342096	WG257292-09 100ug/L STD 8260	NA	1	1	STD23376	12/01/07 15:25
12	8M342097	WG257292-10 200ug/L STD 8260	NA	1	1	STD23376	12/01/07 15:55
13	8M342098	WG257292-11 300ug/L STD 8260	NA	1	1	STD23376	12/01/07 16:25
14	8M342099	SYSTEM BLANK	NA	1	1		12/01/07 16:54
15	8M342100	SYSTEM BLANK	NA	1	1		12/01/07 17:24
16	8M342101	WG257292-12 20ug/L ALT SRC STD 8260	NA	1	1	STD23377	12/01/07 17:54
17	8M342102	SYSTEM BLANK	NA	1	1		12/01/07 18:23

Approved: December 07, 2007

Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS8 Dataset: 122607
Analyst1: CMS Analyst2: TMB
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 22318

Internal Standard: STD23765 Surrogate Standard: STD23766
CCV: STD23642;STD23818 LCS: STD23647;STD23815 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG259304;WG259428

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	8M342729	WG259302-01 BFB 50ng STD 8260	NA	1	1	STD23459	12/26/07 07:45
2	8M342730	WG259302-02 50ug/L STD 8260	NA	1	1	STD23642	12/26/07 08:08
3	8M342731	WG259302-02 50ug/L STD 8260	NA	1	1	STD23642	12/26/07 08:44
4	8M342732	WG259304-01 VBLK1226 BLANK 8260	NA	1	1		12/26/07 09:17
5	8M342733	WG259304-01 VBLK1226 BLANK 8260	NA	1	1		12/26/07 09:47
6	8M342734	WG259304-02 20ug/L LCS STD 8260	NA	1	1	STD23647	12/26/07 10:17
7	8M342735	WG259304-03 20ug/L LCSDUP STD 8260	NA	1	1	STD23647	12/26/07 10:47
8	8M342736	L0712516-02 B 5X 826-SPLP-SPE	NA	18	5		12/26/07 11:17
9	8M342737	L0712516-04 B 5X 826-SPLP-SPE	NA	18	5		12/26/07 11:47
10	8M342738	L0712516-06 B 2.5X 826-SPLP-SPE	NA	18	2.5		12/26/07 12:17
11	8M342739	L0712516-08 B 2.5X 826-SPLP-SPE	NA	18	2.5		12/26/07 12:47
12	8M342740	L0712670-01 A 826-SPE	=7	1	1		12/26/07 13:16
13	8M342741	L0712670-02 A 826-SPE	=7	1	1		12/26/07 13:46
14	8M342742	L0712670-03 A 826-SPE	=7	1	1		12/26/07 14:16
15	8M342743	L0712670-04 A 826-SPE	=7	1	1		12/26/07 14:46
16	8M342744	L0712670-05 A 826-SPE	=7	1	1		12/26/07 15:15
17	8M342745	L0712670-06 A 826-SPE	=7	1	1		12/26/07 15:45
18	8M342746	L0712670-07 A 826-SPE	=7	1	1		12/26/07 16:15
19	8M342747	L0712670-08 A 826-SPE	=7	1	1		12/26/07 16:45
20	8M342748	L0712460-01 B 826-SPE	<2	1	1		12/26/07 17:14
21	8M342749	WG259427-01 50ng BFB STD 8260	NA	1	1	STD23459	12/26/07 17:44
22	8M342750	WG259427-02 50ug/L CCV STD 8260	NA	1	1	STD23818	12/26/07 18:07
23	8M342751	WG259428-01 VBLK1226 BLANK 8260	NA	1	1		12/26/07 18:41
24	8M342752	WG259428-01 VBLK1226 BLANK 8260	NA	1	1		12/26/07 19:11
25	8M342753	WG259428-02 20ug/L LCS STD 8260	NA	1	1	STD23815	12/26/07 19:41
26	8M342754	WG259428-03 20ug/L LCSDUP STD 8260	NA	1	1	STD23815	12/26/07 20:10
27	8M342755	L0712604-02 B 826-SPE	=7	1	1		12/26/07 20:40
28	8M342756	L0712604-03 B 826-SPE	=7	1	1		12/26/07 21:10
29	8M342757	L0712629-01 A 8260	<2	1	1		12/26/07 21:39
30	8M342758	L0712629-02 A 8260	<2	1	1		12/26/07 22:09
31	8M342759	L0712629-03 A 8260	<2	1	1		12/26/07 22:39
32	8M342760	L0712629-04 A 8260	<2	1	1		12/26/07 23:08
33	8M342761	L0712629-05 A 8260	<2	1	1		12/26/07 23:38
34	8M342762	L0712629-06 A 8260	<2	1	1		12/27/07 00:08

Approved: December 27, 2007

Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS8 Dataset: 122607
Analyst1: CMS Analyst2: TMB
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 22318

Internal Standard: STD23765 Surrogate Standard: STD23766
CCV: STD23642;STD23818 LCS: STD23647;STD23815 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG259304;WG259428

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
35	8M342763	L0712629-07 A 8260	<2	1	1		12/27/07 00:38
36	8M342764	L0712629-08 A 8260	<2	1	1		12/27/07 01:08
37	8M342765	L0712629-09 A 8260	<2	1	1		12/27/07 01:39
38	8M342766	L0712629-10 A 8260	<2	1	1		12/27/07 02:09
39	8M342767	L0712629-11 A 8260	<2	1	1		12/27/07 02:39
40	8M342768	L0712629-12 A 8260	<2	1	1		12/27/07 03:09
41	8M342769	L0712553-01 A 826-LOW	<2	1	1		12/27/07 03:39
42	8M342770	L0712553-02 A 826-LOW	<2	1	1		12/27/07 04:09
43	8M342771	L0712553-03 A 826-LOW	<2	1	1		12/27/07 04:39
44	8M342772	L0712553-04 A 826-LOW	<2	1	1		12/27/07 05:09

Comments

Seq.	Rerun	Dil.	Reason	Analytes
2	X		Check Standard Failure	
File ID: 8M342730				
	DNR			
4	X		Carry-over contamination	
File ID: 8M342732				
	DNR			

Approved: December 27, 2007

KEMRON Environmental Services
Data Checklist

Date: 01-DEC-2007
Analyst: CMS
Analyst: NA
Method: 8260B/624
Instrument: HPMS8
Curve Workgroup: NA
Runlog ID: 19688
Analytical Workgroups: WG257292

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	NA
Project/Client Specific Requirements	NA
Special Standards	NA
Blanks	NA
TCL's	NA
Surrogates	NA
LCS (Laboratory Control Sample)	NA
Recoveries	NA
Surrogates	NA
MS/MSD/Duplicates	NA
Samples	NA
TCL Hits	NA
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Library Searches	NA
Calculations & Correct Factors	NA
Dilutions Run	NA
Reruns	NA
Manual Integrations	NA
Case Narrative	NA
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
07-DEC-2007

Secondary Reviewer:
07-DEC-2007

Generated: DEC-07-2007 16:44:01

KEMRON Environmental Services
Data Checklist

Date: 26-DEC-2007
Analyst: CMS
Analyst: TMB
Method: 8260B
Instrument: HPMS8
Curve Workgroup: NA
Runlog ID: 20012
Analytical Workgroups: WG259304;WG259428

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	NA
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
27-DEC-2007

Secondary Reviewer:
27-DEC-2007

Generated: DEC-27-2007 13:53:32

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00114644

Analytical Method: 8260B AAB#: WG259428

Login Number: L0712553

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW21-121807	12/18/07	12/19/07	12/27/07	14	8.59	12/27/07	14	8.59	
12WW22-121807	12/18/07	12/19/07	12/27/07	14	8.63	12/27/07	14	8.63	
12WW20-121807	12/18/07	12/19/07	12/27/07	14	8.73	12/27/07	14	8.73	
12WW20-121807-FD	12/18/07	12/19/07	12/27/07	14	8.75	12/27/07	14	8.75	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 987060
Report generated 01/04/2008 12:22

00114645

SURROGATE STANDARDS

Login Number: L0712553
Instrument Id: HPMS8
Workgroup (AAB#): WG259428

Method: 8260
CAL ID: HPMS8-01-DEC-07
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L0712553-01	1.00	01	106	110	102	108
L0712553-02	1.00	01	107	109	102	108
L0712553-03	1.00	01	108	111	102	109
L0712553-04	1.00	01	98.4	102	102	103
WG259428-01	1.00	01	101	107	103	108
WG259428-02	1.00	01	100	109	103	108
WG259428-03	1.00	01	101	110	103	108

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

KEMRON FORMS - Modified 09/27/2006
Version 1.5 PDF File ID: 987068
Report generated 01/04/2008 12:22

METHOD BLANK SUMMARY

Login Number: L0712553
Work Group: WG259428
Blank File ID: 8M342752
Blank Sample ID: WG259428-01
Prep Date: 12/26/07 19:11
Instrument ID: HPMS8
Analyzed Date: 12/26/07 19:11
Method: 8260B
Analyst: CMS

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG259428-02	8M342753	12/26/07 19:41	01
LCS2	WG259428-03	8M342754	12/26/07 20:10	01
12WW20-121807	L0712553-01	8M342769	12/27/07 03:39	01
12WW20-121807-FD	L0712553-02	8M342770	12/27/07 04:09	01
12WW22-121807	L0712553-03	8M342771	12/27/07 04:39	01
12WW21-121807	L0712553-04	8M342772	12/27/07 05:09	01

KEMRON Environmental Services

METHOD BLANK REPORT

00114647

Login Number:L0712553 Prep Date:12/26/07 19:11 Sample ID:WG259428-01
Instrument ID:HPMS8 Run Date:12/26/07 19:11 Prep Method:5030B
File ID:8M342752 Analyst:CMS Method:8260B
Workgroup (AAB#):WG259428 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS8-01-DEC-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 987062
Report generated 01/04/2008 12:22

METHOD BLANK REPORT

00114648

Login Number:L0712553 Prep Date:12/26/07 19:11 Sample ID:WG259428-01
Instrument ID:HPMS8 Run Date:12/26/07 19:11 Prep Method:5030B
File ID:8M342752 Analyst:CMS Method:8260B
Workgroup (AAB#):WG259428 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS8-01-DEC-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.125	1.00	0.125	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	107	86 - 118	PASS
1,2-Dichloroethane-d4	101	80 - 120	PASS
Toluene-d8	108	88 - 110	PASS
4-Bromofluorobenzene	103	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 987062
Report generated 01/04/2008 12:22

KEMRON Environmental Services

00114649

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0712553 Analyst:CMS Prep Method:5030B

Instrument ID:HPMS8 Matrix:Water Method:8260B

Workgroup (AAB#):WG259428 Units:ug/L

QC Key:STD Lot #:STD23815

Sample ID:WG259428-02 LCS File ID:8M342753 Run Date:12/26/2007 19:41

Sample ID:WG259428-03 LCS2 File ID:8M342754 Run Date:12/26/2007 20:10

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	16.9	84.6	20.0	18.5	92.3	8.71	40 - 142	20	
Benzene	20.0	21.3	106	20.0	21.1	105	1.02	80 - 121	20	
Bromobenzene	20.0	21.7	108	20.0	21.4	107	1.33	80 - 120	20	
Bromochloromethane	20.0	22.2	111	20.0	22.6	113	1.59	65 - 130	20	
Bromodichloromethane	20.0	23.8	119	20.0	23.9	120	0.618	80 - 131	20	
Bromoform	20.0	19.6	97.9	20.0	20.3	101	3.63	70 - 130	20	
Bromomethane	20.0	22.5	112	20.0	22.1	111	1.56	30 - 145	20	
2-Butanone	20.0	17.0	84.9	20.0	19.2	96.1	12.4	30 - 150	20	
n-Butylbenzene	20.0	22.4	112	20.0	21.7	109	3.02	80 - 131	20	
sec-Butylbenzene	20.0	22.4	112	20.0	21.8	109	2.43	80 - 127	20	
tert-Butylbenzene	20.0	22.2	111	20.0	21.3	107	4.16	80 - 126	20	
Carbon disulfide	20.0	24.2	121	20.0	23.6	118	2.85	58 - 138	20	
Carbon tetrachloride	20.0	25.4	127	20.0	24.8	124	2.34	65 - 140	20	
Chlorobenzene	20.0	21.4	107	20.0	21.4	107	0.151	80 - 120	20	
Chlorodibromomethane	20.0	20.5	102	20.0	21.0	105	2.31	60 - 135	20	
Chloroethane	20.0	20.0	100	20.0	19.8	98.9	1.15	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	17.6	87.8	20.0	18.3	91.6	4.19	58 - 151	20	
Chloroform	20.0	22.9	114	20.0	22.6	113	1.37	80 - 125	20	
Chloromethane	20.0	23.1	116	20.0	23.0	115	0.485	40 - 125	20	
2-Chlorotoluene	20.0	24.0	120	20.0	22.4	112	6.99	80 - 127	20	
4-Chlorotoluene	20.0	18.5	92.5	20.0	19.5	97.6	5.40	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	16.8	84.0	20.0	17.3	86.3	2.80	50 - 130	20	
1,2-Dibromoethane	20.0	21.5	108	20.0	21.9	110	1.99	80 - 125	20	
Dibromomethane	20.0	21.9	110	20.0	21.7	109	0.784	75 - 125	20	
1,2-Dichlorobenzene	20.0	20.7	104	20.0	20.8	104	0.594	80 - 125	20	
1,3-Dichlorobenzene	20.0	21.1	106	20.0	20.9	105	0.828	80 - 120	20	
1,4-Dichlorobenzene	20.0	20.6	103	20.0	20.5	103	0.386	80 - 120	20	
Dichlorodifluoromethane	20.0	21.4	107	20.0	21.3	106	0.344	50 - 133	20	
1,1-Dichloroethane	20.0	21.6	108	20.0	21.2	106	1.98	80 - 125	20	
1,2-Dichloroethane	20.0	21.5	107	20.0	21.9	109	1.74	80 - 129	20	
1,1-Dichloroethene	20.0	22.6	113	20.0	21.8	109	3.30	80 - 132	20	
cis-1,2-Dichloroethene	20.0	22.7	114	20.0	22.4	112	1.21	70 - 125	20	
trans-1,2-Dichloroethene	20.0	22.1	111	20.0	21.6	108	2.25	80 - 127	20	
1,2-Dichloropropane	20.0	21.1	106	20.0	21.2	106	0.618	80 - 120	20	
1,3-Dichloropropane	20.0	20.2	101	20.0	20.5	103	1.44	80 - 120	20	
2,2-Dichloropropane	20.0	23.0	115	20.0	22.7	113	1.40	80 - 133	20	
cis-1,3-Dichloropropene	20.0	21.6	108	20.0	21.8	109	0.874	70 - 130	20	
trans-1,3-Dichloropropene	20.0	19.4	96.9	20.0	19.8	99.2	2.30	80 - 130	20	
1,1-Dichloropropene	20.0	22.3	112	20.0	22.0	110	1.37	75 - 130	20	
Ethylbenzene	20.0	22.2	111	20.0	21.8	109	2.10	80 - 122	20	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 984793
Report generated 01/04/2008 12:22

KEMRON Environmental Services

00114650

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0712553 Analyst:CMS Prep Method:5030B
Instrument ID:HPMS8 Matrix:Water Method:8260B
Workgroup (AAB#):WG259428 Units:ug/L
QC Key:STD Lot #:STD23815

Sample ID:WG259428-02 LCS File ID:8M342753 Run Date:12/26/2007 19:41
Sample ID:WG259428-03 LCS2 File ID:8M342754 Run Date:12/26/2007 20:10

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	16.6	83.0	20.0	17.7	88.7	6.60	55 - 130	20	
Hexachlorobutadiene	20.0	23.5	118	20.0	22.5	112	4.68	72 - 132	20	
Isopropylbenzene	20.0	20.5	102	20.0	20.3	101	0.940	80 - 122	20	
p-Isopropyltoluene	20.0	21.9	109	20.0	21.5	108	1.59	80 - 122	20	
4-Methyl-2-pentanone	20.0	17.4	87.0	20.0	18.3	91.4	4.98	64 - 140	20	
Methylene chloride	20.0	20.4	102	20.0	20.1	100	1.44	80 - 123	20	
Naphthalene	20.0	18.0	90.2	20.0	18.9	94.5	4.66	59 - 149	20	
n-Propylbenzene	20.0	22.4	112	20.0	22.0	110	1.71	80 - 129	20	
Styrene	20.0	22.2	111	20.0	22.3	111	0.225	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	21.5	107	20.0	21.7	109	1.12	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	19.5	97.6	20.0	20.8	104	6.41	79 - 125	20	
Tetrachloroethene	20.0	22.4	112	20.0	21.9	110	2.05	80 - 124	20	
Toluene	20.0	21.7	108	20.0	21.2	106	2.28	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	18.2	91.2	20.0	18.5	92.7	1.59	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	19.8	98.9	20.0	20.0	99.8	0.930	65 - 135	20	
1,1,1-Trichloroethane	20.0	25.0	125	20.0	24.4	122	2.51	80 - 134	20	
1,1,2-Trichloroethane	20.0	20.6	103	20.0	21.2	106	2.46	80 - 125	20	
Trichloroethene	20.0	24.0	120	20.0	23.7	118	1.26	80 - 122	20	
Trichlorofluoromethane	20.0	18.9	94.3	20.0	18.3	91.4	3.10	62 - 151	20	
1,2,3-Trichloropropane	20.0	20.3	102	20.0	21.3	106	4.69	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	22.7	113	20.0	22.1	111	2.32	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	22.3	111	20.0	21.9	110	1.62	80 - 127	20	
Vinyl acetate	20.0	33.9	170	20.0	35.0	175	3.18	10 - 150	20	*
Vinyl chloride	20.0	21.6	108	20.0	20.8	104	3.96	65 - 140	20	
o-Xylene	20.0	21.5	107	20.0	21.6	108	0.707	80 - 122	20	
m-,p-Xylene	40.0	42.0	105	40.0	41.7	104	0.876	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	109	110	86 - 118	PASS
1,2-Dichloroethane-d4	100	101	80 - 120	PASS
Toluene-d8	108	108	88 - 110	PASS
4-Bromofluorobenzene	103	103	86 - 115	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 984793
Report generated 01/04/2008 12:22

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L0712553 Tune ID: WG257292-01
Instrument: HPMS8 Run Date: 12/01/2007
Analyst: CMS Run Time: 11:20
Workgroup: WG257292 File ID: 8M342088
Cal ID: HPMS8-01-DEC-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.2	9499	PASS
75.0	95.0	30.0	60.0	46.7	23128	PASS
95.0	95.0	100	100	100	49552	PASS
96.0	95.0	5.00	9.00	7.16	3546	PASS
173	174	0	2.00	0.285	114	PASS
174	95.0	50.0	100	80.8	40034	PASS
175	174	5.00	9.00	7.48	2993	PASS
176	174	95.0	101	97.7	39104	PASS
177	176	5.00	9.00	6.53	2555	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG257292-02	STD	01	12/01/2007 11:51	
WG257292-03	STD	01	12/01/2007 12:24	
WG257292-04	STD	01	12/01/2007 12:53	
WG257292-05	STD	01	12/01/2007 13:24	
WG257292-06	STD	01	12/01/2007 13:55	
WG257292-07	STD	01	12/01/2007 14:25	
WG257292-08	STD-CCV	01	12/01/2007 14:55	
WG257292-09	STD	01	12/01/2007 15:25	
WG257292-10	STD	01	12/01/2007 15:55	
WG257292-11	STD	01	12/01/2007 16:25	
WG257292-12	SSCV	01	12/01/2007 17:54	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 987065
Report generated 01/04/2008 12:22

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L0712553 Tune ID: WG259427-01
Instrument: HPMS8 Run Date: 12/26/2007
Analyst: CMS Run Time: 17:44
Workgroup: WG259427 File ID: 8M342749
Cal ID: HPMS8-01-DEC-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	18.7	12297	PASS
75.0	95.0	30.0	60.0	46.9	30789	PASS
95.0	95.0	100	100	100	65645	PASS
96.0	95.0	5.00	9.00	7.01	4599	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	81.0	53152	PASS
175	174	5.00	9.00	7.31	3888	PASS
176	174	95.0	101	96.1	51058	PASS
177	176	5.00	9.00	6.94	3543	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG259427-02	CCV	01	12/26/2007 18:07	
WG259428-01	BLANK	01	12/26/2007 19:11	
WG259428-02	LCS	01	12/26/2007 19:41	
WG259428-03	LCS2	01	12/26/2007 20:10	
L0712553-01	12WW20-121807	01	12/27/2007 03:39	
L0712553-02	12WW20-121807-FD	01	12/27/2007 04:09	
L0712553-03	12WW22-121807	01	12/27/2007 04:39	
L0712553-04	12WW21-121807	01	12/27/2007 05:09	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 987065
Report generated 01/04/2008 12:22

INITIAL CALIBRATION SUMMARY

Login Number: L0712553 **Instrument ID:** HPMS8

Analytical Method: 8260B **Initial Calibration Date:** 01-DEC-07 16:25

ICAL Workgroup: WG257292 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.3023	12.0		
1,2-Dichloropropane	CCC	0.2006	6.83		
Chloroform	CCC	0.3554	6.05		
Ethylbenzene	CCC	0.4231	16.7		1.00
Toluene	CCC	1.078	12.2		
Vinyl Chloride	CCC	0.1037	8.98		
1,1,2,2-Tetrachloroethane	SPCC	0.3297	14.7		
1,1-Dichloroethane	SPCC	0.3765	5.81		
Bromoform	SPCC	0.1182	15.8		1.00
Chlorobenzene	SPCC	0.7774	14.9		
Chloromethane	SPCC	0.1561	19.3		1.00
1,1,1,2-Tetrachloroethane		0.2630	15.6		1.00
1,1,1-Trichloroethane		0.3105	12.5		
1,1,2-Trichloroethane		0.1653	11.2		
1,1-Dichloropropene		0.2914	4.43		
1,2,3-Trichlorobenzene		0.6339	12.9		
1,2,3-Trichloropropane		0.1070	11.9		
1,2,4-Trichlorobenzene		0.7346	13.0		
1,2,4-Trimethylbenzene		2.110	12.9		
1,2-Dibromo-3-Chloropropane		0.06402	5.73		
1,2-Dibromoethane		0.1747	10.8		
1,2-Dichlorobenzene		1.084	11.5		
1,2-Dichloroethane		0.2423	6.80		
1,3,5-Trimethylbenzene		2.017	12.0		
1,3-Dichlorobenzene		1.224	13.2		
1,3-Dichloropropane		0.3149	9.95		
1,4-Dichlorobenzene		1.239	13.2		
2,2-Dichloropropane		0.3340	2.03		
2-Butanone		0.04380	5.88		
2-Chloroethyl Vinyl Ether		0.08497	10.4		
2-Chlorotoluene		1.740	13.6		
2-Hexanone		0.04760	10.5		
4-Chlorotoluene		1.797	14.7		
4-Methyl-2-Pentanone		0.03977	10.4		
Acetone		0.02833	4.46		
Benzene		0.8363	10.8		
Bromobenzene		0.5948	12.8		
Bromochloromethane		0.1130	12.4		
Bromodichloromethane		0.2487	10.2		
Bromomethane		0.1350	3.91		
Carbon Disulfide		0.5437	7.83		
Carbon Tetrachloride		0.2789	6.57		
Chloroethane		0.1512	4.01		
Dibromochloromethane		0.2077	20.9		1.00
Dibromomethane		0.09264	6.90		

KEMRON FORMS - Modified 01/18/2007
Version 1.5 PDF File ID: 987063
Report generated 01/04/2008 12:22

INITIAL CALIBRATION SUMMARY

Login Number: L0712553
Instrument ID: HPMS8
Analytical Method: 8260B
Initial Calibration Date: 01-DEC-07 16:25
ICAL Workgroup: WG257292
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Dichlorodifluoromethane		0.2164	2.35		
Hexachlorobutadiene		0.2591	14.4		
Isopropylbenzene		1.252	13.0		
Methylene Chloride		0.2381	31.9		1.00
Naphthalene		1.278	9.21		
Styrene		0.8170	12.0		
Tetrachloroethene		0.2179	16.2		1.00
Trichloroethene		0.2153	12.5		
Trichlorofluoromethane		0.3767	2.88		
Vinyl Acetate		0.1275	7.86		
cis-1,2-Dichloroethene		0.2078	8.89		
cis-1,3-Dichloropropene		0.3072	7.48		
m-,p-Xylene		0.5428	13.4		
n-Butylbenzene		1.774	11.4		
n-Propylbenzene		2.654	13.4		
o-Xylene		0.5276	12.7		
p-Isopropyltoluene		2.060	11.9		
sec-Butylbenzene		2.384	12.9		
tert-Butylbenzene		0.4494	10.6		
trans-1,2-Dichloroethene		0.2939	11.9		
trans-1,3-Dichloropropene		0.3341	10.4		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INITIAL CALIBRATION DATA

00114655

Login Number: L0712553 **Instrument ID:** HPMS8

Analytical Method: 8260B **Initial Calibration Date:** 01-DEC-07 16:25

Column ID: F

Analyte	WG257292-02			WG257292-03			WG257292-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	2033.00000	0.2152	1.00	7584.00000	0.3220
1,2-Dichloropropane	NA	NA	NA	0.400	1681.00000	0.1779	1.00	4910.00000	0.2085
Chloroform	0.300	2378.00000	0.3283	0.400	3125.00000	0.3308	1.00	8726.00000	0.3705
Ethylbenzene	NA	NA	NA	NA	NA	NA	1.00	8286.00000	0.4569
Toluene	NA	NA	NA	0.400	7888.00000	1.086	1.00	21462.0000	1.184
Vinyl Chloride	NA	NA	NA	NA	NA	NA	1.00	2740.00000	0.1164
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	899.000000	0.2283	1.00	3295.00000	0.3326
1,1-Dichloroethane	NA	NA	NA	0.400	3155.00000	0.3340	1.00	9189.00000	0.3902
Bromoform	NA	NA	NA	NA	NA	NA	1.00	1445.00000	0.07970
Chlorobenzene	NA	NA	NA	0.400	5666.00000	0.7798	1.00	15493.0000	0.8543
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	4756.00000	0.2020
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	1393.00000	0.1917	1.00	4973.00000	0.2742
1,1,1-Trichloroethane	NA	NA	NA	0.400	2041.00000	0.2161	1.00	7523.00000	0.3195
1,1,2-Trichloroethane	NA	NA	NA	0.400	1035.00000	0.1424	1.00	2876.00000	0.1586
1,1-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	7253.00000	0.3080
1,2,3-Trichlorobenzene	0.300	2200.00000	0.7451	0.400	2591.00000	0.6580	1.00	6841.00000	0.6905
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	841.000000	0.08490
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	3070.00000	0.7797	1.00	7772.00000	0.7844
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	7924.00000	2.012	1.00	22576.0000	2.279
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	1014.00000	0.1396	1.00	2930.00000	0.1616
1,2-Dichlorobenzene	0.300	3284.00000	1.112	0.400	4119.00000	1.046	1.00	11300.0000	1.141
1,2-Dichloroethane	NA	NA	NA	0.400	2054.00000	0.2174	1.00	5942.00000	0.2523
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	7074.00000	1.797	1.00	21605.0000	2.181
1,3-Dichlorobenzene	NA	NA	NA	0.400	4796.00000	1.218	1.00	12653.0000	1.277
1,3-Dichloropropane	NA	NA	NA	0.400	2005.00000	0.2759	1.00	5870.00000	0.3237
1,4-Dichlorobenzene	0.300	4052.00000	1.372	0.400	4709.00000	1.196	1.00	13090.0000	1.321
2,2-Dichloropropane	NA	NA	NA	NA	NA	NA	1.00	7922.00000	0.3364
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	NA	NA	NA	0.400	6473.00000	1.644	1.00	18513.0000	1.869
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	7102.00000	1.804	1.00	18781.0000	1.896
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	8511.00000	0.9010	1.00	21734.0000	0.9229
Bromobenzene	0.300	1543.00000	0.5226	0.400	2343.00000	0.5950	1.00	6218.00000	0.6276
Bromochloromethane	NA	NA	NA	0.400	767.000000	0.08120	1.00	2708.00000	0.1150
Bromodichloromethane	NA	NA	NA	0.400	1858.00000	0.1967	1.00	5353.00000	0.2273
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	2999.00000	0.1274
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	12869.0000	0.5465
Carbon Tetrachloride	NA	NA	NA	NA	NA	NA	1.00	5760.00000	0.2446

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 987063
Report generated 01/04/2008 12:22

INITIAL CALIBRATION DATA

00114656

Login Number: L0712553 **Instrument ID:** HPMS8

Analytical Method: 8260B **Initial Calibration Date:** 01-DEC-07 16:25

Column ID: F

Analyte	WG257292-05			WG257292-06			WG257292-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	14626.0000	0.3117	5.00	38741.0000	0.3286	20.0	141452.000	0.3035
1,2-Dichloropropane	2.00	10256.0000	0.2186	5.00	24516.0000	0.2080	20.0	96304.0000	0.2066
Chloroform	2.00	18092.0000	0.3856	5.00	44174.0000	0.3747	20.0	168110.000	0.3606
Ethylbenzene	2.00	18520.0000	0.5134	5.00	42957.0000	0.4763	20.0	159476.000	0.4386
Toluene	2.00	45209.0000	1.253	5.00	104976.000	1.164	20.0	393891.000	1.083
Vinyl Chloride	2.00	4909.00000	0.1046	5.00	13380.0000	0.1135	20.0	48774.0000	0.1046
1,1,2,2-Tetrachloroethane	2.00	7985.00000	0.4035	5.00	16289.0000	0.3340	20.0	69528.0000	0.3492
1,1-Dichloroethane	2.00	18572.0000	0.3958	5.00	46875.0000	0.3976	20.0	176226.000	0.3781
Bromoform	2.00	4512.00000	0.1251	5.00	9791.00000	0.1086	20.0	45788.0000	0.1259
Chlorobenzene	2.00	34369.0000	0.9528	5.00	76022.0000	0.8430	20.0	286901.000	0.7890
Chloromethane	2.00	8409.00000	0.1792	5.00	18904.0000	0.1604	20.0	64496.0000	0.1384
1,1,1,2-Tetrachloroethane	2.00	11589.0000	0.3213	5.00	25578.0000	0.2836	20.0	100229.000	0.2756
1,1,1-Trichloroethane	2.00	15370.0000	0.3276	5.00	39292.0000	0.3333	20.0	149625.000	0.3210
1,1,2-Trichloroethane	2.00	7373.00000	0.2044	5.00	15208.0000	0.1686	20.0	62529.0000	0.1720
1,1-Dichloropropene	2.00	13710.0000	0.2922	5.00	35710.0000	0.3029	20.0	133470.000	0.2863
1,2,3-Trichlorobenzene	2.00	14298.0000	0.7225	5.00	30805.0000	0.6316	20.0	124285.000	0.6242
1,2,3-Trichloropropane	2.00	2541.00000	0.1284	5.00	5059.00000	0.1037	20.0	22014.0000	0.1106
1,2,4-Trichlorobenzene	2.00	17554.0000	0.8871	5.00	37626.0000	0.7714	20.0	145890.000	0.7327
1,2,4-Trimethylbenzene	2.00	50372.0000	2.546	5.00	112027.000	2.297	20.0	422890.000	2.124
1,2-Dibromo-3-Chloropropane	2.00	1322.00000	0.06680	5.00	2789.00000	0.05720	20.0	12444.0000	0.06250
1,2-Dibromoethane	2.00	7319.00000	0.2029	5.00	15640.0000	0.1734	20.0	68056.0000	0.1872
1,2-Dichlorobenzene	2.00	26092.0000	1.319	5.00	55688.0000	1.142	20.0	218052.000	1.095
1,2-Dichloroethane	2.00	12373.0000	0.2637	5.00	29492.0000	0.2502	20.0	116729.000	0.2504
1,3,5-Trimethylbenzene	2.00	47254.0000	2.388	5.00	107195.000	2.198	20.0	410001.000	2.059
1,3-Dichlorobenzene	2.00	29838.0000	1.508	5.00	64544.0000	1.323	20.0	246569.000	1.238
1,3-Dichloropropane	2.00	13686.0000	0.3794	5.00	28665.0000	0.3179	20.0	116532.000	0.3205
1,4-Dichlorobenzene	2.00	29635.0000	1.498	5.00	64144.0000	1.315	20.0	246612.000	1.239
2,2-Dichloropropane	2.00	15474.0000	0.3298	5.00	40186.0000	0.3409	20.0	154982.000	0.3325
2-Butanone	NA	NA	NA	5.00	4655.00000	0.03950	20.0	20681.0000	0.04440
2-Chloroethyl Vinyl Ether	2.00	3537.00000	0.07540	5.00	8530.00000	0.07240	20.0	41719.0000	0.08950
2-Chlorotoluene	2.00	41698.0000	2.107	5.00	89603.0000	1.837	20.0	351329.000	1.765
2-Hexanone	NA	NA	NA	5.00	3382.00000	0.03750	20.0	18134.0000	0.04990
4-Chlorotoluene	2.00	43838.0000	2.215	5.00	94306.0000	1.934	20.0	343288.000	1.724
4-Methyl-2-Pentanone	NA	NA	NA	5.00	3764.00000	0.03190	20.0	19365.0000	0.04150
Acetone	NA	NA	NA	5.00	3196.00000	0.02710	20.0	13016.0000	0.02790
Benzene	2.00	43710.0000	0.9316	5.00	102818.000	0.8722	20.0	386620.000	0.8294
Bromobenzene	2.00	14920.0000	0.7540	5.00	31142.0000	0.6385	20.0	119498.000	0.6002
Bromochloromethane	2.00	5780.00000	0.1232	5.00	14141.0000	0.1200	20.0	56406.0000	0.1210
Bromodichloromethane	2.00	12832.0000	0.2735	5.00	29918.0000	0.2538	20.0	123560.000	0.2651
Bromomethane	2.00	6067.00000	0.1293	5.00	16592.0000	0.1408	20.0	61997.0000	0.1330
Carbon Disulfide	2.00	22581.0000	0.4813	5.00	61406.0000	0.5209	20.0	270611.000	0.5805
Carbon Tetrachloride	2.00	12797.0000	0.2727	5.00	34291.0000	0.2909	20.0	134004.000	0.2875

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 987063
Report generated 01/04/2008 12:22

INITIAL CALIBRATION DATA

00114657

Login Number: L0712553 **Instrument ID:** HPMS8

Analytical Method: 8260B **Initial Calibration Date:** 01-DEC-07 16:25

Column ID: F

Analyte	WG257292-08			WG257292-09			WG257292-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	370225.000	0.3213	100	719892.000	0.3143	200	1316027.00	0.3020
1,2-Dichloropropane	50.0	237432.000	0.2061	100	446463.000	0.1949	200	803557.000	0.1844
Chloroform	50.0	421844.000	0.3661	100	807898.000	0.3527	200	1433908.00	0.3291
Ethylbenzene	50.0	368757.000	0.4088	100	647735.000	0.3627	200	1058720.00	0.3053
Toluene	50.0	947289.000	1.050	100	1716957.00	0.9613	200	2909189.00	0.8388
Vinyl Chloride	50.0	117316.000	0.1018	100	210699.000	0.09200	200	403963.000	0.09270
1,1,2,2-Tetrachloroethane	50.0	171077.000	0.3420	100	324420.000	0.3289	200	607878.000	0.3189
1,1-Dichloroethane	50.0	445319.000	0.3865	100	856236.000	0.3738	200	1550751.00	0.3559
Bromoform	50.0	119543.000	0.1325	100	231481.000	0.1296	200	436909.000	0.1260
Chlorobenzene	50.0	679586.000	0.7534	100	1196384.00	0.6699	200	1999920.00	0.5767
Chloromethane	50.0	146881.000	0.1275	100	295085.000	0.1288	NA	NA	NA
1,1,1,2-Tetrachloroethane	50.0	236484.000	0.2622	100	415494.000	0.2326	NA	NA	NA
1,1,1-Trichloroethane	50.0	385567.000	0.3346	100	734051.000	0.3204	200	1356287.00	0.3113
1,1,2-Trichloroethane	50.0	150438.000	0.1668	100	281970.000	0.1579	200	526612.000	0.1518
1,1-Dichloropropene	50.0	342558.000	0.2973	100	648920.000	0.2833	200	1175694.00	0.2698
1,2,3-Trichlorobenzene	50.0	297334.000	0.5944	100	540972.000	0.5485	200	933931.000	0.4900
1,2,3-Trichloropropane	50.0	54333.0000	0.1086	100	105862.000	0.1073	200	200622.000	0.1053
1,2,4-Trichlorobenzene	50.0	350466.000	0.7006	100	637667.000	0.6465	200	1094683.00	0.5743
1,2,4-Trimethylbenzene	50.0	1033327.00	2.066	100	1870012.00	1.896	200	3159037.00	1.657
1,2-Dibromo-3-Chloropropane	50.0	32874.0000	0.06570	100	65224.0000	0.06610	200	125395.000	0.06580
1,2-Dibromoethane	50.0	166360.000	0.1844	100	317008.000	0.1775	200	592071.000	0.1707
1,2-Dichlorobenzene	50.0	528335.000	1.056	100	960421.000	0.9737	200	1655084.00	0.8683
1,2-Dichloroethane	50.0	286658.000	0.2488	100	540940.000	0.2361	200	956954.000	0.2196
1,3,5-Trimethylbenzene	50.0	1005267.00	2.010	100	1832658.00	1.858	200	3134933.00	1.645
1,3-Dichlorobenzene	50.0	590854.000	1.181	100	1070220.00	1.085	200	1836985.00	0.9637
1,3-Dichloropropane	50.0	285211.000	0.3162	100	535899.000	0.3001	200	990697.000	0.2857
1,4-Dichlorobenzene	50.0	590483.000	1.180	100	1068173.00	1.083	200	1800725.00	0.9447
2,2-Dichloropropane	50.0	395850.000	0.3436	100	757080.000	0.3305	200	1412308.00	0.3241
2-Butanone	50.0	51565.0000	0.04480	100	102444.000	0.04470	200	204909.000	0.04700
2-Chloroethyl Vinyl Ether	50.0	107856.000	0.09360	100	203483.000	0.08880	200	392398.000	0.09010
2-Chlorotoluene	50.0	858499.000	1.716	100	1690284.00	1.714	200	2421980.00	1.271
2-Hexanone	50.0	45767.0000	0.05070	100	88605.0000	0.04960	200	172029.000	0.04960
4-Chlorotoluene	50.0	819988.000	1.639	100	1350573.00	1.369	NA	NA	NA
4-Methyl-2-Pentanone	50.0	48985.0000	0.04250	100	95811.0000	0.04180	200	184978.000	0.04250
Acetone	50.0	34839.0000	0.03020	100	65267.0000	0.02850	200	127726.000	0.02930
Benzene	50.0	935584.000	0.8120	100	1714646.00	0.7485	200	2930170.00	0.6725
Bromobenzene	50.0	289382.000	0.5785	100	533992.000	0.5414	200	944137.000	0.4953
Bromochloromethane	50.0	140500.000	0.1219	100	265314.000	0.1158	200	462784.000	0.1062
Bromodichloromethane	50.0	309565.000	0.2687	100	587597.000	0.2565	200	1081618.00	0.2482
Bromomethane	50.0	156808.000	0.1361	100	316597.000	0.1382	200	611184.000	0.1403
Carbon Disulfide	50.0	692289.000	0.6008	100	1300166.00	0.5676	200	2213726.00	0.5080
Carbon Tetrachloride	50.0	347149.000	0.3013	100	650456.000	0.2839	200	1183303.00	0.2716

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 987063
Report generated 01/04/2008 12:22

INITIAL CALIBRATION DATA

00114658

Login Number: L0712553 **Instrument ID:** HPMS8

Analytical Method: 8260B **Initial Calibration Date:** 01-DEC-07 16:25

Column ID: F

Analyte	WG257292-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	297220.000	0.04240
2-Chloroethyl Vinyl Ether	NA	NA	NA
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	260089.000	0.04830
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	269771.000	0.03840
Acetone	300	189595.000	0.02700
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

INITIAL CALIBRATION DATA

00114659

Login Number: L0712553 **Instrument ID:** HPMS8

Analytical Method: 8260B **Initial Calibration Date:** 01-DEC-07 16:25

Column ID: F

Analyte	WG257292-02			WG257292-03			WG257292-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	3254.00000	0.1382
Dibromochloromethane	NA	NA	NA	0.400	805.000000	0.1108	1.00	3302.00000	0.1821
Dibromomethane	NA	NA	NA	NA	NA	NA	1.00	1953.00000	0.08290
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	4960.00000	0.2106
Hexachlorobutadiene	NA	NA	NA	0.400	670.000000	0.1702	1.00	2669.00000	0.2694
Isopropylbenzene	NA	NA	NA	0.400	7693.00000	1.059	1.00	24907.0000	1.374
Methylene Chloride	NA	NA	NA	NA	NA	NA	1.00	9039.00000	0.3838
Naphthalene	NA	NA	NA	0.400	4901.00000	1.245	1.00	12601.0000	1.272
Styrene	NA	NA	NA	0.400	5173.00000	0.7119	1.00	14685.0000	0.8098
Tetrachloroethene	NA	NA	NA	0.400	1058.00000	0.1456	1.00	4346.00000	0.2397
Trichloroethene	NA	NA	NA	0.400	1474.00000	0.1560	1.00	5409.00000	0.2297
Trichlorofluoromethane	NA	NA	NA	NA	NA	NA	1.00	8560.00000	0.3635
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	1612.00000	0.1706	1.00	5057.00000	0.2147
cis-1,3-Dichloropropene	NA	NA	NA	0.400	2542.00000	0.2691	1.00	6809.00000	0.2891
m-,p-Xylene	NA	NA	NA	0.800	7221.00000	0.4969	2.00	21627.0000	0.5963
n-Butylbenzene	NA	NA	NA	0.400	6262.00000	1.590	1.00	19463.0000	1.964
n-Propylbenzene	NA	NA	NA	0.400	8918.00000	2.265	1.00	29067.0000	2.934
o-Xylene	NA	NA	NA	0.400	3597.00000	0.4950	1.00	10273.0000	0.5665
p-Isopropyltoluene	NA	NA	NA	0.400	7091.00000	1.801	1.00	21921.0000	2.213
sec-Butylbenzene	NA	NA	NA	0.400	7714.00000	1.959	1.00	25928.0000	2.617
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	1.00	4655.00000	0.4698
trans-1,2-Dichloroethene	NA	NA	NA	0.400	2021.00000	0.2139	1.00	7287.00000	0.3094
trans-1,3-Dichloropropene	NA	NA	NA	0.400	1923.00000	0.2647	1.00	5958.00000	0.3285

INITIAL CALIBRATION DATA

Login Number: L0712553
Instrument ID: HPMS8
Analytical Method: 8260B
Initial Calibration Date: 01-DEC-07 16:25
Column ID: F

Analyte	WG257292-05			WG257292-06			WG257292-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	7063.00000	0.1505	5.00	18372.0000	0.1559	20.0	70442.0000	0.1511
Dibromochloromethane	2.00	8723.00000	0.2418	5.00	18862.0000	0.2092	20.0	83823.0000	0.2305
Dibromomethane	2.00	4800.00000	0.1023	5.00	11098.0000	0.09410	20.0	44936.0000	0.09640
Dichlorodifluoromethane	2.00	10118.0000	0.2156	5.00	26375.0000	0.2237	20.0	103219.000	0.2214
Hexachlorobutadiene	2.00	5697.00000	0.2879	5.00	13928.0000	0.2856	20.0	52534.0000	0.2638
Isopropylbenzene	2.00	53851.0000	1.493	5.00	122840.000	1.362	20.0	466782.000	1.284
Methylene Chloride	2.00	13721.0000	0.2924	5.00	28077.0000	0.2382	20.0	93157.0000	0.1998
Naphthalene	2.00	30008.0000	1.516	5.00	63144.0000	1.295	20.0	261734.000	1.315
Styrene	2.00	35341.0000	0.9798	5.00	79438.0000	0.8809	20.0	315073.000	0.8665
Tetrachloroethene	2.00	9193.00000	0.2549	5.00	21905.0000	0.2429	20.0	82861.0000	0.2279
Trichloroethene	2.00	11204.0000	0.2388	5.00	27378.0000	0.2322	20.0	104880.000	0.2250
Trichlorofluoromethane	2.00	17738.0000	0.3781	5.00	46618.0000	0.3955	20.0	178429.000	0.3828
Vinyl Acetate	NA	NA	NA	5.00	13536.0000	0.1148	20.0	63171.0000	0.1355
cis-1,2-Dichloroethene	2.00	10636.0000	0.2267	5.00	26142.0000	0.2218	20.0	99661.0000	0.2138
cis-1,3-Dichloropropene	2.00	15804.0000	0.3368	5.00	36893.0000	0.3130	20.0	152569.000	0.3273
m-,p-Xylene	4.00	46929.0000	0.6505	10.0	105551.000	0.5852	40.0	387376.000	0.5327
n-Butylbenzene	2.00	40559.0000	2.050	5.00	94869.0000	1.945	20.0	354460.000	1.780
n-Propylbenzene	2.00	62131.0000	3.140	5.00	144683.000	2.966	20.0	542118.000	2.723
o-Xylene	2.00	22902.0000	0.6349	5.00	51278.0000	0.5686	20.0	197530.000	0.5432
p-Isopropyltoluene	2.00	47810.0000	2.416	5.00	110731.000	2.270	20.0	416069.000	2.090
sec-Butylbenzene	2.00	55520.0000	2.806	5.00	128541.000	2.635	20.0	483143.000	2.427
tert-Butylbenzene	2.00	10130.0000	0.5119	5.00	23874.0000	0.4895	20.0	89374.0000	0.4489
trans-1,2-Dichloroethene	2.00	14691.0000	0.3131	5.00	38193.0000	0.3240	20.0	141716.000	0.3040
trans-1,3-Dichloropropene	2.00	13825.0000	0.3833	5.00	30545.0000	0.3387	20.0	129501.000	0.3561

INITIAL CALIBRATION DATA

00114661

Login Number: L0712553 **Instrument ID:** HPMS8

Analytical Method: 8260B **Initial Calibration Date:** 01-DEC-07 16:25

Column ID: F

Analyte	WG257292-08			WG257292-09			WG257292-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	177462.000	0.1540	100	352072.000	0.1537	200	675591.000	0.1550
Dibromochloromethane	50.0	213121.000	0.2363	100	408803.000	0.2289	200	769031.000	0.2217
Dibromomethane	50.0	109188.000	0.09480	100	208990.000	0.09120	200	378046.000	0.08680
Dichlorodifluoromethane	50.0	252358.000	0.2190	100	486103.000	0.2122	200	924619.000	0.2122
Hexachlorobutadiene	50.0	135780.000	0.2714	100	263547.000	0.2672	200	490449.000	0.2573
Isopropylbenzene	50.0	1141502.00	1.266	100	2069099.00	1.159	200	3541868.00	1.021
Methylene Chloride	50.0	224571.000	0.1949	100	418938.000	0.1829	200	762365.000	0.1750
Naphthalene	50.0	639176.000	1.278	100	1183717.00	1.200	200	2099227.00	1.101
Styrene	50.0	761288.000	0.8440	100	1373635.00	0.7691	200	2337568.00	0.6740
Tetrachloroethene	50.0	207023.000	0.2295	100	382063.000	0.2139	200	655518.000	0.1890
Trichloroethene	50.0	261821.000	0.2272	100	489146.000	0.2135	200	869883.000	0.1996
Trichlorofluoromethane	50.0	436275.000	0.3786	100	854604.000	0.3731	200	1592912.00	0.3656
Vinyl Acetate	50.0	157988.000	0.1371	100	300102.000	0.1310	200	518535.000	0.1190
cis-1,2-Dichloroethene	50.0	249687.000	0.2167	100	474470.000	0.2071	200	831258.000	0.1908
cis-1,3-Dichloropropene	50.0	374529.000	0.3250	100	703766.000	0.3072	200	1265596.00	0.2904
m-,p-Xylene	100	907349.000	0.5030	200	1554166.00	0.4351	NA	NA	NA
n-Butylbenzene	50.0	877152.000	1.753	100	1620048.00	1.643	200	2800694.00	1.469
n-Propylbenzene	50.0	1324418.00	2.648	100	2393162.00	2.426	200	4065808.00	2.133
o-Xylene	50.0	471138.000	0.5223	100	848163.000	0.4749	200	1440997.00	0.4155
p-Isopropyltoluene	50.0	1042665.00	2.084	100	1888093.00	1.914	200	3230649.00	1.695
sec-Butylbenzene	50.0	1209497.00	2.418	100	2199604.00	2.230	200	3780984.00	1.984
tert-Butylbenzene	50.0	221985.000	0.4437	100	406289.000	0.4119	200	705437.000	0.3701
trans-1,2-Dichloroethene	50.0	357391.000	0.3102	100	685508.000	0.2992	200	1208601.00	0.2774
trans-1,3-Dichloropropene	50.0	317324.000	0.3518	100	596035.000	0.3337	200	1095971.00	0.3160

INITIAL CALIBRATION DATA

00114662

Login Number: L0712553
Instrument ID: HPMS8
Analytical Method: 8260B
Initial Calibration Date: 01-DEC-07 16:25
Column ID: F

Analyte	WG257292-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

Login Number:L0712553 Run Date:12/01/2007 Sample ID:WG257292-12
Instrument ID:HPMS8 Run Time:17:54 Method:8260B
File ID:8M342101 Analyst:CMS QC Key:STD
ICal Workgroup:WG257292 Cal ID: HPMS8 - 01-DEC-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	20.6	ug/L	0.365	2.80	30	
1,1-Dichloroethene	CCC	20.0	20.4	ug/L	0.308	2.00	30	
1,2-Dichloropropane	CCC	20.0	20.9	ug/L	0.210	4.60	30	
Ethylbenzene	CCC	20.0	21.9	ug/L	0.464	9.40	30	
Toluene	CCC	20.0	20.9	ug/L	1.12	4.30	30	
Vinyl Chloride	CCC	20.0	20.1	ug/L	0.104	0.300	30	
Bromoform	SPCC	20.0	18.7	ug/L	0.122	6.40	30	
Chlorobenzene	SPCC	20.0	21.0	ug/L	0.816	5.00	30	
Chloromethane	SPCC	20.0	21.3	ug/L	0.141	6.60	30	
1,1-Dichloroethane	SPCC	20.0	20.0	ug/L	0.376	0.200	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	20.7	ug/L	0.341	3.30	30	
Acetone		20.0	18.4	ug/L	0.0261	8.10	30	
Benzene		20.0	20.5	ug/L	0.856	2.30	30	
Bromobenzene		20.0	21.0	ug/L	0.623	4.80	30	
Bromochloromethane		20.0	21.2	ug/L	0.120	5.90	30	
Bromodichloromethane		20.0	22.0	ug/L	0.273	9.80	30	
Bromomethane		20.0	22.0	ug/L	0.149	10.0	30	
2-Butanone		20.0	19.6	ug/L	0.0429	2.00	30	
n-Butylbenzene		20.0	21.3	ug/L	1.89	6.50	30	
sec-Butylbenzene		20.0	21.7	ug/L	2.59	8.70	30	
tert-Butylbenzene		20.0	21.1	ug/L	0.473	5.30	30	
Carbon Disulfide		20.0	16.9	ug/L	0.460	15.4	30	
Carbon Tetrachloride		20.0	21.4	ug/L	0.298	6.90	30	
Dibromochloromethane		20.0	19.5	ug/L	0.228	2.50	30	
Chloroethane		20.0	20.5	ug/L	0.155	2.40	30	
2-Chloroethyl Vinyl Ether		20.0	18.7	ug/L	0.0795	6.40	30	
2-Chlorotoluene		20.0	20.7	ug/L	1.80	3.70	30	
4-Chlorotoluene		20.0	20.2	ug/L	1.82	1.10	30	
1,2-Dibromo-3-Chloropropane		20.0	18.7	ug/L	0.0597	6.70	30	
1,2-Dibromoethane		20.0	21.3	ug/L	0.186	6.50	30	
Dibromomethane		20.0	20.4	ug/L	0.0944	1.90	30	
1,2-Dichlorobenzene		20.0	20.6	ug/L	1.12	3.10	30	
1,3-Dichlorobenzene		20.0	20.6	ug/L	1.26	2.90	30	
1,4-Dichlorobenzene		20.0	20.1	ug/L	1.25	0.700	30	
Dichlorodifluoromethane		20.0	21.8	ug/L	0.236	9.10	30	
1,2-Dichloroethane		20.0	20.0	ug/L	0.242	0	30	
cis-1,2-Dichloroethene		20.0	20.9	ug/L	0.217	4.40	30	
trans-1,2-Dichloroethene		20.0	20.4	ug/L	0.300	1.90	30	
1,3-Dichloropropane		20.0	20.6	ug/L	0.325	3.20	30	
2,2-Dichloropropane		20.0	19.0	ug/L	0.318	4.90	30	
cis-1,3-Dichloropropene		20.0	21.1	ug/L	0.324	5.30	30	
trans-1,3-Dichloropropene		20.0	19.2	ug/L	0.321	3.90	30	

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 987064
Report generated 01/04/2008 12:22

Login Number:L0712553 Run Date:12/01/2007 Sample ID:WG257292-12
Instrument ID:HPMS8 Run Time:17:54 Method:8260B
File ID:8M342101 Analyst:CMS QC Key:STD
ICal Workgroup:WG257292 Cal ID: HPMS8 - 01-DEC-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	20.9	ug/L	0.304	4.50	30	
2-Hexanone		20.0	18.6	ug/L	0.0442	7.20	30	
Hexachlorobutadiene		20.0	21.8	ug/L	0.283	9.10	30	
Isopropylbenzene		20.0	20.1	ug/L	1.26	0.600	30	
p-Isopropyltoluene		20.0	21.1	ug/L	2.18	5.60	30	
4-Methyl-2-Pentanone		20.0	18.3	ug/L	0.0363	8.60	30	
Methylene Chloride		20.0	19.7	ug/L	0.198	1.40	30	
Naphthalene		20.0	20.1	ug/L	1.28	0.300	30	
n-Propylbenzene		20.0	21.6	ug/L	2.86	7.90	30	
Styrene		20.0	22.3	ug/L	0.912	11.6	30	
1,1,1,2-Tetrachloroethane		20.0	20.4	ug/L	0.284	2.10	30	
Tetrachloroethene		20.0	20.9	ug/L	0.244	4.30	30	
1,2,3-Trichlorobenzene		20.0	19.2	ug/L	0.607	4.20	30	
1,2,4-Trichlorobenzene		20.0	20.0	ug/L	0.736	0.100	30	
1,1,1-Trichloroethane		20.0	21.9	ug/L	0.340	9.40	30	
1,1,2-Trichloroethane		20.0	21.0	ug/L	0.174	5.00	30	
Trichloroethene		20.0	22.4	ug/L	0.241	11.9	30	
Trichlorofluoromethane		20.0	16.0	ug/L	0.301	20.2	30	
1,2,3-Trichloropropane		20.0	20.5	ug/L	0.109	2.30	30	
1,2,4-Trimethylbenzene		20.0	22.1	ug/L	2.34	10.7	30	
1,3,5-Trimethylbenzene		20.0	21.8	ug/L	2.20	9.10	30	
Vinyl Acetate		20.0	16.4	ug/L	0.105	17.9	40	
o-Xylene		20.0	21.6	ug/L	0.571	8.20	30	
m-,p-Xylene		40.0	41.3	ug/L	0.561	3.30	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CONTINUING CALIBRATION VERIFICATION (CCV)

00114665

Login Number:L0712553 Run Date:12/26/2007 Sample ID:WG259427-02
Instrument ID:HPMS8 Run Time:18:07 Method:8260B
File ID:8M342750 Analyst:CMS QC Key:STD
Workgroup (AAB#):WG259428 Cal ID: HPMS8 - 01-DEC-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	52.9	ug/L	0.376	5.71	20	
1,1-Dichloroethene	CCC	50.0	52.4	ug/L	0.317	4.81	20	
1,2-Dichloropropane	CCC	50.0	49.0	ug/L	0.197	2.06	20	
Ethylbenzene	CCC	50.0	51.7	ug/L	0.412	3.38	20	
Toluene	CCC	50.0	48.4	ug/L	1.04	3.17	20	
Vinyl Chloride	CCC	50.0	53.0	ug/L	0.110	6.07	20	
Bromoform	SPCC	50.0	49.1	ug/L	0.129	1.87	40	
Chlorobenzene	SPCC	50.0	48.3	ug/L	0.751	3.35	40	
Chloromethane	SPCC	50.0	60.9	ug/L	0.157	21.9	40	
1,1-Dichloroethane	SPCC	50.0	50.2	ug/L	0.378	0.374	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	45.9	ug/L	0.303	8.12	40	
Acetone		50.0	40.4	ug/L	0.0229	19.2	40	
Benzene		50.0	48.2	ug/L	0.806	3.59	40	
Bromobenzene		50.0	48.8	ug/L	0.581	2.31	40	
Bromochloromethane		50.0	52.2	ug/L	0.118	4.49	40	
Bromodichloromethane		50.0	54.6	ug/L	0.272	9.23	40	
Bromomethane		50.0	52.9	ug/L	0.143	5.73	40	
2-Butanone		50.0	40.1	ug/L	0.0351	19.7	40	
n-Butylbenzene		50.0	50.0	ug/L	1.77	0.0142	40	
sec-Butylbenzene		50.0	50.6	ug/L	2.41	1.12	40	
tert-Butylbenzene		50.0	49.9	ug/L	0.448	0.288	40	
Carbon Disulfide		50.0	55.4	ug/L	0.602	10.8	40	
Carbon Tetrachloride		50.0	59.6	ug/L	0.332	19.2	40	
Dibromochloromethane		50.0	49.6	ug/L	0.232	0.755	40	
Chloroethane		50.0	47.5	ug/L	0.144	4.94	40	
2-Chloroethyl Vinyl Ether		50.0	45.9	ug/L	0.0780	8.14	40	
2-Chlorotoluene		50.0	51.4	ug/L	1.79	2.80	40	
4-Chlorotoluene		50.0	44.8	ug/L	1.61	10.4	40	
1,2-Dibromo-3-Chloropropane		50.0	42.9	ug/L	0.0549	14.3	40	
1,2-Dibromoethane		50.0	49.8	ug/L	0.174	0.480	40	
Dibromomethane		50.0	50.6	ug/L	0.0938	1.29	40	
1,2-Dichlorobenzene		50.0	47.2	ug/L	1.02	5.64	40	
1,3-Dichlorobenzene		50.0	48.5	ug/L	1.19	2.90	40	
1,4-Dichlorobenzene		50.0	47.5	ug/L	1.18	4.90	40	
Dichlorodifluoromethane		50.0	56.7	ug/L	0.245	13.4	40	
1,2-Dichloroethane		50.0	50.6	ug/L	0.245	1.12	40	
cis-1,2-Dichloroethene		50.0	52.1	ug/L	0.217	4.27	40	
trans-1,2-Dichloroethene		50.0	51.8	ug/L	0.305	3.68	40	
1,3-Dichloropropane		50.0	46.6	ug/L	0.294	6.80	40	
2,2-Dichloropropane		50.0	54.7	ug/L	0.365	9.40	40	
cis-1,3-Dichloropropene		50.0	50.9	ug/L	0.313	1.85	40	
trans-1,3-Dichloropropene		50.0	49.3	ug/L	0.329	1.47	40	

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 987066
Report generated 01/04/2008 12:22

CONTINUING CALIBRATION VERIFICATION (CCV)

00114666

Login Number:L0712553 Run Date:12/26/2007 Sample ID:WG259427-02
Instrument ID:HPMS8 Run Time:18:07 Method:8260B
File ID:8M342750 Analyst:CMS QC Key:STD
Workgroup (AAB#):WG259428 Cal ID: HPMS8 - 01-DEC-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	52.0	ug/L	0.303	3.98	40	
2-Hexanone		50.0	42.1	ug/L	0.0401	15.8	40	
Hexachlorobutadiene		50.0	52.9	ug/L	0.274	5.81	40	
Isopropylbenzene		50.0	50.7	ug/L	1.27	1.31	40	
p-Isopropyltoluene		50.0	51.0	ug/L	2.10	2.06	40	
4-Methyl-2-Pentanone		50.0	43.7	ug/L	0.0348	12.6	40	
Methylene Chloride		50.0	48.3	ug/L	0.185	3.45	40	
Naphthalene		50.0	41.9	ug/L	1.07	16.2	40	
n-Propylbenzene		50.0	50.5	ug/L	2.68	1.08	40	
Styrene		50.0	50.7	ug/L	0.828	1.34	40	
1,1,1,2-Tetrachloroethane		50.0	50.9	ug/L	0.266	1.71	40	
Tetrachloroethene		50.0	52.7	ug/L	0.239	5.46	40	
1,2,3-Trichlorobenzene		50.0	41.5	ug/L	0.526	17.0	40	
1,2,4-Trichlorobenzene		50.0	44.9	ug/L	0.660	10.1	40	
1,1,1-Trichloroethane		50.0	57.8	ug/L	0.359	15.7	40	
1,1,2-Trichloroethane		50.0	47.9	ug/L	0.158	4.25	40	
Trichloroethene		50.0	55.0	ug/L	0.237	10.0	40	
Trichlorofluoromethane		50.0	53.7	ug/L	0.405	7.39	40	
1,2,3-Trichloropropane		50.0	47.2	ug/L	0.101	5.68	40	
1,2,4-Trimethylbenzene		50.0	49.4	ug/L	2.08	1.27	40	
1,3,5-Trimethylbenzene		50.0	50.2	ug/L	2.03	0.465	40	
Vinyl Acetate		50.0	65.8	ug/L	0.168	31.7	40	
o-Xylene		50.0	48.5	ug/L	0.512	3.01	40	
m-,p-Xylene		100	92.9	ug/L	0.505	7.06	40	
1,2-Dichloroethene		100	104	ug/L	0.261	3.97	40	
Xylenes		150	141	ug/L	0.508	5.71	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 987066
Report generated 01/04/2008 12:22

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number:L0712553
Instrument ID:HPMS8
Workgroup (AAB#):WG259428

CCV Number:WG259427-02
CAL ID: HPMS8-01-DEC-07
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG259427-02	NA	NA	240674	438395	547471
Upper Limit	NA	NA	481348	876790	1094942
Lower Limit	NA	NA	120337	219198	273736
L0712553-01	1.00	01	226151	406538	507381
L0712553-02	1.00	01	225061	409192	508418
L0712553-03	1.00	01	226485	406832	509764
L0712553-04	1.00	01	223713	398000	466833
WG259428-01	1.00	01	236381	433733	541114
WG259428-02	1.00	01	234929	431464	539011
WG259428-03	1.00	01	239350	434354	537270

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

KEMRON FORMS - Modified 02/20/2007
Version 1.3 PDF File ID: 987067
Report generated 01/04/2008 12:22

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number:L0712553
Instrument ID:HPMS8
Workgroup (AAB#):WG259428

CCV Number:WG259427-02
CAL ID: HPMS8-01-DEC-07
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG259427-02	NA	NA	17.38	14.37	10.52
Upper Limit	NA	NA	17.88	14.87	11.02
Lower Limit	NA	NA	16.88	13.87	10.02
L0712553-01	1.00	01	17.38	14.37	10.51
L0712553-02	1.00	01	17.38	14.37	10.51
L0712553-03	1.00	01	17.38	14.37	10.51
L0712553-04	1.00	01	17.38	14.37	10.51
WG259428-01	1.00	01	17.38	14.37	10.51
WG259428-02	1.00	01	17.38	14.37	10.51
WG259428-03	1.00	01	17.38	14.37	10.51

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

KEMRON FORMS - Modified 02/20/2007
Version 1.3 PDF File ID: 987069
Report generated 01/04/2008 12:22

2.1.2 RSK 175

2.1.2.1 Summary Data

LABORATORY REPORT

L0712553

01/07/08 16:15

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW20-121807	L0712553-01	RSK175	1	19-DEC-07
12WW20-121807-FD	L0712553-02	RSK175	1	19-DEC-07
12WW22-121807	L0712553-03	RSK175	1	19-DEC-07
12WW21-121807	L0712553-04	RSK175	1	19-DEC-07
12WW21-121807	L0712553-04	RSK175	10	19-DEC-07

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114672

Sample Number: **L0712553-01**
Client ID: **12WW20-121807**
Matrix: **Water**
Workgroup Number: **WG259220**
Collect Date: **12/18/2007 10:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **12/22/2007 02:41**
Cal Date: **11/02/2007 13:03**
Run Date: **12/22/2007 02:41**
File ID: **16G11003**

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	9.14		0.500	0.250
ethene	74-85-1		U	0.500	0.250
ethane	74-84-0		U	0.500	0.250

U Not detected at or above adjusted sample detection limit

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114673

Sample Number: **L0712553-02**
Client ID: **12WW20-121807-FD**
Matrix: **Water**
Workgroup Number: **WG259220**
Collect Date: **12/18/2007 10:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **12/22/2007 02:59**
Cal Date: **11/02/2007 13:03**
Run Date: **12/22/2007 02:59**
File ID: **16G11004**

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	8.74		0.500	0.250
ethene	74-85-1		U	0.500	0.250
ethane	74-84-0		U	0.500	0.250

U Not detected at or above adjusted sample detection limit

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114674

Sample Number: **L0712553-03**
Client ID: **12WW22-121807**
Matrix: **Water**
Workgroup Number: **WG259220**
Collect Date: **12/18/2007 13:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **12/22/2007 03:18**
Cal Date: **11/02/2007 13:03**
Run Date: **12/22/2007 03:18**
File ID: **16G11005**

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	291		0.500	0.250
ethene	74-85-1		U	0.500	0.250
ethane	74-84-0		U	0.500	0.250

U Not detected at or above adjusted sample detection limit

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114675

Sample Number: **L0712553-04**
Client ID: **12WW21-121807**
Matrix: **Water**
Workgroup Number: **WG259220**
Collect Date: **12/18/2007 15:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **12/22/2007 03:35**
Cal Date: **11/02/2007 13:03**
Run Date: **12/22/2007 03:35**
File ID: **16G11006**

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	850	I	0.500	0.250
ethene	74-85-1		U	0.500	0.250
ethane	74-84-0		U	0.500	0.250

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114676

Sample Number: **L0712553-04**
Client ID: **12WW21-121807**
Matrix: **Water**
Workgroup Number: **WG259359**
Collect Date: **12/18/2007 15:05**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **10**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **12/26/2007 21:51**
Cal Date: **11/02/2007 13:03**
Run Date: **12/26/2007 21:51**
File ID: **16G11039**

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	196		5.00	2.50
ethene	74-85-1		U	5.00	2.50
ethane	74-84-0		U	5.00	2.50

U Not detected at or above adjusted sample detection limit

2.1.2.2 QC Summary Data

KEMRON Environmental Services
Data Checklist

Date: 02-NOV-2007
Analyst: FJB
Analyst: NA
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 19118
Analytical Workgroups: WG254544,WG254621

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	SMH
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
06-NOV-2007

Secondary Reviewer:
07-NOV-2007

Generated: NOV-07-2007 08:41:58

KEMRON Environmental Services
Data Checklist

Date: 21-DEC-2007
Analyst: FJB
Analyst: NA
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 20019
Analytical Workgroups: WG259219,WG259220

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	SMH
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
27-DEC-2007

Secondary Reviewer:
03-JAN-2008

Generated: JAN-03-2008 10:09:03

KEMRON Environmental Services
Data Checklist

Date: 26-DEC-2007
Analyst: FJB
Analyst: NA
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 20021
Analytical Workgroups: WG259358,WG259359, WG259360

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	SMH
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
28-DEC-2007

Secondary Reviewer:
03-JAN-2008

Generated: JAN-03-2008 11:13:22

RSK-175 - Example Calculation for Methane

ICAL Plot - Linear Regression (y = ax)

1.0 Calculate the Regression Constant (a)

Where:
ICAL_x = the ICAL concentration = x
ICAL_r = the ICAL response (area) = y

ICAL_x	ICAL_r	[ICAL_r}^2	[ICAL-x][ICAL-r]
0.1	21538	463885444	2153.8
1	77578	6018346084	77578
10	665937	4.43472E+11	6659370
20	1376031	1.89346E+12	27520620
50	3424931	1.17302E+13	171246550
100	6927945	4.79964E+13	692794500
200	14533928	2.11235E+14	2906785600
300	21776507	4.74216E+14	6532952100
		7.47521E+14	10338038472
		a:	**72307.84758**

2.0 Calculate the concentration in extract, x:

Where:
y = response of methane from quant report = **37493410**
x = y/a = 37493410/72307 = 518.52

3.0 Calculate the concentration in sample, Cs:

Cs = x (MW/Tf) (HS/S) (DF)

Where:

x = Concentration in extract	**518.5247695**	umol/mol
MW = molecular weight of analyte	**16.04**	ug/umol
TF = temperature factor = (22.45)(313/273)	**25.68**	L/mol
HS = headspace volume	**0.015**	L
S = sample volume remaining after headspace removal	**0.00547**	L
DF = dilution factor	**10**	
Cs = calculated sample concentration	**8881.427692**	ug/L

RSK-175 - Example Calculation for Carbon Dioxide

ICAL Plot - Quadratic Regression (y = Ax^2 + Bx +C)

Ax^2 + Bx + (C - y) = 0

Step 1 - Calculate the concentration in extract, x:

Data from quadratic regression plot:		
Value of A from plot:	**0.916**	
Value of B from plot:	**1540**	
Value of C from plot:	**0**	
Response for carbon dioxide from quantitation report (y):	**8763828**	
Value of C - y	**-8763828**	
Solving for x using the quadratic formula:		
Root 1 - Computed x1:	**2364.716284**	umol/mol
Root 2 - Computed x2:	**-4045.938991**	

Step 2 - Calculate the concentration in sample, Cs:

Cs = x (MW/Tf) (HS/S) (DF)

Where:

x = Concentration in extract :	**2364.716284**	umol/mol
MW = molecular weight of analyte:	**44**	ug/umol
TF = temperature factor = (22.45)(313/273):	**25.68**	L/mol
HS = initial headspace volume (extraction log):	**0.015**	L
S = final volume (extraction log):	**0.00547**	L
DF = dilution factor:	**1**	
Cs = calculated sample concentration:	**11110.6798**	ug/L

Note: Temperature = 40 C = 313 K

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 110207
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 21573

Internal Standard: NA Surrogate Standard: NA
CCV: STD22747 LCS: STD22747 MS/MSD: NA

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG254544, WG254621

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G9354	WG254544-01 0.1umol/mol STD	NA	1	1	STD22747	11/02/07 10:27
2	16G9355	WG254544-01 0.1umol/mol STD	NA	1	1	STD22747	11/02/07 10:53
3	16G9356	WG254544-02 1umol/mol STD	NA	1	1	STD22747	11/02/07 11:12
4	16G9357	WG254544-03 10umol/mol STD	NA	1	1	STD22747	11/02/07 11:30
5	16G9358	WG254544-04 20umol/mol STD	NA	1	1	STD22747	11/02/07 11:48
6	16G9359	WG254544-05 50umol/mol STD	NA	1	1	STD22747	11/02/07 12:07
7	16G9360	WG254544-06 100umol/mol STD	NA	1	1	STD22747	11/02/07 12:25
8	16G9361	WG254544-07 200umol/mol STD	NA	1	1	STD22747	11/02/07 12:44
9	16G9362	WG254544-08 300umol/mol STD	NA	1	1	STD22747	11/02/07 13:03
10	16G9363	ACETYLENE 50umol/mol STD	NA	1	1	STD22747	11/02/07 13:32
11	16G9364	WG254544-09 20umol/mol ALT SRC	NA	1	1	STD22747	11/02/07 14:10
12	16G9365	L0701196-01 0.1umol/mol MDL	NA	1	1	STD22747	11/02/07 14:41
13	16G9366	L0701196-02 0.1umol/mol MDL	NA	1	1	STD22747	11/02/07 14:59
14	16G9367	L0701196-03 0.1umol/mol MDL	NA	1	1	STD22747	11/02/07 15:17
15	16G9368	L0701196-04 0.1umol/mol MDL	NA	1	1	STD22747	11/02/07 15:36
16	16G9369	L0701196-05 0.1umol/mol MDL	NA	1	1	STD22747	11/02/07 15:55
17	16G9370	L0701196-06 0.1umol/mol MDL	NA	1	1	STD22747	11/02/07 16:13
18	16G9371	L0701196-07 0.1umol/mol MDL	NA	1	1	STD22747	11/02/07 16:32
19	16G9372	WG255791-01 50umol/mol STD	NA	1	1	STD22747	11/02/07 16:50
20	16G9373	WG254620-01 50umol/mol STD	NA	1	1	STD22747	11/02/07 22:22
21	16G9374	WG254621-01 BLANK	NA	1	1		11/02/07 22:44
22	16G9375	WG254621-02 20umol/mol LCS	NA	1	1	STD22747	11/02/07 23:02
23	16G9376	WG254621-03 20umol/mol LCSD	NA	1	1	STD22747	11/02/07 23:35
24	16G9377	L0710611-01 A 10X	7	1	10		11/02/07 23:55
25	16G9378	L0710611-03 A 10X	7	1	10		11/03/07 00:13
26	16G9379	L0710611-05 A 10X	7	1	10		11/03/07 00:32
27	16G9380	L0710611-07 A 10X	7	1	10		11/03/07 00:50
28	16G9381	WG254620-02 50umol/mol STD	NA	1	1	STD22747	11/03/07 01:08
29	16G9382	L0710602-01 A	7	1	1		11/03/07 01:26
30	16G9383	L0710602-02 A	7	1	1		11/03/07 01:44
31	16G9384	L0710602-03 A	7	1	1		11/03/07 02:03
32	16G9385	L0710602-04 A	5	1	1		11/03/07 02:21
33	16G9386	L0710602-05 A	7	1	1		11/03/07 02:39
34	16G9387	L0710602-06 A	7	1	1		11/03/07 02:57

Approved: November 07, 2007

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 110207
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 21573

Internal Standard: NA Surrogate Standard: NA
CCV: STD22747 LCS: STD22747 MS/MSD: NA

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG254544, WG254621

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
35	16G9388	L0710616-02 A	7	1	1		11/03/07 03:16
36	16G9389	L0710616-03 A	7	1	1		11/03/07 03:34
37	16G9390	L0710616-04 A	7	1	1		11/03/07 03:52
38	16G9391	L0710616-05 A	7	1	1		11/03/07 04:10
39	16G9392	WG254620-03 50umol/mol STD	NA	1	1	STD22747	11/03/07 04:28
40	16G9393	L0710616-06 A	7	1	1		11/03/07 04:46
41	16G9394	L0710663-01 A	7	1	1		11/03/07 05:04
42	16G9395	L0710663-02 A	7	1	1		11/03/07 05:23
43	16G9396	L0710663-03 A	7	1	1		11/03/07 05:41
44	16G9397	L0710663-04 A	7	1	1		11/03/07 05:59
45	16G9398	L0710663-05 A	5	1	1		11/03/07 06:17
46	16G9399	WG254620-04 50umol/mol STD	NA	1	1	STD22747	11/03/07 06:35

Comments

Seq.	Rerun	Dil.	Reason	Analytes
1	X			
File ID: 16G9354				
24	X		Check Standard Failure	CO2
File ID: 16G9377				
25	X	20	Check Standard Failure	CO2
File ID: 16G9378				
26	X	20	Check Standard Failure	CO2
File ID: 16G9379				
27	X	50	Over Calibration Range	CO2
File ID: 16G9380				
41	X	1000	Over Calibration Range	METHANE
File ID: 16G9394				
DETECTOR SATURATED - COULD NOT CALCULATE CONCENTRATION				
42	X	10	Over Calibration Range	METHANE
File ID: 16G9395				

Approved: November 07, 2007

Page: 2

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 110207
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 21573

Internal Standard: NA Surrogate Standard: NA
CCV: STD22747 LCS: STD22747 MS/MSD: NA

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG254544, WG254621

Comments

Seq.	Rerun	Dil.	Reason	Analytes
43	X	1000	Over Calibration Range	METHANE
File ID: 16G9396				
DETECTOR SATURATED - COULD NOT CALCULATE CONCENTRATION				

Approved: November 07, 2007

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122107
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22323

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259219,WG259220

Comments: RERUN ALL SAMPLES IN WG259220 EXCEPT 553-01, -02, -03, 04 DUE TO CO2 FAILURE IN LCS AND CCV. CO2 NONTARGET CPD FOR 553'S.

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G10956	WG259218-01 50umol/mol STD	NA	1	1	STD23589	12/21/07 11:58
2	16G10957	WG259219-01 BLANK	NA	1	1		12/21/07 12:27
3	16G10958	WG259219-02 20umol/mol LCS	NA	1	1	STD23589	12/21/07 12:45
4	16G10959	WG259219-02 20umol/mol LCS	NA	1	1	STD23589	12/21/07 13:12
5	16G10960	L0712431-13 C 25X	7	1	25		12/21/07 13:49
6	16G10961	L0712431-01 C 100X	7	1	100		12/21/07 14:08
7	16G10962	L0712431-05 C 25X	7	1	25		12/21/07 14:25
8	16G10963	L0712431-06 C 25X	7	1	25		12/21/07 14:43
9	16G10964	L0712431-17 C 100X	7	1	100		12/21/07 15:01
10	16G10965	L0712431-18 C 25X	7	1	25		12/21/07 15:19
11	16G10966	L0712444-01 C 100X	7	1	100		12/21/07 15:37
12	16G10967	WG259218-02 50umol/mol STD	NA	1	1	STD23589	12/21/07 15:56
13	16G10968	L0712444-02 B 100X	7	1	100		12/21/07 16:14
14	16G10969	L0712444-03 B 100X	7	1	100		12/21/07 16:31
15	16G10970	L0712444-04 B 25X	7	1	25		12/21/07 16:49
16	16G10971	L0712444-05 B 100X	7	1	100		12/21/07 17:07
17	16G10972	L0712444-06 B 25X	7	1	25		12/21/07 17:25
18	16G10973	L0712444-07 B 25X MS	7	1	25	STD23589	12/21/07 17:43
19	16G10974	L0712444-08 B 25X MSD	7	1	25	STD23589	12/21/07 18:01
20	16G10975	L0712444-09 B 100X	7	1	100		12/21/07 18:19
21	16G10976	L0712444-10 B 100X	7	1	100		12/21/07 18:36
22	16G10977	L0712444-12 B 25X	7	1	25		12/21/07 18:54
23	16G10978	WG259218-03 50umol/mol STD	NA	1	1	STD23589	12/21/07 19:12
24	16G10979	L0712444-13 B 25X	7	1	25		12/21/07 19:30
25	16G10980	L0712444-14 B 25X	7	1	25		12/21/07 19:48
26	16G10981	L0712444-15 B 100X	7	1	100		12/21/07 20:06
27	16G10982	WG259218-04 50umol/mol STD	NA	1	1	STD23589	12/21/07 20:23
28	16G10983	WG259220-01 BLANK	NA	1	1		12/21/07 20:41
29	16G10984	WG259220-02 20umol/mol LCS	NA	1	1	STD23589	12/21/07 20:59
30	16G10985	L0712497-01 B 100X	7	1	100		12/21/07 21:17
31	16G10986	L0712497-02 B 100X	7	1	100		12/21/07 21:35
32	16G10987	L0712497-03 A 25X	7	1	25		12/21/07 21:53
33	16G10988	L0712497-04 A 25X	7	1	25		12/21/07 22:10

Approved: January 03, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122107
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22323

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259219,WG259220

Comments: RERUN ALL SAMPLES IN WG259220 EXCEPT 553-01, -02, -03, 04 DUE TO CO2 FAILURE IN LCS AND CCV. CO2 NONTARGET CPD FOR 553'S.

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
34	16G10989	L0712497-05 A 25X	7	1	25		12/21/07 22:28
35	16G10990	L0712497-06 A 25X MS	7	1	25	STD23589	12/21/07 22:46
36	16G10991	L0712497-07 A 25X MSD	7	1	25	STD23589	12/21/07 23:04
37	16G10992	L0712497-08 A 25X	7	1	25		12/21/07 23:22
38	16G10993	WG259218-05 50umol/mol STD	NA	1	1	STD23589	12/21/07 23:41
39	16G10994	L0712497-09 A 25X	7	1	25		12/21/07 23:59
40	16G10995	L0712497-10 A 25X	7	1	25		12/22/07 00:17
41	16G10996	L0712497-11 A 25X	7	1	25		12/22/07 00:35
42	16G10997	L0712497-13 A 25X	7	1	25		12/22/07 00:53
43	16G10998	L0712497-14 A 25X	7	1	25		12/22/07 01:11
44	16G10999	L0712497-15 A 25X	7	1	25		12/22/07 01:29
45	16G11000	L0712497-16 A 25X	7	1	25		12/22/07 01:47
46	16G11001	L0712497-17 A 25X	7	1	25		12/22/07 02:05
47	16G11002	WG259218-06 50umol/mol STD	NA	1	1	STD23589	12/22/07 02:23
48	16G11003	L0712553-01 A	7	1	1		12/22/07 02:41
49	16G11004	L0712553-02 A	7	1	1		12/22/07 02:59
50	16G11005	L0712553-03 A	7	1	1		12/22/07 03:18
51	16G11006	L0712553-04 A	7	1	1		12/22/07 03:35
52	16G11007	WG259218-07 50umol/mol STD	NA	1	1	STD23589	12/22/07 03:54

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X			
File ID: 16G10958				
13	X		Check Standard Failure	METHANE
File ID: 16G10968				
14	X		Check Standard Failure	METHANE
File ID: 16G10969				
16	X		Check Standard Failure	METHANE
File ID: 16G10971				

Approved: January 03, 2008

Page: 2

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122107
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22323

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259219,WG259220

Comments: RERUN ALL SAMPLES IN WG259220 EXCEPT 553-01, -02, -03, 04 DUE TO CO2 FAILURE IN LCS AND CCV. CO2 NONTARGET CPD FOR 553'S.

Comments

Seq.	Rerun	Dil.	Reason	Analytes
24	X		Check Standard Failure	METHANE
File ID: 16G10979				
25	X		Check Standard Failure	METHANE
File ID: 16G10980				
26	X		Check Standard Failure	METHANE
File ID: 16G10981				
51	X	10	Over Calibration Range	METHANE
File ID: 16G11006				

Approved: January 03, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122607
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22326

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259358,WG259359,WG259360

Comments: RERUN WG259359 CO2 FAILED LOW IN CCV'S (-04,-06-07) AND LCS'S. L0712553-04 AND L0712632-02 CO2 IS NONTARGET CPD.
RERUN WG259360 LAST CCV FAILED ETHANE AND ETHENE

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G11008	WG259357-01 50umol/mol STD	NA	1	1	STD23589	12/26/07 11:26
2	16G11009	WG259358-01 BLANK	NA	1	1		12/26/07 11:50
3	16G11010	WG259358-02 20umol/mol LCS	NA	1	1	STD23589	12/26/07 12:08
4	16G11011	L0712444-02 C 100X	7	1	100		12/26/07 13:26
5	16G11012	L0712444-03 C 100X	7	1	100		12/26/07 13:44
6	16G11013	L0712444-05 C 100X	7	1	100		12/26/07 14:02
7	16G11014	L0712444-13 C 25X	7	1	25		12/26/07 14:20
8	16G11015	L0712444-14 C 25X	7	1	25		12/26/07 14:38
9	16G11016	L0712444-15 C 100X	7	1	100		12/26/07 14:56
10	16G11017	L0712497-01 C 100X	7	1	100		12/26/07 15:14
11	16G11018	L0712497-02 C 100X	7	1	100		12/26/07 15:32
12	16G11019	WG259357-02 50umol/mol STD	NA	1	1	STD23589	12/26/07 15:50
13	16G11020	L0712497-03 B 25X	7	1	25		12/26/07 16:08
14	16G11021	L0712497-04 B 25X	7	1	25		12/26/07 16:26
15	16G11022	L0712497-05 B 25X	7	1	25		12/26/07 16:45
16	16G11023	L0712497-06 B 25X MS	7	1	25	STD23589	12/26/07 17:03
17	16G11024	L0712497-07 B 25X MSD	7	1	25	STD23589	12/26/07 17:21
18	16G11025	L0712497-08 B 25X	7	1	25		12/26/07 17:39
19	16G11026	L0712497-09 B 25X	7	1	25		12/26/07 17:57
20	16G11027	L0712497-10 B 25X	7	1	25		12/26/07 18:16
21	16G11028	L0712497-11 B 25X	7	1	25		12/26/07 18:34
22	16G11029	L0712497-13 B 25X	7	1	25		12/26/07 18:52
23	16G11030	WG259357-03 50umol/mol STD	NA	1	1	STD23589	12/26/07 19:09
24	16G11031	L0712497-14 B 25X	7	1	25		12/26/07 19:27
25	16G11032	L0712497-15 B 25X	7	1	25		12/26/07 19:45
26	16G11033	WG259357-04 50umol/mol STD	NA	1	1	STD23589	12/26/07 20:03
27	16G11034	WG259359-01 BLANK	NA	1	1		12/26/07 20:21
28	16G11035	WG259359-02 20umol/mol LCS	NA	1	1	STD23589	12/26/07 20:39
29	16G11036	WG259359-03 20umol/mol LCS DUP	NA	1	1	STD23589	12/26/07 20:57
30	16G11037	L0712497-16 B 25X	7	1	25		12/26/07 21:15
31	16G11038	L0712497-17 B 25X	7	1	25		12/26/07 21:33
32	16G11039	L0712553-04 B 10X	7	1	10		12/26/07 21:51

Approved: January 03, 2008

Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122607
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22326

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259358,WG259359,WG259360

Comments: RERUN WG259359 CO2 FAILED LOW IN CCV'S (-04,-06-07) AND LCS'S. L0712553-04 AND L0712632-02 CO2 IS NONTARGET CPD.
RERUN WG259360 LAST CCV FAILED ETHANE AND ETHENE

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
33	16G11040	L0712562-01 A 25X	7	1	25		12/26/07 22:09
34	16G11041	L0712562-02 A 25X	7	1	25		12/26/07 22:27
35	16G11042	L0712562-03 A 25X	7	1	25		12/26/07 22:45
36	16G11043	L0712562-04 A 25X	7	1	25		12/26/07 23:03
37	16G11044	WG259357-05 50umol/mol STD	NA	1	1	STD23589	12/26/07 23:21
38	16G11045	L0712562-05 A 25X	7	1	25		12/26/07 23:39
39	16G11046	L0712562-07 A 25X	7	1	25		12/26/07 23:57
40	16G11047	L0712562-08 A 25X	7	1	25		12/27/07 00:15
41	16G11048	L0712562-09 A 25X	7	1	25		12/27/07 00:33
42	16G11049	L0712562-10 A 25X	7	1	25		12/27/07 00:51
43	16G11050	L0712562-11 A 25X	7	1	25		12/27/07 01:09
44	16G11051	L0712562-12 A 25X	7	1	25		12/27/07 01:27
45	16G11052	L0712562-13 A 25X	7	1	25		12/27/07 01:45
46	16G11053	L0712562-14 A 25X	7	1	25		12/27/07 02:03
47	16G11054	L0712562-15 A 25X	7	1	25		12/27/07 02:21
48	16G11055	WG259357-06 50umol/mol STD	NA	1	1	STD23589	12/27/07 02:39
49	16G11056	L0712562-16 A 25X	7	1	25		12/27/07 02:57
50	16G11057	L0712635-01 A	7	1	1		12/27/07 03:15
51	16G11058	L0712635-02 A	7	1	1		12/27/07 03:33
52	16G11059	WG259357-07 50umol/mol STD	NA	1	1	STD23589	12/27/07 03:51
53	16G11060	WG259360-01 BLANK	NA	1	1		12/27/07 04:09
54	16G11061	WG259360-02 20umol/mol LCS	NA	1	1	STD23589	12/27/07 04:27
55	16G11062	L0712666-01 A	7	1	1		12/27/07 04:45
56	16G11063	L0712666-02 A MS	7	1	1	STD23589	12/27/07 05:03
57	16G11064	L0712666-03 A MSD	7	1	1	STD23589	12/27/07 05:21
58	16G11065	L0712666-04 A	7	1	1		12/27/07 05:39
59	16G11066	L0712666-05 A	7	1	1		12/27/07 05:57
60	16G11067	L0712666-06 A	7	1	1		12/27/07 06:15
61	16G11068	L0712666-07 A	7	1	1		12/27/07 06:33
62	16G11069	L0712666-08 A	7	1	1		12/27/07 06:51
63	16G11070	WG259357-08 50umol/mol STD	NA	1	1	STD23589	12/27/07 07:09
64	16G11071	L0712666-09 A	7	1	1		12/27/07 07:27

Approved: January 03, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122607
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22326

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259358,WG259359,WG259360

Comments: RERUN WG259359 CO2 FAILED LOW IN CCV'S (-04,-06-07) AND LCS'S. L0712553-04 AND L0712632-02 CO2 IS NONTARGET CPD.
RERUN WG259360 LAST CCV FAILED ETHANE AND ETHENE

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
65	16G11072	L0712666-10 A	7	1	1		12/27/07 07:45
66	16G11073	L0712666-11 A	7	1	1		12/27/07 08:02
67	16G11074	L0712666-12 A	7	1	1		12/27/07 08:20
68	16G11075	L0712666-13 A	7	1	1		12/27/07 08:38
69	16G11076	L0712666-14 A	7	1	1		12/27/07 08:56
70	16G11077	WG259357-09 50umol/mol STD	NA	1	1	STD23589	12/27/07 09:14

Comments

Seq.	Rerun	Dil.	Reason	Analytes
24	X		Check Standard Failure	CO2
File ID: 16G11031				
25	X		Check Standard Failure	CO2
File ID: 16G11032				
34	X	100	Over Calibration Range	CO2
File ID: 16G11041				
39	X	100	Over Calibration Range	CO2
File ID: 16G11046				
40	X	100	Over Calibration Range	CO2
File ID: 16G11047				
50	X	50	Over Calibration Range	METHANE
File ID: 16G11057				
55	X	100	Over Calibration Range	METHANE
File ID: 16G11062				
56	X	100	Over Calibration Range	METHANE
File ID: 16G11063				
57	X	100	Over Calibration Range	METHANE

Approved: January 03, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122607
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22326

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259358,WG259359,WG259360

Comments: RERUN WG259359 CO2 FAILED LOW IN CCV'S (-04,-06-07) AND LCS'S. L0712553-04 AND L0712632-02 CO2 IS NONTARGET CPD.
RERUN WG259360 LAST CCV FAILED ETHANE AND ETHENE

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 16G11064				
58	X	100	Over Calibration Range	METHANE
File ID: 16G11065				
59	X	100	Over Calibration Range	METHANE
File ID: 16G11066				
60	X	100	Over Calibration Range	METHANE
File ID: 16G11067				
61	X	100	Over Calibration Range	METHANE
File ID: 16G11068				
62	X	100	Over Calibration Range	METHANE
File ID: 16G11069				
64	X	100	Over Calibration Range	METHANE
File ID: 16G11071				
65	X	50	Over Calibration Range	METHANE
File ID: 16G11072				
66	X	50	Over Calibration Range	METHANE
File ID: 16G11073				
67	X	50	Over Calibration Range	METHANE
File ID: 16G11074				
68	X	100	Over Calibration Range	METHANE
File ID: 16G11075				
69	X	50	Over Calibration Range	METHANE

Approved: January 03, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122607
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22326

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA

Workgroups: WG259358,WG259359,WG259360

Comments: RERUN WG259359 CO2 FAILED LOW IN CCV'S (-04,-06-07) AND LCS'S. L0712553-04 AND L0712632-02 CO2 IS NONTARGET CPD.
RERUN WG259360 LAST CCV FAILED ETHANE AND ETHENE

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 16G11076				

Approved: January 03, 2008

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: RSK175 **AAB#:** WG259220
Login Number: L0712553

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW21-121807	12/18/07	12/19/07	12/22/07	14	3.52	12/22/07	14	3.52	
12WW22-121807	12/18/07	12/19/07	12/22/07	14	3.57	12/22/07	14	3.57	
12WW20-121807	12/18/07	12/19/07	12/22/07	14	3.69	12/22/07	14	3.69	
12WW20-121807-FD	12/18/07	12/19/07	12/22/07	14	3.70	12/22/07	14	3.70	

*** EXT = SEE PROJECT QAPP REQUIREMENTS**
***ANAL = SEE PROJECT QAPP REQUIREMENTS**

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: RSK175 **AAB#:** WG259359
Login Number: L0712553

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW21-121807	12/18/07	12/19/07	12/26/07	14	8.28	12/26/07	14	8.28	

*** EXT = SEE PROJECT QAPP REQUIREMENTS**
***ANAL = SEE PROJECT QAPP REQUIREMENTS**

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 988324
Report generated 01/07/2008 11:15

METHOD BLANK SUMMARY

Login Number: L0712553
Work Group: WG259220
Blank File ID: 16G10983
Blank Sample ID: WG259220-01
Prep Date: 12/21/07 20:41
Instrument ID: HP16
Analyzed Date: 12/21/07 20:41
Method: RSK175
Analyst: FJB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG259220-02	16G10984	12/21/07 20:59	01
12WW20-121807	L0712553-01	16G11003	12/22/07 02:41	01
12WW20-121807-FD	L0712553-02	16G11004	12/22/07 02:59	01
12WW22-121807	L0712553-03	16G11005	12/22/07 03:18	01
12WW21-121807	L0712553-04	16G11006	12/22/07 03:35	01

METHOD BLANK SUMMARY

Login Number: L0712553
Work Group: WG259359
Blank File ID: 16G11034
Blank Sample ID: WG259359-01
Prep Date: 12/26/07 20:21
Instrument ID: HP16
Analyzed Date: 12/26/07 20:21
Method: RSK175
Analyst: FJB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG259359-02	16G11035	12/26/07 20:39	01
LCS2	WG259359-03	16G11036	12/26/07 20:57	01
12WW21-121807	L0712553-04	16G11039	12/26/07 21:51	DL01

KEMRON FORMS - Modified 01/31/2007
Version 1.5 PDF File ID: 981411
Report generated 01/07/2008 11:15

KEMRON Environmental Services

METHOD BLANK REPORT

00114698

Login Number:L0712553 Prep Date:12/21/07 20:41 Sample ID:WG259220-01
Instrument ID:HP16 Run Date:12/21/07 20:41 Prep Method:5021
File ID:16G10983 Analyst:FJB Method:RSK175
Workgroup (AAB#):WG259220 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HP16-02-NOV-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
methane	0.250	0.500	0.250	1	U
ethene	0.250	0.500	0.250	1	U
ethane	0.250	0.500	0.250	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 981412
Report generated 01/07/2008 11:15

KEMRON Environmental Services

METHOD BLANK REPORT

00114699

Login Number:L0712553 Prep Date:12/26/07 20:21 Sample ID:WG259359-01
Instrument ID:HP16 Run Date:12/26/07 20:21 Prep Method:5021
File ID:16G11034 Analyst:FJB Method:RSK175
Workgroup (AAB#):WG259359 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HP16-02-NOV-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
methane	0.250	0.500	0.250	1	U
ethene	0.250	0.500	0.250	1	U
ethane	0.250	0.500	0.250	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 981412
Report generated 01/07/2008 11:15

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00114700

Login Number: L0712553 Run Date: 12/21/2007 Sample ID: WG259220-02

Instrument ID: HP16 Run Time: 20:59 Prep Method: 5021

File ID: 16G10984 Analyst: FJB Method: RSK175

Workgroup (AAB#): WG259220 Matrix: Water Units: ug/L

QC Key: STD Lot#: STD23589 Cal ID: HP16-02-NOV-07

Analytes	Expected	Found	% Rec	LCS Limits	Q
methane	34.3	31.0	90.6	56 - 140	
ethene	59.9	53.7	89.6	56 - 140	
ethane	64.2	57.6	89.8	56 - 137	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 981413
Report generated 01/07/2008 11:23

KEMRON Environmental Services

00114701

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0712553 Analyst:FJB Prep Method:5021
Instrument ID:HP16 Matrix:Water Method:RSK175
Workgroup (AAB#):WG259359 Units:ug/L
QC Key:STD Lot #:STD23589

Sample ID:WG259359-02 LCS File ID:16G11035 Run Date:12/26/2007 20:39
Sample ID:WG259359-03 LCS2 File ID:16G11036 Run Date:12/26/2007 20:57

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
methane	34.3	31.6	92.3	34.3	29.3	85.4	7.80	56 - 140	40	
ethene	59.9	54.0	90.1	59.9	49.7	82.9	8.26	56 - 140	40	
ethane	64.2	58.3	90.8	64.2	53.6	83.5	8.41	56 - 137	40	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 982866
Report generated 01/07/2008 11:23

INITIAL CALIBRATION SUMMARY

Login Number: L0712553 **Instrument ID:** HP16

Analytical Method: RSK175 **Initial Calibration Date:** 02-NOV-07 13:03

ICAL Workgroup: WG254544 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
ethane		56210	11.3	0.999	
ethene		51660	13.0	0.999	
methane		33590	18.6	0.999	

R = Correlation coefficient; 0.995 minimum

R^2 = Coefficient of determination; 0.99 minimum

KEMRON Environmental Services

INITIAL CALIBRATION DATA

00114703

Login Number: L0712553 **Instrument ID:** HP16

Analytical Method: RSK175 **Initial Calibration Date:** 02-NOV-07 13:03

Column ID: F

Analyte	WG254544-01			WG254544-02			WG254544-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
ethane	0.100	4228.00000	42280	1.00	64156.0000	64160	10.0	558897.000	55890
ethene	0.100	3633.00000	36330	1.00	56893.0000	56890	10.0	502742.000	50270
methane	0.100	4787.00000	47870	1.00	37043.0000	37040	10.0	302922.000	30290

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 988325
Report generated 01/07/2008 11:15

KEMRON Environmental Services

INITIAL CALIBRATION DATA

00114704

Login Number:L0712553

Analytical Method:RSK175

Instrument ID:HP16

Initial Calibration Date:02-NOV-07 13:03

Column ID:F

Analyte	WG254544-04			WG254544-05			WG254544-06		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
ethane	20.0	1091194.00	54560	50.0	2903635.00	58070	100	6019101.00	60190
ethene	20.0	1013568.00	50680	50.0	2737844.00	54760	100	5678133.00	56780
methane	20.0	582994.000	29150	50.0	1551339.00	31030	100	3223736.00	32240

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 988325
Report generated 01/07/2008 11:15

INITIAL CALIBRATION DATA

Login Number: L0712553
Instrument ID: HP16
Analytical Method: RSK175
Initial Calibration Date: 02-NOV-07 13:03
Column ID: F

Analyte	WG254544-07			WG254544-08		
	CONC	RESP	RF	CONC	RESP	RF
ethane	200	11630243.0	58150	300	16907777.0	56360
ethene	200	11026584.0	55130	300	15720407.0	52400
methane	200	6210085.00	31050	300	9021296.00	30070

KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00114706

Login Number:L0712553 Run Date:11/02/2007 Sample ID:WG254544-09

Instrument ID:HP16 Run Time:14:10 Method:RSK175

File ID:16G9364 Analyst:FJB QC Key:STD

ICal Workgroup:WG254544 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
methane		34.3	34.1	ug/L	30400	0.400	30	
ethene		59.9	58.2	ug/L	52000	2.80	30	
ethane		64.2	63.3	ug/L	56300	1.40	30	

* Exceeds %D Limit

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 988326
Report generated 01/07/2008 11:15

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114707

Login Number: L0712553 Run Date: 12/21/2007 Sample ID: WG259218-04
Instrument ID: HP16 Run Time: 20:23 Method: RSK175
File ID: 16G10982 Analyst: FJB QC Key: STD
Workgroup (AAB#): WG259220 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	80.8	ug/L	28800	5.60	25	
ethene		150	138	ug/L	49300	7.81	25	
ethane		160	149	ug/L	53100	7.05	25	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988327
Report generated 01/07/2008 11:15

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114708

Login Number:L0712553 Run Date:12/21/2007 Sample ID:WG259218-05
Instrument ID:HP16 Run Time:23:41 Method:RSK175
File ID:16G10993 Analyst:FJB QC Key:STD
Workgroup (AAB#):WG259220 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	75.4	ug/L	26900	11.9	25	
ethene		150	129	ug/L	46200	13.6	25	
ethane		160	138	ug/L	49200	14.0	25	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988327
Report generated 01/07/2008 11:15

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114709

Login Number: L0712553 Run Date: 12/22/2007 Sample ID: WG259218-06

Instrument ID: HP16 Run Time: 02:23 Method: RSK175

File ID: 16G11002 Analyst: FJB QC Key: STD

Workgroup (AAB#): WG259220 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	74.8	ug/L	26700	12.6	25	
ethene		150	128	ug/L	45700	14.6	25	
ethane		160	136	ug/L	48500	15.1	25	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988327
Report generated 01/07/2008 11:15

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114710

Login Number: L0712553 Run Date: 12/22/2007 Sample ID: WG259218-07
Instrument ID: HP16 Run Time: 03:54 Method: RSK175
File ID: 16G11007 Analyst: FJB QC Key: STD
Workgroup (AAB#): WG259220 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	71.7	ug/L	25500	16.3	25	
ethene		150	120	ug/L	43000	19.7	25	
ethane		160	130	ug/L	46200	19.1	25	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988327
Report generated 01/07/2008 11:15

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114711

Login Number:L0712553 Run Date:12/26/2007 Sample ID:WG259357-04
Instrument ID:HP16 Run Time:20:03 Method:RSK175
File ID:16G11033 Analyst:FJB QC Key:STD
Workgroup (AAB#):WG259359 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	66.6	ug/L	23700	22.3	25	
ethene		150	114	ug/L	40800	23.7	25	
ethane		160	125	ug/L	44400	22.3	25	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988327
Report generated 01/07/2008 11:15

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114712

Login Number:L0712553 Run Date:12/26/2007 Sample ID:WG259357-05
Instrument ID:HP16 Run Time:23:21 Method:RSK175
File ID:16G11044 Analyst:FJB QC Key:STD
Workgroup (AAB#):WG259359 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	76.6	ug/L	27300	10.5	25	
ethene		150	130	ug/L	46300	13.5	25	
ethane		160	139	ug/L	49400	13.6	25	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988327
Report generated 01/07/2008 11:15

2.2 General Chemistry Data

2.2.1 Method 9056

2.2.1.1 Summary Data

LABORATORY REPORT

L0712553

01/07/08 16:15

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW20-121807	L0712553-01	300.0	30	19-DEC-07
12WW20-121807-FD	L0712553-02	300.0	30	19-DEC-07
12WW22-121807	L0712553-03	300.0	15	19-DEC-07
12WW21-121807	L0712553-04	300.0	10	19-DEC-07
12WW21-121807	L0712553-04	300.0	200	19-DEC-07

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114717

Sample Number: **L0712553-01**
Client ID: **12WW20-121807**
Matrix: **Water**
Workgroup Number: **WG259510**
Collect Date: **12/18/2007 10:05**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **30**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **12/19/2007 16:02**
Cal Date: **11/27/2007 15:47**
Run Date: **12/19/2007 16:02**
File ID: **I21219071602.07**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	285		6.00	3.00
Nitrate	14797-55-8		U	18.0	3.00
Nitrite	14797-65-0		U	12.0	3.00
Sulfate	14808-79-8	174		30.0	15.0

U Not detected at or above adjusted sample detection limit

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114718

Sample Number: **L0712553-02**
Client ID: **12WW20-121807-FD**
Matrix: **Water**
Workgroup Number: **WG259510**
Collect Date: **12/18/2007 10:05**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **30**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **12/19/2007 16:20**
Cal Date: **11/27/2007 15:47**
Run Date: **12/19/2007 16:20**
File ID: **I21219071620.08**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	283		6.00	3.00
Nitrate	14797-55-8		U	18.0	3.00
Nitrite	14797-65-0		U	12.0	3.00
Sulfate	14808-79-8	176		30.0	15.0

U Not detected at or above adjusted sample detection limit

Report Number: **L0712553**
Report Date : **January 7, 2008**

Sample Number: **L0712553-03**
Client ID: **12WW22-121807**
Matrix: **Water**
Workgroup Number: **WG259510**
Collect Date: **12/18/2007 13:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **15**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **12/19/2007 16:37**
Cal Date: **11/27/2007 15:47**
Run Date: **12/19/2007 16:37**
File ID: **I21219071637.09**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	85.7		3.00	1.50
Nitrate	14797-55-8		U	9.00	1.50
Nitrite	14797-65-0		U	6.00	1.50
Sulfate	14808-79-8	67.2		15.0	7.50

U Not detected at or above adjusted sample detection limit

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114720

Sample Number: **L0712553-04**
Client ID: **12WW21-121807**
Matrix: **Water**
Workgroup Number: **WG259510**
Collect Date: **12/18/2007 15:05**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **10**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **12/19/2007 16:54**
Cal Date: **11/27/2007 15:47**
Run Date: **12/19/2007 16:54**
File ID: **I21219071654.10**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	932	I	2.00	1.00
Nitrate	14797-55-8		U	6.00	1.00
Nitrite	14797-65-0		U	4.00	1.00
Sulfate	14808-79-8	407		10.0	5.00

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114721

Sample Number: **L0712553-04**
Client ID: **12WW21-121807**
Matrix: **Water**
Workgroup Number: **WG259510**
Collect Date: **12/18/2007 15:05**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **200**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **12/19/2007 17:12**
Cal Date: **11/27/2007 15:47**
Run Date: **12/19/2007 17:12**
File ID: **I212190717l2.11**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	1660		40.0	20.0
Nitrate	14797-55-8		U	120	20.0
Nitrite	14797-65-0		U	80.0	20.0
Sulfate	14808-79-8	398		200	100

U Not detected at or above adjusted sample detection limit

2.2.1.2 QC Summary Data

The concentrations (ppm) of the calibration standards and the resulting area counts are used to determine the equation of a linear or quadratic plot.
The slope and y-intercept of that line are used to calculate the quantity of the analyzed unkown samples.
Amount(ppm) = [(slope)(area count of unknown) + y-intercept](dilution)
(The slope is the amt/area also identified as the CF or calibration factor)

KEMRON Environmental Services

Instrument Run Log

Instrument: IC2 Dataset: 112707 CURVE IC2.SEQ

Analyst1: DSF Analyst2: NA

Method: 9056/300 SOP: IC1 Rev: 7

Maintenance Log ID: 21879

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG256931

Internal STD: NA Surrogate STD: NA Calibration STD STD22570

Comments: This is a method 300/9056 calibration curve.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I21127071420.01	WG256931-01 STD \#1	1	1		11/27/07 14:20
2	I21127071437.02	WG256931-02 STD \#2	1	1		11/27/07 14:37
3	I21127071455.03	WG256931-03 STD \#3	1	1		11/27/07 14:55
4	I21127071512.04	WG256931-04 STD \#4	1	1		11/27/07 15:12
5	I21127071530.05	WG256931-05 STD \#5	1	1		11/27/07 15:30
6	I21127071547.06	WG256931-06 STD \#6	1	1		11/27/07 15:47
7	I21127071604.07	WG256931-07 ALT STD	1	1		11/27/07 16:04
8	I21127071622.08	ELUENT	1	1		11/27/07 16:22
9	I21127071639.09	DI WATER	1	1		11/27/07 16:39

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Page: 1 Approved: 29-NOV-07

KEMRON Environmental Services

Instrument Run Log

Instrument: IC2 Dataset: 121907 IC2.SEQ

Analyst1: DSF Analyst2: NA

Method: 9056/300 SOP: IC1 Rev: 7

Maintenance Log ID: 22317

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG259510

Internal STD: NA Surrogate STD: NA Calibration STD STD22570

Comments: All L0712553 samples analyzed at a dilution only due to high pre-run screen results for chloride and sulfate.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I21219070951.01	ELUENT	1	1		12/19/07 09:51
2	I21219071009.02	DI WATER	1	1		12/19/07 10:09
3	I21219071026.03	WG259511-01 ANION CCV	1	1		12/19/07 10:26
4	I21219071044.04	WG259511-02 ANION CCB	1	1		12/19/07 10:44
5	I21219071101.05	WG259510-01 ANION BLANK	1	1		12/19/07 11:01
6	I21219071118.06	WG259510-02 ANION LCS	1	1		12/19/07 11:18
7	I21219071602.07	L0712553-01 (Cl, NO2, NO3, SO4) 1/30 RS	1	30		12/19/07 16:02
8	I21219071620.08	L0712553-02 (Cl, NO2, NO3, SO4) 1/30 DS	1	30		12/19/07 16:20
9	I21219071637.09	L0712553-03 (Cl, NO2, NO3, SO4) 1/15	1	15		12/19/07 16:37
10	I21219071654.10	L0712553-04 (Cl, NO2, NO3, SO4) 1/10	1	10		12/19/07 16:54
11	I21219071712.11	L0712553-04 RR Cl 1/200	1	200		12/19/07 17:12
12	I21219071729.12	L0712562-01 (Cl,NO2,Br,NO3,SO4) 1/4 REF	1	4		12/19/07 17:29
13	I21219071747.13	WG259510-04 DUP 562-01 1/4	1	4		12/19/07 17:47
14	I21219071804.14	L0712562-02 (Cl,NO2,Br,NO3,SO4) 1/4	1	4		12/19/07 18:04
15	I21219071821.15	WG259511-03 ANION CCV	1	1		12/19/07 18:21
16	I21219071839.16	WG259511-04 ANION CCB	1	1		12/19/07 18:39
17	I21219071856.17	L0712562-03 (Cl,NO2,Br,NO3,SO4) 1/5	1	5		12/19/07 18:56
18	I21219071914.18	L0712562-04 (Cl,NO2,Br,NO3,SO4) 1/4	1	4		12/19/07 19:14
19	I21219071931.19	L0712562-05 (Cl,NO2,Br,NO3,SO4)	1	1		12/19/07 19:31
20	I21219071949.20	L0712562-08 (Cl,NO2,Br,NO3,SO4) 1/5	1	5		12/19/07 19:49
21	I21219072006.21	L0712562-09 (Cl,NO2,Br,NO3,SO4) 1/4	1	4		12/19/07 20:06
22	I21219072023.22	L0712562-10 (Cl,NO2,Br,NO3,SO4)	1	1		12/19/07 20:23
23	I21219072041.23	L0712562-11 (Cl,NO2,Br,NO3,SO4)	1	1		12/19/07 20:41
24	I21219072058.24	L0712562-12 (Cl,NO2,Br,NO3,SO4)	1	1		12/19/07 20:58
25	I21219072116.25	L0712562-13 (Cl,NO2,Br,NO3,SO4)	1	1		12/19/07 21:16
26	I21219072133.26	DI WATER (Column Rinse)	1	1		12/19/07 21:33
27	I21219072151.27	WG259511-05 ANION CCV	1	1		12/19/07 21:51
28	I21219072208.28	WG259511-06 ANION CCB	1	1		12/19/07 22:08
29	I21219072226.29	L0712562-14 (Cl,NO2,Br,NO3,SO4)	1	1		12/19/07 22:26
30	I21219072243.30	L0712562-15 (Cl,NO2,Br,NO3,SO4)	1	1		12/19/07 22:43
31	I21219072300.31	L0712562-16 (Cl,NO2,Br,NO3,SO4) REF	1	1		12/19/07 23:00
32	I21219072318.32	WG259510-06 DUP 562-16	1	1		12/19/07 23:18
33	I21219072335.33	WG259510-07 MS 562-16	1	1		12/19/07 23:35
34	I21219072353.34	WG259510-08 MSD 562-16	1	1		12/19/07 23:53
35	I21220070010.35	DI WATER (Column Rinse)	1	1		12/20/07 00:10

Page: 1 Approved: 28-DEC-07

KEMRON Environmental Services

Instrument Run Log

Instrument: IC2 Dataset: 121907 IC2.SEQ

Analyst1: DSF Analyst2: NA

Method: 9056/300 SOP: IC1 Rev: 7

Maintenance Log ID: 22317

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG259510

Internal STD: NA Surrogate STD: NA STD22570

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
36	I21220070027.36	WG259511-07 ANION CCV	1	1		12/20/07 00:27
37	I21220070045.37	WG259511-08 ANION CCB	1	1		12/20/07 00:45
38	I21220070839.39	WG259511-09 ANION CCV	1	1		12/20/07 08:39
39	I21220070856.40	WG259511-10 ANION CCB	1	1		12/20/07 08:56
40	I21220070919.41	L0712562-05 RR Cl 1/2	1	2		12/20/07 09:19
41	I21220070937.42	L0712562-10 RR Cl 1/2	1	2		12/20/07 09:37
42	I21220070954.43	L0712562-11 RR Cl 1/2	1	2		12/20/07 09:54
43	I21220071011.44	L0712562-12 RR Cl 1/2	1	2		12/20/07 10:11
44	I21220071029.45	L0712562-13 RR Cl 1/2	1	2		12/20/07 10:29
45	I21220071046.46	L0712562-14 RR Cl 1/2	1	2		12/20/07 10:46
46	I21220071104.47	L0712562-15 RR Cl 1/2	1	2		12/20/07 11:04
47	I21220071121.48	WG259511-11 ANION CCV	1	1		12/20/07 11:21
48	I21220071139.49	WG259511-12 ANION CCB	1	1		12/20/07 11:39

Comments

Seq.	Rerun	Dil.	Reason	Analytes
10	X	200	Over Calibration Range	Chloride
12		4		
	Sample analyzed at a dilution only due to strong odor and brownish color.			
14		4		
	Sample analyzed at a dilution only due to strong odor and brownish color.			
17		5		
	Sample analyzed at a dilution only due to strong odor and brownish color.			
18		4		
	Sample analyzed at a dilution only due to strong odor and brownish color.			
19	X	2	Over Calibration Range	Chloride
20		5		
	Sample analyzed at a dilution only due to strong odor and brownish color.			
21		4		
	Sample analyzed at a dilution only due to strong odor and brownish color.			
22	X	2	Over Calibration Range	Chloride
23	X	2	Over Calibration Range	Chloride
24	X	2	Over Calibration Range	Chloride

Page: 2 Approved: 28-DEC-07

KEMRON Environmental Services

Instrument Run Log

Instrument: IC2 Dataset: 121907 IC2.SEQ

Analyst1: DSF Analyst2: NA

Method: 9056/300 SOP: IC1 Rev: 7

Maintenance Log ID: 22317

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG259510

Internal STD: NA Surrogate STD: NA STD22570

Comments

Seq.	Rerun	Dil.	Reason	Analytes
25	X	2	Over Calibration Range	Chloride
29	X	2	Over Calibration Range	Chloride
30	X	2	Over Calibration Range	Chloride
33				

The %Recovery for chloride was below the advisory limit. The %RPD was well within the advisory limit.

Approved: 28-DEC-07

KEMRON Environmental Services
Data Checklist

Date: 27-NOV-2007
Analyst: DSF
Analyst: NA
Method: 300/9056
Instrument: IC2
Curve Workgroup: NA
Runlog ID: 19505
Analytical Workgroups: THIS IS A METHOD 300/9056 CALIBRATION CURVE

ANALYTICAL	
System Performance Check	
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	X
Window standard (FID)	NA
Initial Calibration	
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	
% D/% Drift	NA
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	NA
TCL hits	NA
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	
Recoveries	NA
Surrogate recoveries	NA
MS/MSD/Sample duplicates	
Recoveries	NA
%RPD	NA
Samples	
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	DSF
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
28-NOV-2007
Debra S. Frederick

Secondary Reviewer:
29-NOV-2007
Michael Cochran

Generated: NOV-29-2007 10:23:00

KEMRON Environmental Services
Data Checklist

Date: 19-DEC-2007
Analyst: DSF
Analyst: NA
Method: 300/9056
Instrument: IC2
Curve Workgroup: NA
Runlog ID: 20011
Analytical Workgroups: L0712553, L0712562

ANALYTICAL	
System Performance Check	
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	X
Window standard (FID)	NA
Initial Calibration	
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	
% D/% Drift	X
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	X
Special standards	NA
Blanks	X
TCL hits	NA
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	
Recoveries	X
%RPD	X
Samples	
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	X
Check for completeness	X
Primary Reviewer	DSF
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
27-DEC-2007
Debra S. Frederick

Secondary Reviewer:
28-DEC-2007
Michael Cochran

Generated: DEC-28-2007 11:50:03

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00114730

Analytical Method: 300.0 AAB#: WG259510

Login Number: L0712553

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW20-121807	12/18/07	12/19/07	12/19/07	2	1.25	12/19/07	2	1.25	
12WW21-121807	12/18/07	12/19/07	12/19/07	2	1.09	12/19/07	2	1.09	
12WW21-121807	12/18/07	12/19/07	12/19/07	2	1.08	12/19/07	2	1.08	
12WW22-121807	12/18/07	12/19/07	12/19/07	2	1.13	12/19/07	2	1.13	
12WW20-121807-FD	12/18/07	12/19/07	12/19/07	2	1.26	12/19/07	2	1.26	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 981276
Report generated 12/28/2007 12:04

METHOD BLANK SUMMARY

Login Number: L0712553
Work Group: WG259510
Blank File ID: I21219071101.05
Blank Sample ID: WG259510-01
Prep Date: 12/19/07 11:01
Instrument ID: IC2
Analyzed Date: 12/19/07 11:01
Method: 300.0
Analyst: DSF

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG259510-02	I21219071118.06	12/19/07 11:18	01
12WW20-121807	L0712553-01	I21219071602.07	12/19/07 16:02	DL01
12WW20-121807-FD	L0712553-02	I21219071620.08	12/19/07 16:20	DL01
12WW22-121807	L0712553-03	I21219071637.09	12/19/07 16:37	DL01
12WW21-121807	L0712553-04	I21219071654.10	12/19/07 16:54	DL01
12WW21-121807	L0712553-04	I21219071712.11	12/19/07 17:12	DL02
DUP	WG259510-04	I21219071747.13	12/19/07 17:47	DL01
DUP	WG259510-06	I21219072318.32	12/19/07 23:18	01

KEMRON Environmental Services

METHOD BLANK REPORT

00114732

Login Number:L0712553 Prep Date:12/19/07 11:01 Sample ID:WG259510-01
Instrument ID:IC2 Run Date:12/19/07 11:01 Prep Method:300.0
File ID:I21219071101.05 Analyst:DSF Method:300.0
Workgroup (AAB#):WG259510 Matrix:Water Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID: IC2-27-NOV-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0.100	1	U
Nitrate	0.100	0.600	0.100	1	U
Nitrite	0.100	0.400	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 981278
Report generated 12/28/2007 12:04

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00114733

Login Number: L0712553 Run Date: 12/19/2007 Sample ID: WG259510-02

Instrument ID: IC2 Run Time: 11:18 Prep Method: 300.0

File ID: I21219071118.06 Analyst: DSF Method: 300.0

Workgroup (AAB#): WG259510 Matrix: Water Units: mg/L

QC Key: STD Lot#: STD22570 Cal ID: IC2-27-NOV-07

Analytes	Expected	Found	% Rec	LCS Limits	Q
Chloride	6.00	6.50	108	90 - 110	
Nitrate	4.07	4.20	103	90 - 110	
Nitrite	3.65	3.93	107	90 - 110	
Sulfate	30.0	31.6	105	90 - 110	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 981279
Report generated 12/28/2007 12:04

DUPLICATE REPORT

00114734

Login Number: L0712553 Worknum: WG259510

Instrument ID: IC2 Method: 300.0

Sample ID: L0712553-01 File ID: I21219071602.07 Dil: 30 Matrix: Water

Duplicate ID: L0712553-02 File ID: I21219071620.08 Dil: 30 Units: mg/L

Analyte	Sample	Duplicate	RPD	RPD Limit	Q
Chloride	285	283	0.644	20	
Nitrate	ND	ND	0	20	
Nitrite	ND	ND	0	20	
Sulfate	174	176	1.56	20	

KEMRON FORMS - Modified 02/14/2006
Version 1.5 PDF File ID: 981280
Report generated 12/27/2007 14:36

INITIAL CALIBRATION SUMMARY

Login Number: L0712553 **Instrument ID:** IC2

Analytical Method: 300.0 **Initial Calibration Date:** 27-NOV-07 15:47

ICAL Workgroup: WG256931 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Chloride		9.948	5.69		
Nitrate		4.170	9.60		
Nitrite		4.439	6.67		
Sulfate		12.99	8.00		

R = Correlation coefficient; 0.995 minimum

R^2 = Coefficient of determination; 0.99 minimum

This method always uses quadratic calibration model (R^2)

KEMRON Environmental Services

INITIAL CALIBRATION DATA

00114736

Login Number: L0712553

Analytical Method: 300.0

Instrument ID: IC2

Initial Calibration Date: 27-NOV-07 15:47

Column ID: F

Analyte	WG256931-01			WG256931-02			WG256931-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloride	0.200	0.0190000000	10.53	2.00	0.193000000	10.36	4.00	0.400000000	10.00
Nitrate	0.136	0.0280000000	4.839	1.36	0.311000000	4.358	2.71	0.654000000	4.145
Nitrite	0.122	0.0310000000	3.929	1.22	0.259000000	4.702	2.44	0.531000000	4.587
Sulfate	1.00	0.0690000000	14.49	10.0	0.731000000	13.68	20.0	1.52500000	13.11

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 982365
Report generated 12/28/2007 12:04

KEMRON Environmental Services

INITIAL CALIBRATION DATA

00114737

Login Number: L0712553

Analytical Method: 300.0

Instrument ID: IC2

Initial Calibration Date: 27-NOV-07 15:47

Column ID: F

Analyte	WG256931-04			WG256931-05			WG256931-06		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloride	6.00	0.599000000	10.02	8.00	0.817000000	9.792	12.0	1.33500000	8.989
Nitrate	4.07	0.996000000	4.083	5.42	1.36400000	3.975	8.13	2.24800000	3.618
Nitrite	3.65	0.797000000	4.584	4.87	1.08800000	4.477	7.31	1.67800000	4.355
Sulfate	30.0	2.35400000	12.74	40.0	3.22500000	12.40	60.0	5.21300000	11.51

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 982365
Report generated 12/28/2007 12:04

KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00114738

Login Number:L0712553 Run Date:11/27/2007 Sample ID:WG256931-07
Instrument ID:IC2 Run Time:16:04 Method:300.0
File ID:I21127071604.07 Analyst:DSF QC Key:STD
ICal Workgroup:WG256931 Cal ID: IC2 - 27-NOV-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloride		6.00	6.21	mg/L	9.62	3.50	10	
Nitrate		4.07	4.24	mg/L	3.90	4.20	10	
Nitrite		3.65	3.67	mg/L	4.54	0.400	10	
Sulfate		30.0	30.9	mg/L	12.4	2.90	10	

* Exceeds %D Limit

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 982366
Report generated 12/28/2007 12:04

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00114739

Login Number:L0712553 Run Date:12/19/2007 Sample ID:WG259511-02
Instrument ID:IC2 Run Time:10:44 Method:300.0
File ID:I21219071044.04 Analyst:DSF Units:mg/L
Workgroup (AAB#):WG259510 Cal ID: IC2 -
Matrix:WATER

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 981282
Report generated 12/27/2007 14:36

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00114740

Login Number:L0712553 Run Date:12/19/2007 Sample ID:WG259511-04
Instrument ID:IC2 Run Time:18:39 Method:300.0
File ID:I21219071839.16 Analyst:DSF Units:mg/L
Workgroup (AAB#):WG259510 Cal ID: IC2 -
Matrix:WATER

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 981282
Report generated 12/27/2007 14:36

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00114741

Login Number:L0712553 Run Date:12/19/2007 Sample ID:WG259511-06
Instrument ID:IC2 Run Time:22:08 Method:300.0
File ID:I21219072208.28 Analyst:DSF Units:mg/L
Workgroup (AAB#):WG259510 Cal ID: IC2 -
Matrix:WATER

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 981282
Report generated 12/27/2007 14:36

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00114742

Login Number:L0712553 Run Date:12/20/2007 Sample ID:WG259511-08
Instrument ID:IC2 Run Time:00:45 Method:300.0
File ID:I21220070045.37 Analyst:DSF Units:mg/L
Workgroup (AAB#):WG259510 Cal ID: IC2 -
Matrix:WATER

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 981282
Report generated 12/27/2007 14:36

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114743

Login Number:L0712553 Run Date:12/19/2007 Sample ID:WG259511-01
Instrument ID:IC2 Run Time:10:26 Method:300.0
File ID:I21219071026.03 Analyst:DSF QC Key:STD
Workgroup (AAB#):WG259510 Cal ID: IC2 - 27-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	6.48	mg/L	9.17	7.95	10	
Nitrate		4.07	4.34	mg/L	3.80	6.66	10	
Nitrite		3.65	3.92	mg/L	4.24	7.22	10	
Sulfate		30.0	31.6	mg/L	12.1	5.18	10	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 981281
Report generated 12/28/2007 12:04

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114744

Login Number:L0712553 Run Date:12/19/2007 Sample ID:WG259511-03
Instrument ID:IC2 Run Time:18:21 Method:300.0
File ID:I21219071821.15 Analyst:DSF QC Key:STD
Workgroup (AAB#):WG259510 Cal ID: IC2 - 27-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	6.15	mg/L	9.72	2.43	10	
Nitrate		4.07	4.19	mg/L	3.94	3.12	10	
Nitrite		3.65	3.67	mg/L	4.53	0.564	10	
Sulfate		30.0	30.5	mg/L	12.5	1.60	10	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 981281
Report generated 12/28/2007 12:04

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114745

Login Number: L0712553 Run Date: 12/19/2007 Sample ID: WG259511-05

Instrument ID: IC2 Run Time: 21:51 Method: 300.0

File ID: I21219072151.27 Analyst: DSF QC Key: STD

Workgroup (AAB#): WG259510 Cal ID: IC2 - 27-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	6.33	mg/L	9.42	5.42	10	
Nitrate		4.07	4.11	mg/L	4.03	1.13	10	
Nitrite		3.65	3.85	mg/L	4.32	5.30	10	
Sulfate		30.0	30.8	mg/L	12.4	2.56	10	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 981281
Report generated 12/28/2007 12:04

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114746

Login Number:L0712553 Run Date:12/20/2007 Sample ID:WG259511-07
Instrument ID:IC2 Run Time:00:27 Method:300.0
File ID:I21220070027.36 Analyst:DSF QC Key:STD
Workgroup (AAB#):WG259510 Cal ID: IC2 - 27-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	6.13	mg/L	9.76	2.10	10	
Nitrate		4.07	4.04	mg/L	4.12	0.743	10	
Nitrite		3.65	3.68	mg/L	4.53	0.673	10	
Sulfate		30.0	30.4	mg/L	12.6	1.36	10	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 981281
Report generated 12/28/2007 12:04

2.2.2 Total Organic Carbon Data

2.2.2.1 Summary Data

LABORATORY REPORT

00114749

L0712553

01/07/08 16:15

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW20-121807	L0712553-01	415.1	1	19-DEC-07
12WW20-121807	L0712553-01	415.1	1	19-DEC-07
12WW20-121807-FD	L0712553-02	415.1	1	19-DEC-07
12WW20-121807-FD	L0712553-02	415.1	1	19-DEC-07
12WW22-121807	L0712553-03	415.1	1	19-DEC-07
12WW22-121807	L0712553-03	415.1	1	19-DEC-07
12WW21-121807	L0712553-04	415.1	1	19-DEC-07
12WW21-121807	L0712553-04	415.1	1	19-DEC-07

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114750

Sample Number: **L0712553-01**
Client ID: **12WW20-121807**
Matrix: **Water**
Workgroup Number: **WG259266**
Collect Date: **12/18/2007 10:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **12/22/2007 12:10**
Cal Date: **09/28/2007 13:01**
Run Date: **12/22/2007 12:10**
File ID: **TC12-22-2007.11**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Organic Carbon		3.54		1.00	0.500

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114751

Sample Number: **L0712553-01**
Client ID: **12WW20-121807**
Matrix: **Water**
Workgroup Number: **WG259266**
Collect Date: **12/18/2007 10:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **12/22/2007 12:10**
Cal Date: **09/28/2007 13:01**
Run Date: **12/22/2007 12:10**
File ID: **TC12-22-2007.11**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Inorganic Carbon		29.4		1.00	0.500

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114752

Sample Number: **L0712553-02**
Client ID: **12WW20-121807-FD**
Matrix: **Water**
Workgroup Number: **WG259266**
Collect Date: **12/18/2007 10:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **12/22/2007 12:23**
Cal Date: **09/28/2007 13:01**
Run Date: **12/22/2007 12:23**
File ID: **TC12-22-2007.12**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Organic Carbon		1.17		1.00	0.500

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114753

Sample Number: **L0712553-02**
Client ID: **12WW20-121807-FD**
Matrix: **Water**
Workgroup Number: **WG259266**
Collect Date: **12/18/2007 10:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **12/22/2007 12:23**
Cal Date: **09/28/2007 13:01**
Run Date: **12/22/2007 12:23**
File ID: **TC12-22-2007.12**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Inorganic Carbon		27.6		1.00	0.500

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114754

Sample Number: **L0712553-03**
Client ID: **12WW22-121807**
Matrix: **Water**
Workgroup Number: **WG259266**
Collect Date: **12/18/2007 13:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **12/22/2007 12:37**
Cal Date: **09/28/2007 13:01**
Run Date: **12/22/2007 12:37**
File ID: **TC12-22-2007.13**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Inorganic Carbon		46.9		1.00	0.500

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114755

Sample Number: **L0712553-03**
Client ID: **12WW22-121807**
Matrix: **Water**
Workgroup Number: **WG259266**
Collect Date: **12/18/2007 13:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **12/22/2007 12:37**
Cal Date: **09/28/2007 13:01**
Run Date: **12/22/2007 12:37**
File ID: **TC12-22-2007.13**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Organic Carbon		1.14		1.00	0.500

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114756

Sample Number: **L0712553-04**
Client ID: **12WW21-121807**
Matrix: **Water**
Workgroup Number: **WG259266**
Collect Date: **12/18/2007 15:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **12/22/2007 12:52**
Cal Date: **09/28/2007 13:01**
Run Date: **12/22/2007 12:52**
File ID: **TC12-22-2007.14**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Inorganic Carbon		39.6		1.00	0.500

Report Number: **L0712553**
Report Date : **January 7, 2008**

00114757

Sample Number: **L0712553-04**
Client ID: **12WW21-121807**
Matrix: **Water**
Workgroup Number: **WG259266**
Collect Date: **12/18/2007 15:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **12/22/2007 12:52**
Cal Date: **09/28/2007 13:01**
Run Date: **12/22/2007 12:52**
File ID: **TC12-22-2007.14**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Organic Carbon		3.22		1.00	0.500

2.2.2.2 QC Summary Data

Total Organic Carbon Example Calculations
(Direct Readout Parameter)

(Readout)/(dilution) = mg/L

where:

Readout = direct readout from the instrument
dilution = dilution in decimal form (ex. 1/5 dilution = 0.2)

KEMRON Environmental Services
Data Checklist

Date: 22-DEC-2007
Analyst: DR
Analyst: DIH
Method: TOC
Instrument: TOC
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG259266 WG259276

Calibration/Linearity	9/28/2007
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JBK
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
28-DEC-2007

Secondary Reviewer:
29-DEC-2007

Generated: DEC-29-2007 09:21:33

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00114761

Analytical Method: 415.1 AAB#: WG259266

Login Number: L0712553

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW22-121807	12/18/07	12/19/07	12/22/07	28	3.96	12/22/07	28	3.96	
12WW21-121807	12/18/07	12/19/07	12/22/07	28	3.91	12/22/07	28	3.91	
12WW20-121807	12/18/07	12/19/07	12/22/07	28	4.09	12/22/07	28	4.09	
12WW20-121807-FD	12/18/07	12/19/07	12/22/07	28	4.10	12/22/07	28	4.10	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 983386
Report generated 12/29/2007 09:15

METHOD BLANK SUMMARY

Login Number: L0712553
Work Group: WG259266
Blank File ID: TC12-22-2007.04
Blank Sample ID: WG259266-01
Prep Date: 12/22/07 10:38
Instrument ID: TOC-VWP
Analyzed Date: 12/22/07 10:38
Method: 415.1
Analyst: DIH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG259266-02	TC12-22-2007.05	12/22/07 10:50	01
LCS2	WG259266-03	TC12-22-2007.06	12/22/07 11:01	01
12WW20-121807	L0712553-01	TC12-22-2007.11	12/22/07 12:10	01
12WW20-121807	L0712553-01	TC12-22-2007.11	12/22/07 12:10	01
12WW20-121807-FD	L0712553-02	TC12-22-2007.12	12/22/07 12:23	01
12WW20-121807-FD	L0712553-02	TC12-22-2007.12	12/22/07 12:23	01
12WW22-121807	L0712553-03	TC12-22-2007.13	12/22/07 12:37	01
12WW22-121807	L0712553-03	TC12-22-2007.13	12/22/07 12:37	01
12WW21-121807	L0712553-04	TC12-22-2007.14	12/22/07 12:52	01
12WW21-121807	L0712553-04	TC12-22-2007.14	12/22/07 12:52	01
DUP	WG259266-05	TC12-22-2007.30	12/22/07 16:11	DL01

KEMRON Environmental Services

METHOD BLANK REPORT

00114763

Login Number:L0712553 Prep Date:12/22/07 10:38 Sample ID:WG259266-01
Instrument ID:TOC-VWP Run Date:12/22/07 10:38 Prep Method:415.1
File ID:TC12-22-2007.04 Analyst:DIH Method:415.1
Workgroup (AAB#):WG259266 Matrix:Water Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID:TOC-VW-

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 983388
Report generated 12/29/2007 09:15

KEMRON Environmental Services

00114764

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0712553 Analyst:DIH Prep Method:415.1
Instrument ID:TOC-VWP Matrix:Water Method:415.1
Workgroup (AAB#):WG259266 Units:mg/L
QC Key:STD Lot #:STD23654

Sample ID:WG259266-02 LCS File ID:TC12-22-2007.05 Run Date:12/22/2007 10:50
Sample ID:WG259266-03 LCS2 File ID:TC12-22-2007.06 Run Date:12/22/2007 11:01

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	22.0	87.8	25.0	22.3	89.2	1.58	85 - 115	15	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 983389
Report generated 12/29/2007 09:15

2.2.2.3 Raw Data

TC/TIC curves

KEMRON ENVIRONMENTAL SERVICES

WG#: _____

Total Organic Carbon

MAKE DAILY

CCV (TOC): Dee Leslie ($^{10}/_{200}$(1000) = 50 mg/L) ($^{5}/_{200}$(1000) = 10 mg/L)

LCS (TOC): _____ ($^{5}/_{200}$(1000) = 25 mg/L)

CCV (TIC): _____ ($^{5}/_{200}$(1000) = 25 mg/L)

MS (TOC): _____

Calibration Curve Date: 9/28/07

☑ EPA 415.1 / SM5310-C TOC / TOC-4 / TOC-D / TOCLOW
☐ SW846 9060 TOC-14 / TOC-44

SOP: K 4151 Rev. 11

Instrument: Shimadza TOC-VWP/ASI

DAILY CHECK

☑ drain reservoir filled
☑ ASI water bottle full
☑ dilution water bottle full

☑ 3rd bottle full
☑ sufficient gas
☑ sufficient persulfate

☑ sufficient acid
☑ waste container

Position	Sample ID	Dilution
1	IHE TC curve	
2	TC ICV	
3	TIC curve	
4	TIC ICV	
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

Position	Sample ID	Dilution
26	curve std	
27	TC std 20564	
28	TIC std 21975	
29		
30		
31		
32		
33	ICV	
34		
35	TC std 22001	
36		
37	TIC std 21999	
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		

Position	Sample ID	Dilution
51		
52	) see SOP	
53	) for curves	
54		
55		
56		
57		
58		
59		
60	5/200(1000)=25	
61		
62	5/200(1000)=25	
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		

Analyst: Deanna Roberts Date: 9/28/07 Time: _____

DCN#71205

Deanna Roberts

Approved: September 30, 2007

	Analysi	Sample Name	Result	Status	Date / Time
1	TC	TCCURVE		Compl	09/28/2007 12:28:50 PM
2	TC	TC ICV	TC:24.61mg/L	Compl	09/28/2007 12:35:37 PM
3	IC	TICCURVE		Compl	09/28/2007 01:18:04 PM
4	IC	TIC	IC:25.94mg/L	Compl	09/28/2007 01:26:28 PM

Approved: September 30, 2007

Instr.Information

System TOCVW ASI
Detector Wet Chemical

Cal. Curve

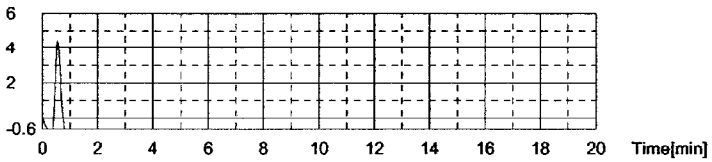
Sample Name: TCCURVE
Sample ID: Untitled
Cal. Curve: TCCURVE-09-28-2007.2007_09_28_11_55_13.cal
Status Completed

Type	Anal.
Standard	TC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	7.415	500uL	1	********		09/28/2007 11:58:33 AM

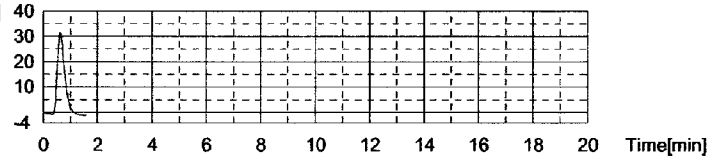
Acid Add. 0.000%
Mean Area 7.415



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	60.44	500uL	1	********		09/28/2007 12:03:55 PM

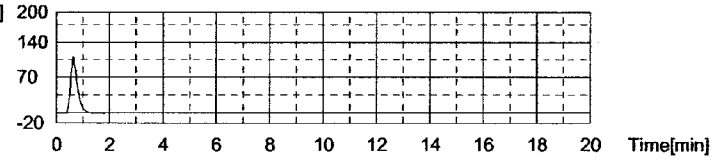
Acid Add. 0.000%
Mean Area 60.44



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	196.6	500uL	1	********		09/28/2007 12:09:42 PM

Acid Add. 0.000%
Mean Area 196.6

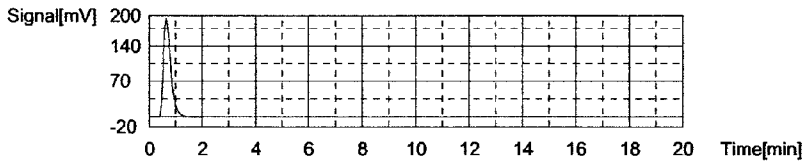


Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	386.2	500uL	1	********		09/28/2007 12:15:46 PM

Approved: September 30, 2007

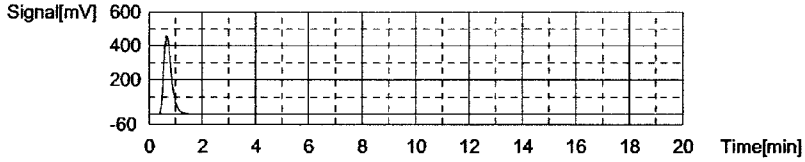
Acid Add. 0.000%
Mean Area 386.2



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	945.1	500uL	1	********		09/28/2007 12:22:10 PM

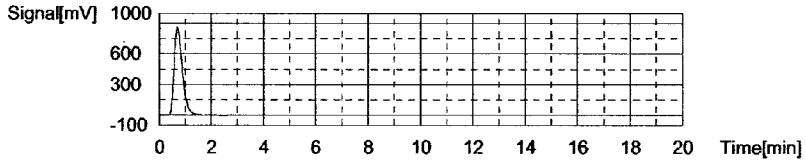
Acid Add. 0.000%
Mean Area 945.1



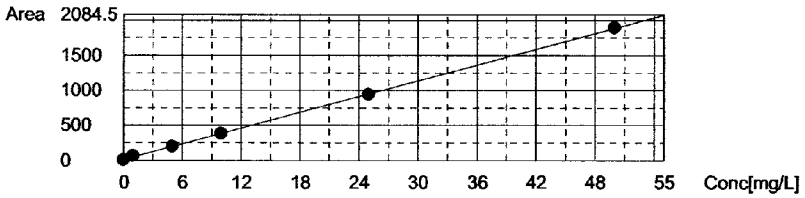
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1895	500uL	1	********		09/28/2007 12:28:50 PM

Acid Add. 0.000%
Mean Area 1895



Slope: 37.60
Intercept 11.55
r^2 0.999921
Zero Shift No



Sample

Sample Name: TC ICV
Sample ID: Untitled
Origin: TCCURVE-09-28-2007.cal
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TC	1.000	TC:24.61mg/L

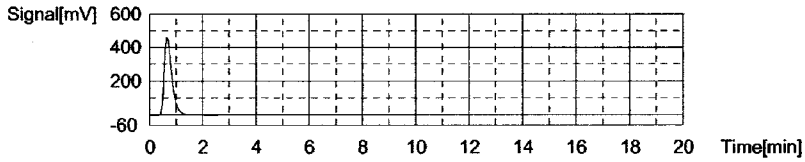
1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	937.0	24.61mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	09/28/2007 12:35:37 PM

Approved: September 30, 2007

Mean Area 937.0
Mean Conc. 24.61mg/L



Cal. Curve

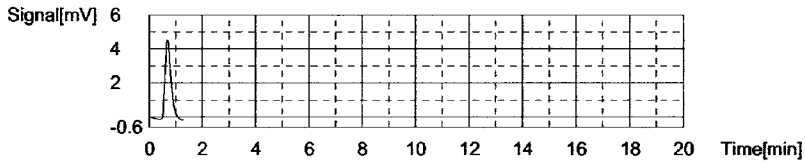
Sample Name: TICCURVE
Sample ID: Untitled
Cal. Curve: TICCURVE-09-29-2007.2007_09_28_12_35_37.cal
Status Completed

Type	Anal.
Standard	IC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	7.260	500uL	1	*******		09/28/2007 12:39:07 PM

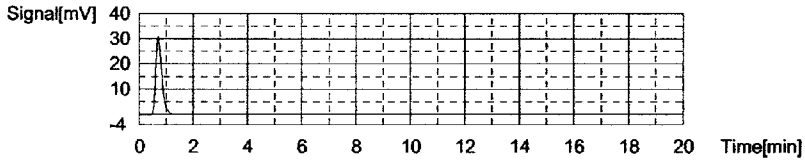
Acid Add. 10.00%
Mean Area 7.260



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	47.64	500uL	1	*******		09/28/2007 12:46:16 PM

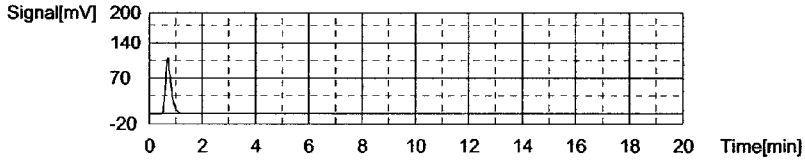
Acid Add. 10.00%
Mean Area 47.64



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	159.9	500uL	1	*******		09/28/2007 12:53:33 PM

Acid Add. 10.00%
Mean Area 159.9

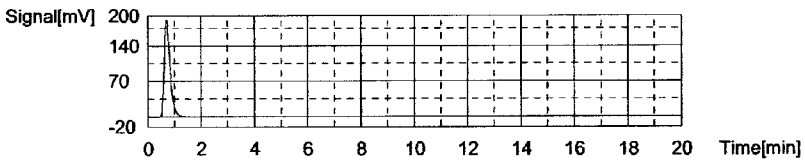


Conc: 10.00mg/L

Approved: September 30, 2007

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	300.8	500uL	1	*******		09/28/2007 01:01:01 PM

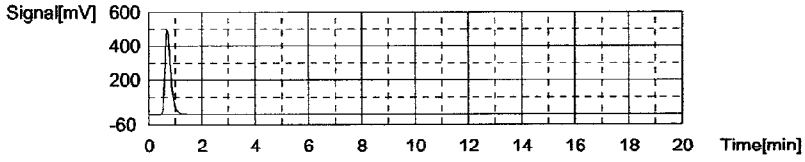
Acid Add. 10.00%
Mean Area 300.8



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	766.5	500uL	1	*******		09/28/2007 01:09:32 PM

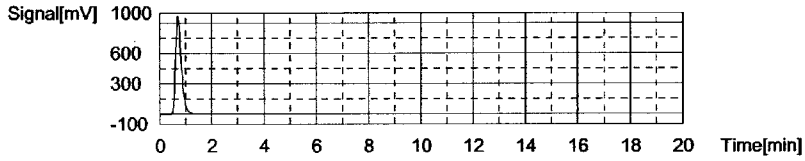
Acid Add. 10.00%
Mean Area 766.5



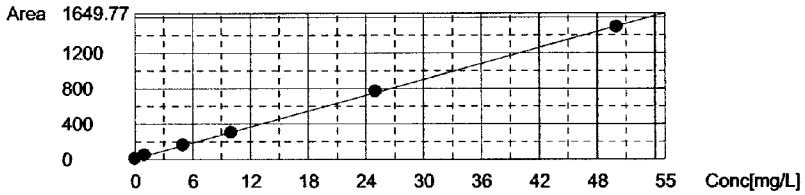
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1496	500uL	1	*******		09/28/2007 01:18:04 PM

Acid Add. 10.00%
Mean Area 1496



Slope: 29.76
Intercept 11.60
r^2 0.999843
Zero Shift No



Sample

Sample Name: TIC
Sample ID: Untitled
Origin: TICCURVE-09-29-2007.cal
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	IC	1.000	IC:25.94mg/L

1. Det

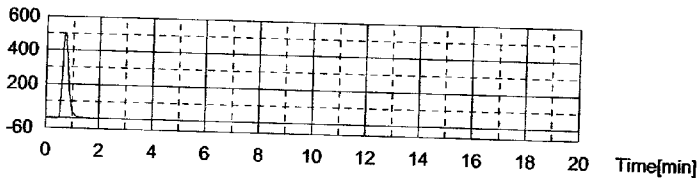
Anal.: IC

Jeanna Roberts
Approved: September 30, 2007

09/28/2007 01:40:32 PM 09-28-2007-DIH-TOC.t32

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	783.7	25.94mg/L	500ul	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	09/28/2007 01:26:28 PM

Mean Area 783.7
Mean Conc. 25.94mg/L



5/5

Approved: September 30, 2007

KEMRON ENVIRONMENTAL SERVICES

WORKGROUP: WG259266

WG259276

WG#:

Total Organic Carbon

MAKE DAILY

CCV (TOC): Std 22587 ($^{10}/_{200}$ (1000) = 50 mg/L) ($^{3}/_{200}$ (1000) = 10 mg/L)

CCV (TIC): Std 23787 ($^{5}/_{200}$ (1000) = 25 mg/L)

LCS (TOC): Std 23654 ($^{5}/_{200}$ (1000) = 25 mg/L)

MS (TOC): 0.4(1000)/140 = 0.10 dr (10)

Calibration Curve Date: 9/28/07

☑ EPA 415.1 / SM5310-C TOC / TOC-4 / TOC-D / TOCLOW

☐ SW846 9060 TOC-14 / TOC-44

SOP: K 4151 Rev. 11

Instrument: Shimadza TOC-VWP/ASI

☑ drain reservoir filled
☑ ASI water bottle full
☑ dilution water bottle full

DAILY CHECK

☑ 3rd bottle full
☑ sufficient gas
☑ sufficient persulfate

☑ sufficient acid
☑ waste container

Position	Sample ID	Dilution
1	CCV 50	
2	CCV 10	
3	TIC 25	
4	BLK	
5	LCS	
6	LCSDUP	
7	12-478-10	DISS
8	12	↓
9	14	↓
10	16	↓
11	12-553-01	
12	02	
13	03	
14	04	
15	CCV	
16	CCB	
17	12-566-01	
18	02	
19	12-640-01	
20	03	
21	12-644-01	
22	12-649-01	
23	02	
24	12-659-01	
25	02	

Position	Sample ID	Dilution
26	12-616-01	1/100
27	CCV	
28	CCB	
29	12-620-01	1/2 CL
30	DUP	↓
31	MS	↓
32	12-375-07	1/10
33	Blank	
34	LCS 25	
35	LCSDUP	
36	12-375-08	1/2
37	09	1/20
38	DUP 09	1/20
39	CCV 50	
40	CCB	
41	12-431-01	1/2
42	05	
43	06	
44	14	
45	MS 15	
46	MSD 16	
47	12-334-07	
48		
49		
50		

Position	Sample ID	Dilution
51	CCV 50	
52	CCB	
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		

Analyst: LeannaRoberts Date: 12/22/07 Time: 1002

DCN#72507

Approved: December 29, 2007

	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TOC	CCV 50	!!Error!! TOC:50.54mg/L TC:50.31mg/L IC:-0.2290m	Comple	12/22/2007 10:05:55 AM	1
2	TOC	CCV 10	!!Error!! TOC:9.820mg/L TC:9.592mg/L IC:-0.2279m	Comple	12/22/2007 10:17:03 AM	2
3	TOC	TIC 25	!!Error!! TOC:-1.074mg/L TC:24.94mg/L IC:26.02mg/	Comple	12/22/2007 10:30:36 AM	3
4	TOC	WG259266-01 BLANK	!!Error!! TOC:0.06028mg/L TC:-0.1781mg/L IC:-0.23	Comple	12/22/2007 10:38:42 AM	0
5	TOC	WG259266-02 LCS	!!Error!! TOC:21.96mg/L TC:21.74mg/L IC:-0.2245m	Comple	12/22/2007 10:50:03 AM	5
6	TOC	WG259266-03 LCSDUP	!!Error!! TOC:22.31mg/L TC:22.08mg/L IC:-0.2287m	Comple	12/22/2007 11:01:26 AM	6
7	TOC	L0712478-10	TOC:15.13mg/L TC:25.95mg/L IC:10.82mg/L	Comple	12/22/2007 11:14:59 AM	7
8	TOC	L0712478-12	TOC:11.94mg/L TC:24.63mg/L IC:12.69mg/L	Comple	12/22/2007 11:28:28 AM	8
9	TOC	L0712478-14	TOC:11.14mg/L TC:26.95mg/L IC:15.81mg/L	Comple	12/22/2007 11:42:21 AM	9
10	TOC	L0712478-16	TOC:17.76mg/L TC:32.57mg/L IC:14.81mg/L	Comple	12/22/2007 11:56:08 AM	10
11	TOC	L0712553-01	TOC:3.541mg/L TC:32.91mg/L IC:29.37mg/L	Comple	12/22/2007 12:10:20 PM	11
12	TOC	L0712553-02	TOC:1.173mg/L TC:28.74mg/L IC:27.56mg/L	Comple	12/22/2007 12:23:48 PM	12
13	TOC	L0712553-03	TOC:1.144mg/L TC:47.99mg/L IC:46.85mg/L	Comple	12/22/2007 12:37:07 PM	13
14	TOC	L0712553-04	TOC:3.215mg/L TC:42.81mg/L IC:39.59mg/L	Comple	12/22/2007 12:52:05 PM	14
15	TOC	CCV 50	!!Error!! TOC:45.27mg/L TC:45.25mg/L IC:-0.01911	Comple	12/22/2007 01:03:47 PM	15
16	TOC	CCB	!!Error!! TOC:0.05746mg/L TC:-0.1864mg/L IC:-0.24	Comple	12/22/2007 01:11:52 PM	0
17	TOC	L0712566-01	TOC:2.219mg/L TC:47.99mg/L IC:45.77mg/L	Comple	12/22/2007 01:26:44 PM	17
18	TOC	L0712566-02	TOC:1.462mg/L TC:1.956mg/L IC:0.4939mg/L	Comple	12/22/2007 01:37:41 PM	18
19	TOC	L0712640-01	TOC:3.381mg/L TC:43.58mg/L IC:40.20mg/L	Comple	12/22/2007 01:51:28 PM	19
20	TOC	L0712640-03	TOC:3.105mg/L TC:6.347mg/L IC:3.242mg/L	Comple	12/22/2007 02:03:01 PM	20
21	TOC	L0712644-01	TOC:2.643mg/L TC:7.310mg/L IC:4.667mg/L	Comple	12/22/2007 02:14:44 PM	21
22	TOC	L0712649-01	TOC:3.273mg/L TC:10.65mg/L IC:7.375mg/L	Comple	12/22/2007 02:26:44 PM	22
23	TOC	L0712649-02	TOC:2.571mg/L TC:8.095mg/L IC:5.524mg/L	Comple	12/22/2007 02:38:24 PM	23
24	TOC	L0712659-01	TOC:11.13mg/L TC:116.7mg/L IC:105.6mg/L	Comple	12/22/2007 02:55:06 PM	24
25	TOC	L0712659-02	TOC:21.07mg/L TC:120.2mg/L IC:99.16mg/L	Comple	12/22/2007 03:12:21 PM	25
26	TOC	L0712616-01 (100)	TOC:7.043mg/L TC:29.64mg/L IC:22.60mg/L	Comple	12/22/2007 03:27:00 PM	26
27	TOC	CCV 50	TOC:51.33mg/L TC:51.34mg/L IC:0.01448mg/L	Comple	12/22/2007 03:39:04 PM	27
28	TOC	CCB	!!Error!! TOC:0.03115mg/L TC:-0.1811mg/L IC:-0.21	Comple	12/22/2007 03:47:13 PM	0
29	TOC	L0712620-01 (2)	TOC:3.012mg/L TC:10.53mg/L IC:7.519mg/L	Comple	12/22/2007 03:59:24 PM	29
30	TOC	WG259266-05 (2) DUP	TOC:2.673mg/L TC:9.494mg/L IC:6.820mg/L	Comple	12/22/2007 04:11:20 PM	30
31	TOC	WG259266-06 (2) MS	TOC:6.753mg/L TC:13.55mg/L IC:6.797mg/L	Comple	12/22/2007 04:23:36 PM	31
32	TOC	L0712375-07 (10)	TOC:23.04mg/L TC:25.07mg/L IC:2.031mg/L	Comple	12/22/2007 04:35:15 PM	32
33	TOC	WG259276-01 BLANK	!!Error!! TOC:0.1346mg/L TC:-0.06052mg/L IC:-0.19	Comple	12/22/2007 04:45:43 PM	33
34	TOC	WG259276-02 LCS	!!Error!! TOC:25.77mg/L TC:25.61mg/L IC:-0.1566m	Comple	12/22/2007 04:57:13 PM	34
35	TOC	WG259276-03 LCSDUP	!!Error!! TOC:23.94mg/L TC:23.77mg/L IC:-0.1616m	Comple	12/22/2007 05:08:43 PM	35
36	TOC	L0712375-08 (2)	TOC:4.851mg/L TC:23.01mg/L IC:18.16mg/L	Comple	12/22/2007 05:21:20 PM	36
37	TOC	L0712375-09 (20)	TOC:16.97mg/L TC:18.89mg/L IC:1.927mg/L	Comple	12/22/2007 05:33:05 PM	37
38	TOC	WG259276-05 (20) DUP	TOC:15.64mg/L TC:17.45mg/L IC:1.814mg/L	Comple	12/22/2007 05:44:41 PM	38
39	TOC	CCV 50	!!Error!! TOC:48.69mg/L TC:48.55mg/L IC:-0.1411m	Comple	12/22/2007 05:56:26 PM	39
40	TOC	CCB	!!Error!! TOC:0.04126mg/L TC:-0.2169mg/L IC:-0.25	Comple	12/22/2007 06:04:31 PM	0
41	TOC	L0712431-01 (2)	TOC:15.37mg/L TC:22.07mg/L IC:6.699mg/L	Comple	12/22/2007 06:16:13 PM	41
42	TOC	L0712431-05	TOC:8.771mg/L TC:28.28mg/L IC:19.51mg/L	Comple	12/22/2007 06:28:57 PM	42
43	TOC	L0712431-06	!!Error!! TOC:-0.5742mg/L TC:23.78mg/L IC:24.36m	Comple	12/22/2007 06:41:50 PM	43
44	TOC	L0712431-14	TOC:7.188mg/L TC:25.12mg/L IC:17.93mg/L	Comple	12/22/2007 06:54:43 PM	44
45	TOC	L0712431-15 MS	TOC:15.33mg/L TC:24.29mg/L IC:8.954mg/L	Comple	12/22/2007 07:06:46 PM	45
46	TOC	L0712431-16 MSD	TOC:16.97mg/L TC:26.48mg/L IC:9.505mg/L	Comple	12/22/2007 07:19:16 PM	46
47	TOC	L0712334-07	TOC:0.3964mg/L TC:14.99mg/L IC:14.59mg/L	Comple	12/22/2007 07:31:15 PM	47
48	TOC		!!Error!! TOC:0.1961mg/L TC:0.06531mg/L IC:-0.130	Comple	12/22/2007 07:41:51 PM	48
49	TOC		!!Error!! TOC:0.1457mg/L TC:-0.01421mg/L IC:-0.15	Comple	12/22/2007 07:52:21 PM	49
50	TOC		!!Error!! TOC:0.1419mg/L TC:-0.04637mg/L IC:-0.18	Comple	12/22/2007 08:02:49 PM	50
51	TOC	CCV 50	!!Error!! TOC:51.23mg/L TC:51.08mg/L IC:-0.1534m	Comple	12/22/2007 08:14:38 PM	51
52	TOC	CCB	!!Error!! TOC:0.04048mg/L TC:-0.2174mg/L IC:-0.25	Comple	12/22/2007 08:22:40 PM	0

12/26/2007 07:22:18 AM

1/1

Approved: December 29, 2007

Instr.Information

System TOCVW ASI
Detector Wet Chemical

Sample

Sample Name: CCV 50
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

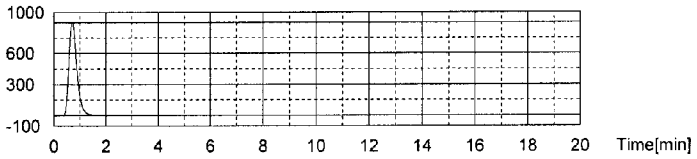
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:50.54mg/L TC:50.31mg/L IC:-0.2290mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1903	50.31mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 10:02:03 AM

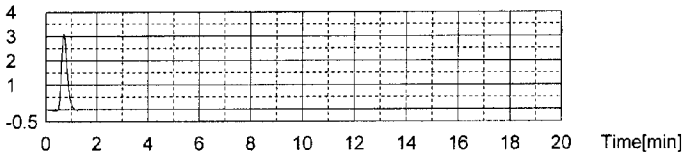
Mean Area 1903
Mean Conc. 50.31mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.784	-0.2290mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 10:05:55 AM

Mean Area 4.784
Mean Conc. -0.2290mg/L



Sample

Sample Name: CCV 10
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:9.820mg/L TC:9.592mg/L IC:-0.2279mg/L

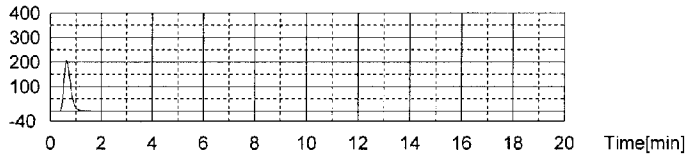
1. Det

Anal.: TC

Approved: December 29, 2007

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	372.2	9.592mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 10:13:09 AM

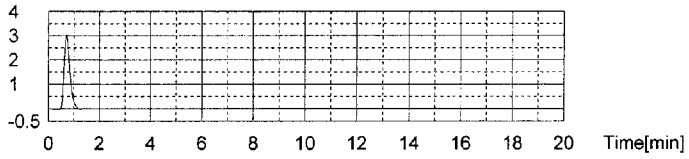
Mean Area 372.2
Mean Conc. 9.592mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.816	-0.2279mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 10:17:03 AM

Mean Area 4.816
Mean Conc. -0.2279mg/L



Sample

Sample Name: TIC 25
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

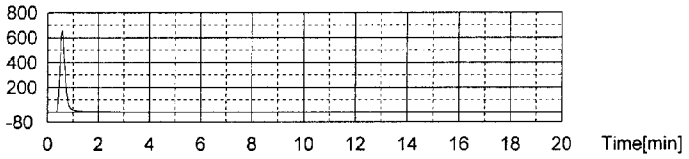
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-1.074mg/L TC:24.94mg/L IC:26.02mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	949.4	24.94mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 10:25:21 AM

Mean Area 949.4
Mean Conc. 24.94mg/L

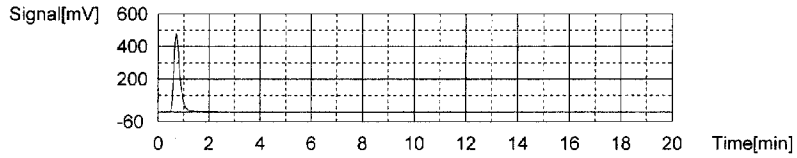


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	786.0	26.02mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 10:30:36 AM

Approved: December 29, 2007

Mean Area 786.0
Mean Conc. 26.02mg/L



Sample

Sample Name: WG259266-01 BLANK
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

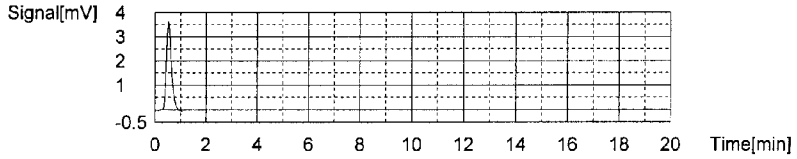
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.06028mg/L TC:-0.1781mg/L IC:-0.2384mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.857	-0.1781mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 10:35:18 AM

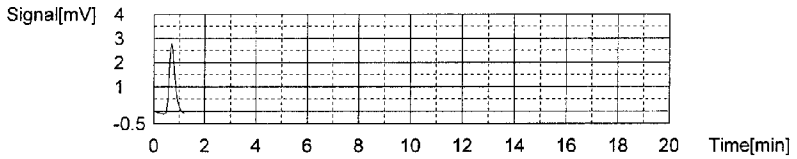
Mean Area 4.857
Mean Conc. -0.1781mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.503	-0.2384mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 10:38:42 AM

Mean Area 4.503
Mean Conc. -0.2384mg/L



Sample

Sample Name: WG259266-02 LCS
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:21.96mg/L TC:21.74mg/L IC:-0.2245mg/L

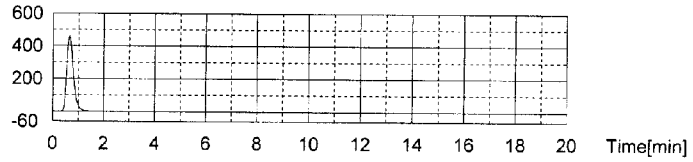
1. Det

Donna Hosson
Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	828.9	21.74mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 10:46:11 AM

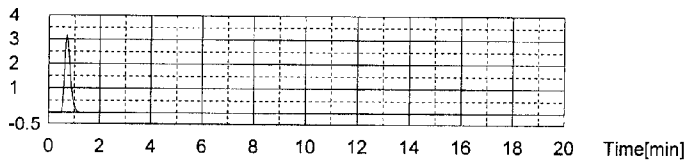
Mean Area 828.9
Mean Conc. 21.74mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.918	-0.2245mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 10:50:03 AM

Mean Area 4.918
Mean Conc. -0.2245mg/L



Sample

Sample Name: WG259266-03 LCSDUP
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

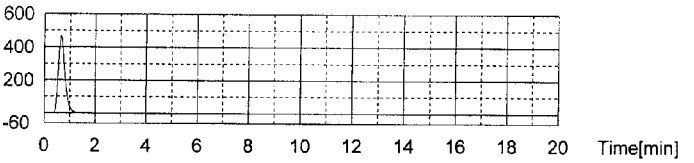
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:22.31mg/L TC:22.08mg/L IC:-0.2287mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	841.9	22.08mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 10:57:34 AM

Mean Area 841.9
Mean Conc. 22.08mg/L

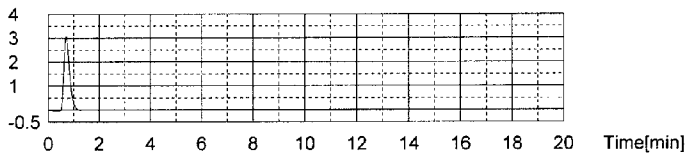


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.792	-0.2287mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 11:01:26 AM

Approved: December 29, 2007

Mean Area 4.792
Mean Conc. -0.2287mg/L



Sample

Sample Name: L0712478-10
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

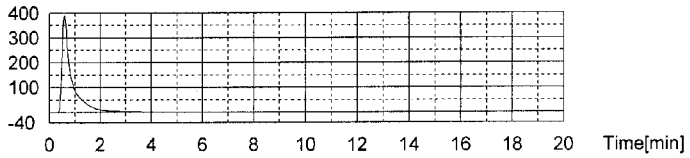
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:15.13mg/L TC:25.95mg/L IC:10.82mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	987.2	25.95mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 11:10:28 AM

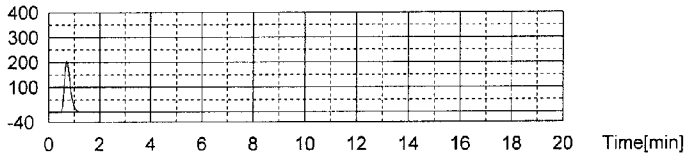
Mean Area 987.2
Mean Conc. 25.95mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	333.5	10.82mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 11:14:59 AM

Mean Area 333.5
Mean Conc. 10.82mg/L



Sample

Sample Name: L0712478-12
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:11.94mg/L TC:24.63mg/L IC:12.69mg/L

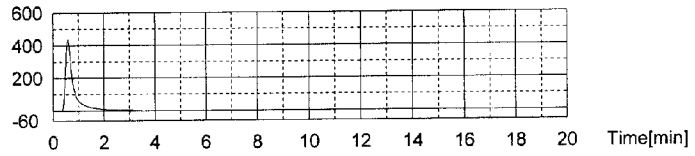
1. Det

Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	937.7	24.63mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 11:23:52 AM

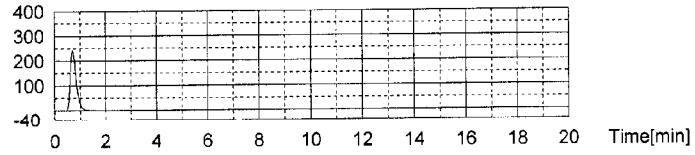
Mean Area 937.7
Mean Conc. 24.63mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	389.4	12.69mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 11:28:28 AM

Mean Area 389.4
Mean Conc. 12.69mg/L



Sample

Sample Name: L0712478-14
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

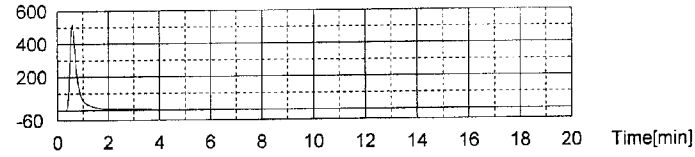
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:11.14mg/L TC:26.95mg/L IC:15.81mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1025	26.95mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 11:37:36 AM

Mean Area 1025
Mean Conc. 26.95mg/L

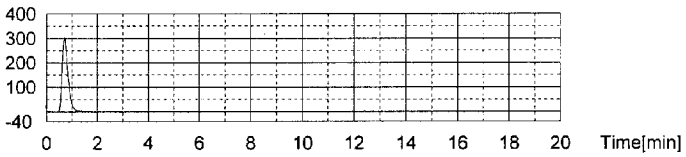


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	482.3	15.81mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 11:42:21 AM

Approved: December 29, 2007

Mean Area 482.3
Mean Conc. 15.81mg/L



Sample

Sample Name: L0712478-16
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

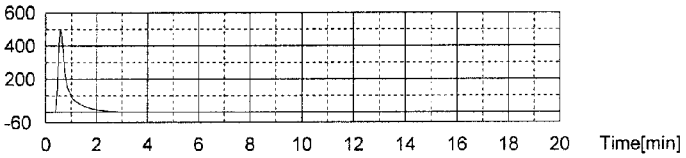
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:17.76mg/L TC:32.57mg/L IC:14.81mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1236	32.57mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 11:51:24 AM

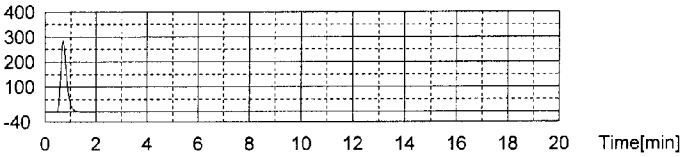
Mean Area 1236
Mean Conc. 32.57mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	452.3	14.81mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 11:56:08 AM

Mean Area 452.3
Mean Conc. 14.81mg/L



Sample

Sample Name: L0712553-01
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.541mg/L TC:32.91mg/L IC:29.37mg/L

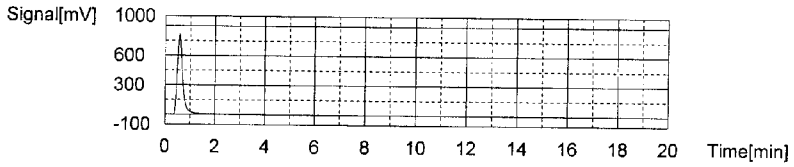
1. Det

Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1249	32.91mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 12:05:21 PM

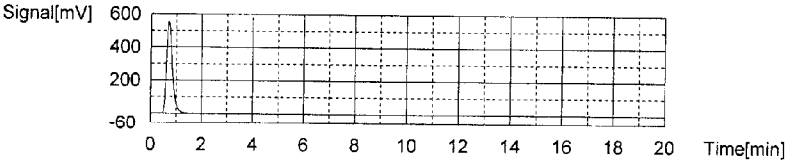
Mean Area 1249
Mean Conc. 32.91mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	885.8	29.37mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 12:10:20 PM

Mean Area 885.8
Mean Conc. 29.37mg/L



Sample

Sample Name: L0712553-02
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

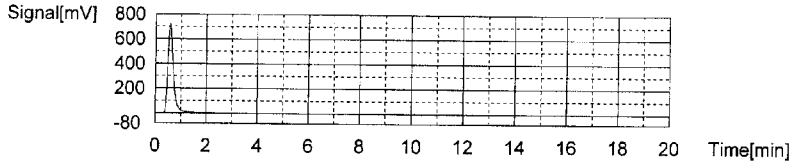
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.173mg/L TC:28.74mg/L IC:27.56mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1092	28.74mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 12:18:45 PM

Mean Area 1092
Mean Conc. 28.74mg/L

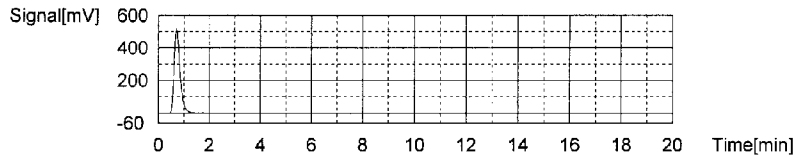


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	832.0	27.56mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 12:23:48 PM

Approved: December 29, 2007

Mean Area 832.0
Mean Conc. 27.56mg/L



Sample

Sample Name: L0712553-03
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

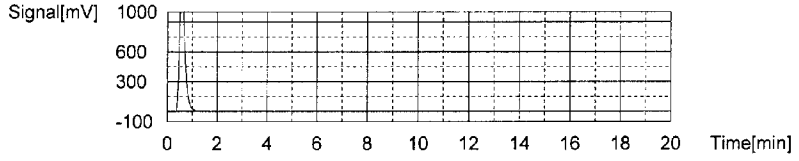
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.144mg/L TC:47.99mg/L IC:46.85mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1816	47.99mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 12:31:34 PM

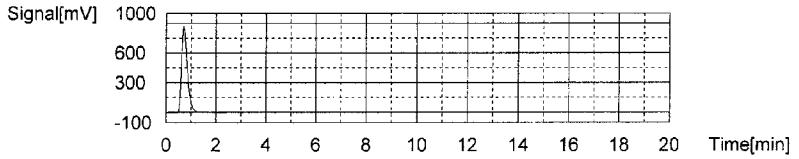
Mean Area 1816
Mean Conc. 47.99mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1406	46.85mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 12:37:07 PM

Mean Area 1406
Mean Conc. 46.85mg/L



Sample

Sample Name: L0712553-04
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.215mg/L TC:42.81mg/L IC:39.59mg/L

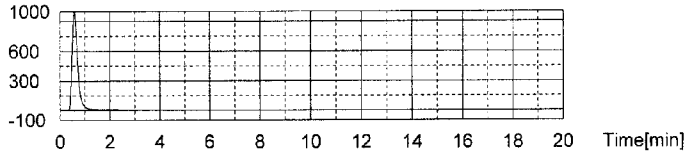
1. Det

Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1621	42.81mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 12:46:43 PM

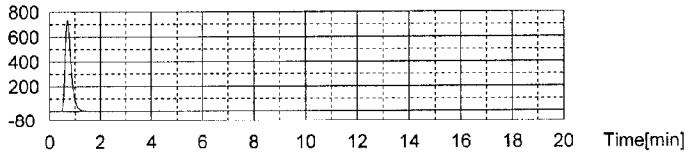
Mean Area 1621
Mean Conc. 42.81mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1190	39.59mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 12:52:05 PM

Mean Area 1190
Mean Conc. 39.59mg/L



Sample

Sample Name: CCV 50
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

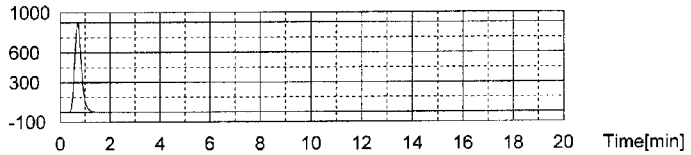
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:45.27mg/L TC:45.25mg/L IC:-0.01911mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1713	45.25mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 12:59:49 PM

Mean Area 1713
Mean Conc. 45.25mg/L

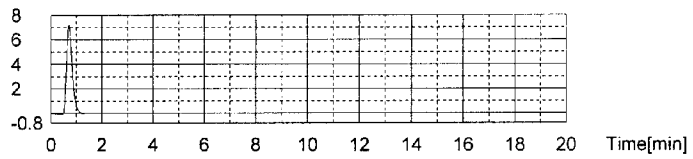


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	11.03	-0.01911mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 01:03:47 PM

Approved: December 29, 2007

Mean Area 11.03
Mean Conc. -0.01911mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

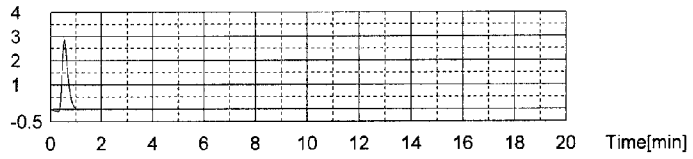
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.05746mg/L TC:-0.1864mg/L IC:-0.2439mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.545	-0.1864mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 01:08:31 PM

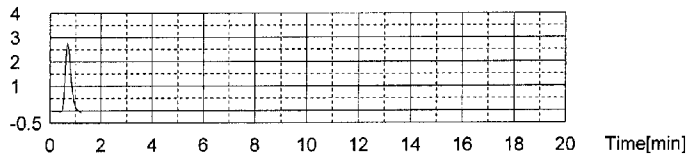
Mean Area 4.545
Mean Conc. -0.1864mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.340	-0.2439mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 01:11:52 PM

Mean Area 4.340
Mean Conc. -0.2439mg/L



Sample

Sample Name: L0712566-01
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.219mg/L TC:47.99mg/L IC:45.77mg/L

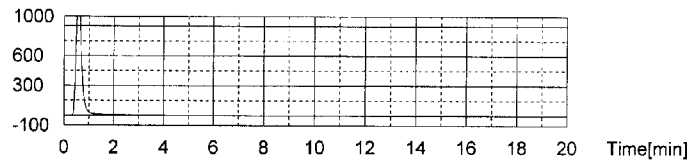
1. Det

Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1816	47.99mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 01:21:23 PM

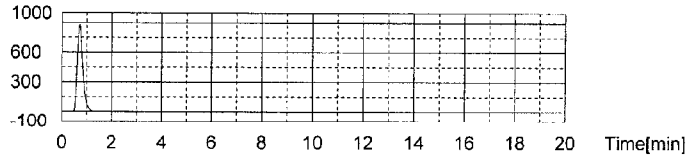
Mean Area 1816
Mean Conc. 47.99mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1374	45.77mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 01:26:44 PM

Mean Area 1374
Mean Conc. 45.77mg/L



Sample

Sample Name: L0712566-02
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

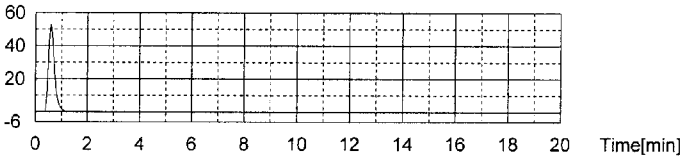
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.462mg/L TC:1.956mg/L IC:0.4939mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	85.11	1.956mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 01:33:37 PM

Mean Area 85.11
Mean Conc. 1.956mg/L

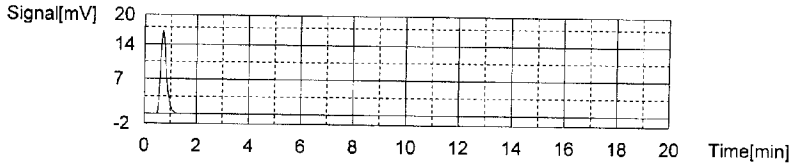


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	26.30	0.4939mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 01:37:41 PM

Approved: December 29, 2007

Mean Area 26.30
Mean Conc. 0.4939mg/L



Sample

Sample Name: L0712640-01
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

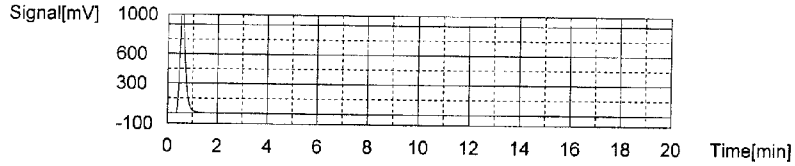
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.381mg/L TC:43.58mg/L IC:40.20mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1650	43.58mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 01:46:17 PM

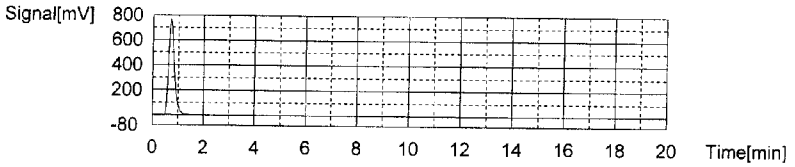
Mean Area 1650
Mean Conc. 43.58mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1208	40.20mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 01:51:28 PM

Mean Area 1208
Mean Conc. 40.20mg/L



Sample

Sample Name: L0712640-03
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.105mg/L TC:6.347mg/L IC:3.242mg/L

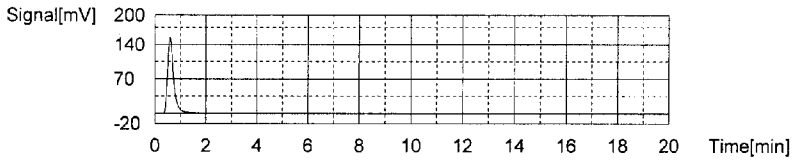
1. Det

Donna Hasson
Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	250.2	6.347mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 01:58:42 PM

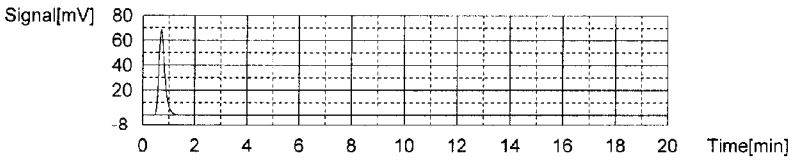
Mean Area 250.2
Mean Conc. 6.347mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	108.1	3.242mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 02:03:01 PM

Mean Area 108.1
Mean Conc. 3.242mg/L



Sample

Sample Name: L0712644-01
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

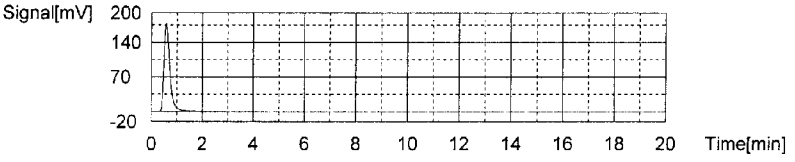
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.643mg/L TC:7.310mg/L IC:4.667mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	286.4	7.310mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 02:10:24 PM

Mean Area 286.4
Mean Conc. 7.310mg/L

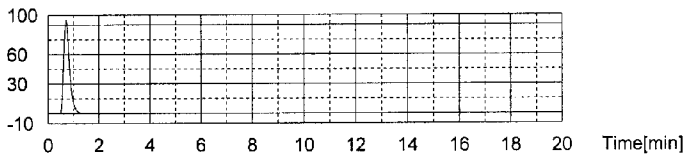


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	150.5	4.667mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 02:14:44 PM

Approved: December 29, 2007

Mean Area 150.5
Mean Conc. 4.667mg/L



Sample

Sample Name: L0712649-01
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

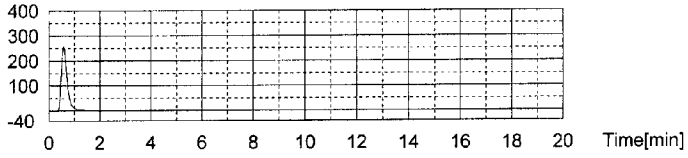
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.273mg/L TC:10.65mg/L IC:7.375mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	411.9	10.65mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 02:22:15 PM

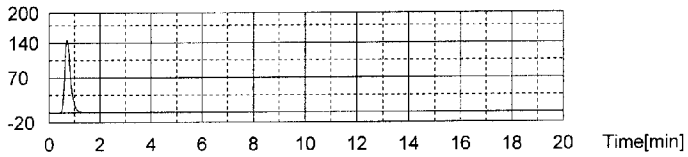
Mean Area 411.9
Mean Conc. 10.65mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	231.1	7.375mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 02:26:44 PM

Mean Area 231.1
Mean Conc. 7.375mg/L



Sample

Sample Name: L0712649-02
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.571mg/L TC:8.095mg/L IC:5.524mg/L

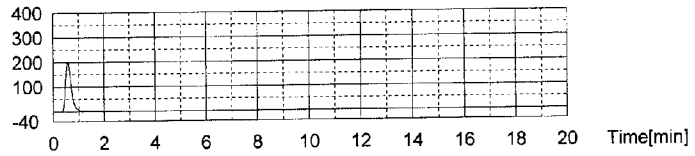
1. Det

Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	315.9	8.095mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 02:34:05 PM

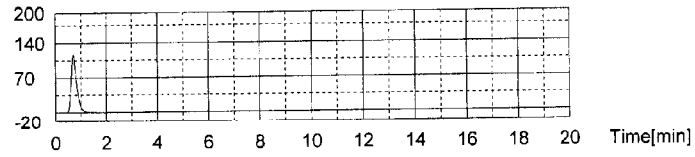
Mean Area 315.9
Mean Conc. 8.095mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	176.0	5.524mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 02:38:24 PM

Mean Area 176.0
Mean Conc. 5.524mg/L



Sample

Sample Name: L0712659-01
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

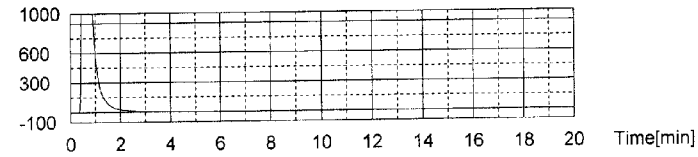
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:11.13mg/L TC:116.7mg/L IC:105.6mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4401	116.7mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 02:48:07 PM

Mean Area 4401
Mean Conc. 116.7mg/L

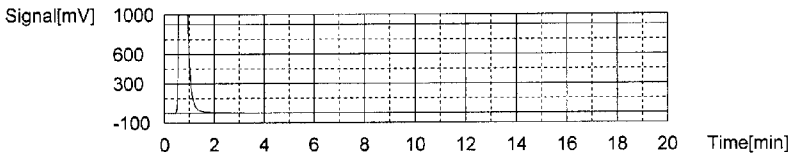


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	3155	105.6mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 02:55:06 PM

Approved: December 29, 2007

Mean Area 3155
Mean Conc. 105.6mg/L



Sample

Sample Name: L0712659-02
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

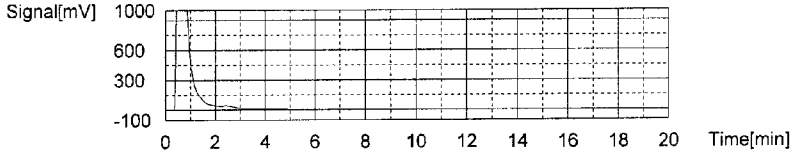
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:21.07mg/L TC:120.2mg/L IC:99.16mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4532	120.2mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 03:05:26 PM

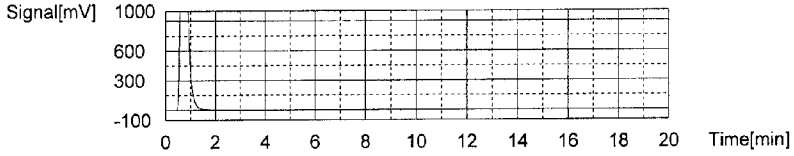
Mean Area 4532
Mean Conc. 120.2mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2963	99.16mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 03:12:21 PM

Mean Area 2963
Mean Conc. 99.16mg/L



Sample

Sample Name: L0712616-01 (100)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:7.043mg/L TC:29.64mg/L IC:22.60mg/L

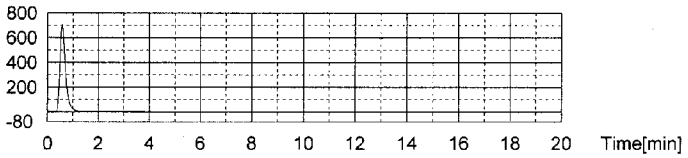
1. Det

Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1126	29.64mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 03:21:35 PM

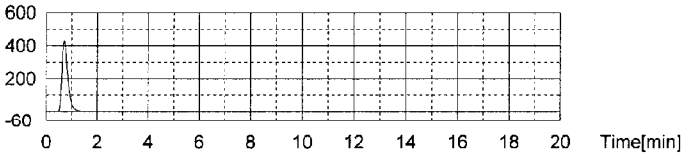
Mean Area 1126
Mean Conc. 29.64mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	684.2	22.60mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 03:27:00 PM

Mean Area 684.2
Mean Conc. 22.60mg/L



Sample

Sample Name: CCV 50
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

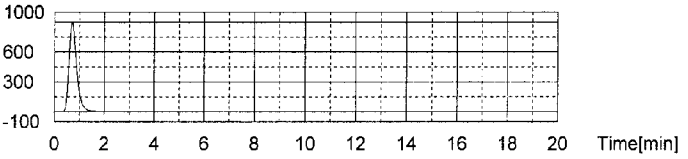
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:51.33mg/L TC:51.34mg/L IC:0.01448mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1942	51.34mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 03:35:04 PM

Mean Area 1942
Mean Conc. 51.34mg/L

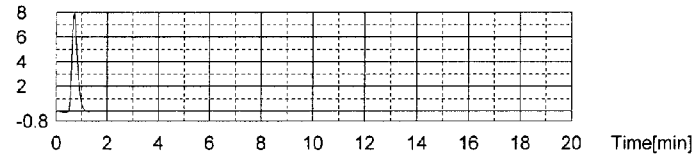


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	12.03	0.01448mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 03:39:04 PM

Approved: December 29, 2007

Mean Area 12.03
Mean Conc. 0.01448mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

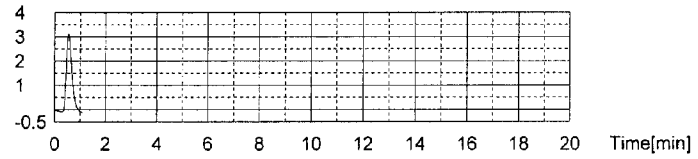
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.03115mg/L TC:-0.1811mg/L IC:-0.2122mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.747	-0.1811mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 03:43:48 PM

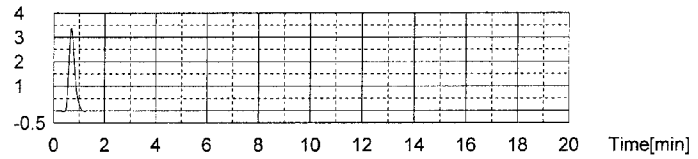
Mean Area 4.747
Mean Conc. -0.1811mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.283	-0.2122mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_31	12/22/2007 03:47:13 PM

Mean Area 5.283
Mean Conc. -0.2122mg/L



Sample

Sample Name: L0712620-01 (2)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.012mg/L TC:10.53mg/L IC:7.519mg/L

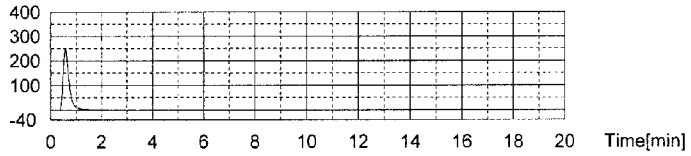
1. Det

Donna Hosson
Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	407.5	10.53mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 03:54:56 PM

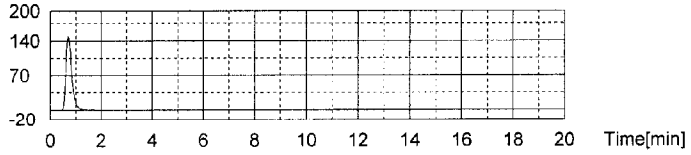
Mean Area 407.5
Mean Conc. 10.53mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	235.4	7.519mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 03:59:24 PM

Mean Area 235.4
Mean Conc. 7.519mg/L



Sample

Sample Name: WG259266-05 (2) DUP
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

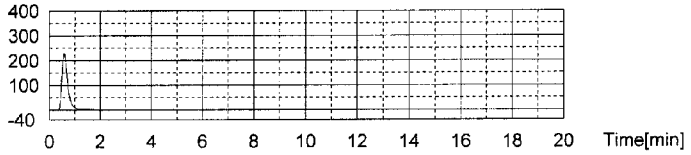
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.673mg/L TC:9.494mg/L IC:6.820mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	368.5	9.494mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 04:06:56 PM

Mean Area 368.5
Mean Conc. 9.494mg/L

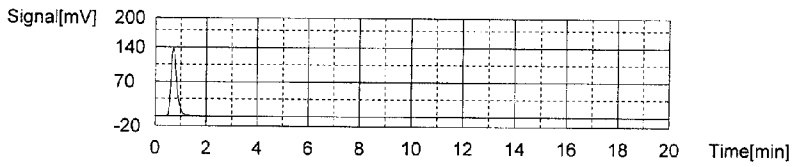


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	214.6	6.820mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 04:11:20 PM

Approved: December 29, 2007

Mean Area 214.6
Mean Conc. 6.820mg/L



Sample

Sample Name: WG259266-06 (2) MS
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

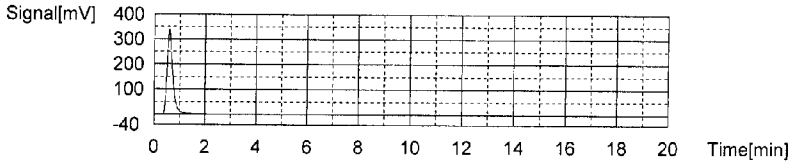
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:6.753mg/L TC:13.55mg/L IC:6.797mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	521.0	13.55mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 04:19:12 PM

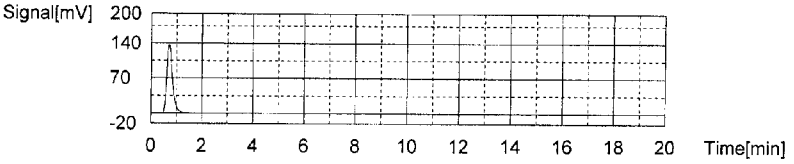
Mean Area 521.0
Mean Conc. 13.55mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	213.9	6.797mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 04:23:36 PM

Mean Area 213.9
Mean Conc. 6.797mg/L



Sample

Sample Name: L0712375-07 (10)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:23.04mg/L TC:25.07mg/L IC:2.031mg/L

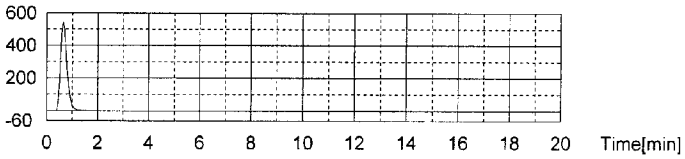
1. Det

Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	954.2	25.07mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 04:31:09 PM

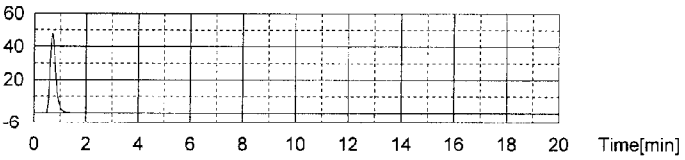
Mean Area 954.2
Mean Conc. 25.07mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	72.06	2.031mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 04:35:15 PM

Mean Area 72.06
Mean Conc. 2.031mg/L



Sample

Sample Name: WG259276-01 BLANK
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

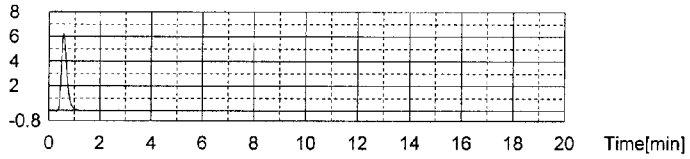
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1346mg/L TC:-0.06052mg/L IC:-0.1951mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.279	-0.06052mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 04:41:51 PM

Mean Area 9.279
Mean Conc. -0.06052mg/L

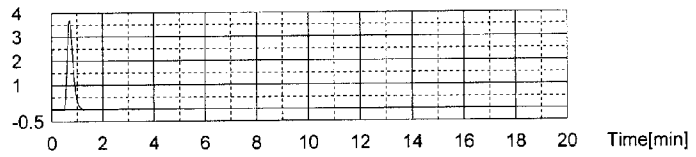


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.791	-0.1951mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 04:45:43 PM

Approved: December 29, 2007

Mean Area 5.791
Mean Conc. -0.1951mg/L



Sample

Sample Name: WG259276-02 LCS
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

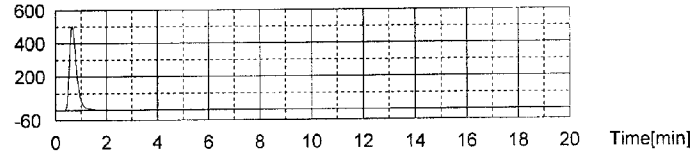
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:25.77mg/L TC:25.61mg/L IC:-0.1566mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	974.5	25.61mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 04:53:20 PM

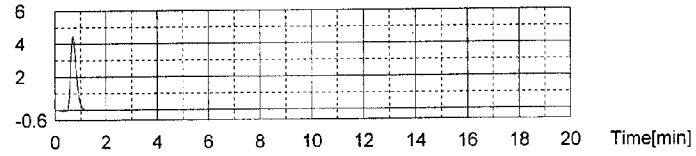
Mean Area 974.5
Mean Conc. 25.61mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.938	-0.1566mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 04:57:13 PM

Mean Area 6.938
Mean Conc. -0.1566mg/L



Sample

Sample Name: WG259276-03 LCSDUP
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:23.94mg/L TC:23.77mg/L IC:-0.1616mg/L

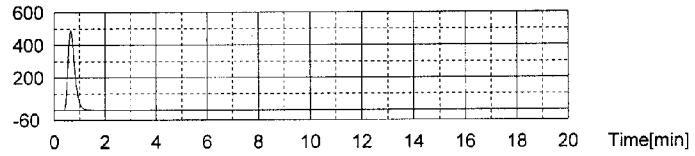
1. Det

Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	905.4	23.77mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 05:04:52 PM

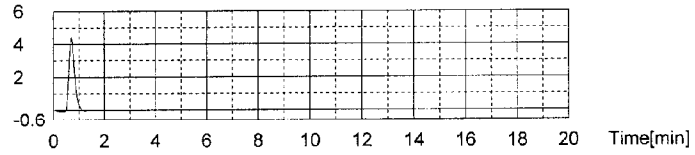
Mean Area 905.4
Mean Conc. 23.77mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.789	-0.1616mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 05:08:43 PM

Mean Area 6.789
Mean Conc. -0.1616mg/L



Sample

Sample Name: L0712375-08 (2)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

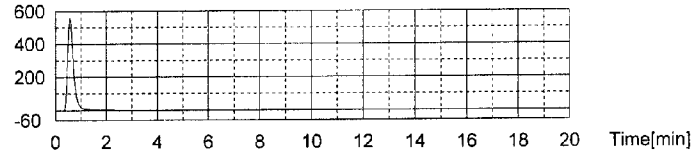
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.851mg/L TC:23.01mg/L IC:18.16mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	876.7	23.01mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 05:16:30 PM

Mean Area 876.7
Mean Conc. 23.01mg/L

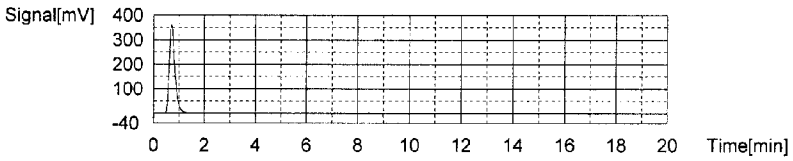


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	552.1	18.16mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 05:21:20 PM

Approved: December 29, 2007

Mean Area 552.1
Mean Conc. 18.16mg/L



Sample

Sample Name: L0712375-09 (20)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

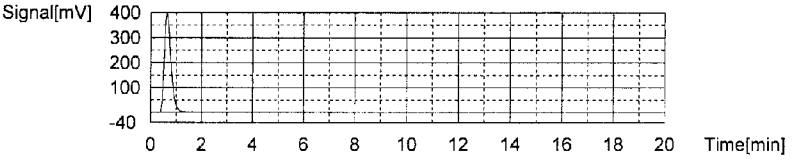
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:16.97mg/L TC:18.89mg/L IC:1.927mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	721.9	18.89mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 05:28:55 PM

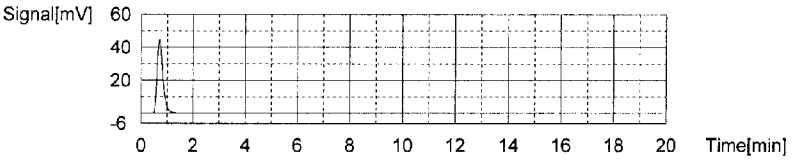
Mean Area 721.9
Mean Conc. 18.89mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	68.94	1.927mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 05:33:05 PM

Mean Area 68.94
Mean Conc. 1.927mg/L



Sample

Sample Name: WG259276-05 (20) DUP
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:15.64mg/L TC:17.45mg/L IC:1.814mg/L

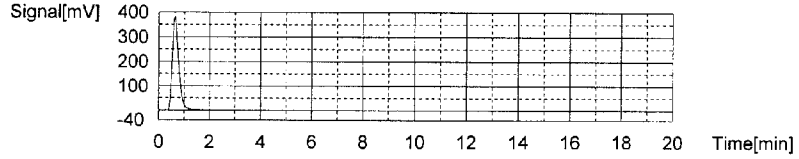
1. Det

Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	667.8	17.45mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 05:40:35 PM

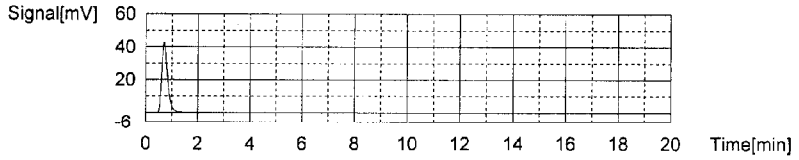
Mean Area 667.8
Mean Conc. 17.45mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	65.60	1.814mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 05:44:41 PM

Mean Area 65.60
Mean Conc. 1.814mg/L



Sample

Sample Name: CCV 50
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

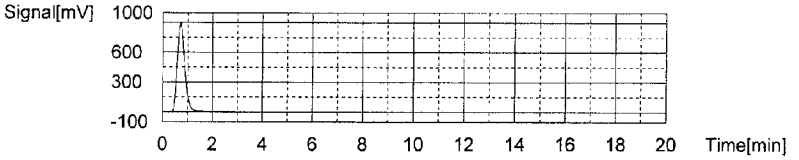
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:48.69mg/L TC:48.55mg/L IC:-0.1411mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1837	48.55mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 05:52:36 PM

Mean Area 1837
Mean Conc. 48.55mg/L

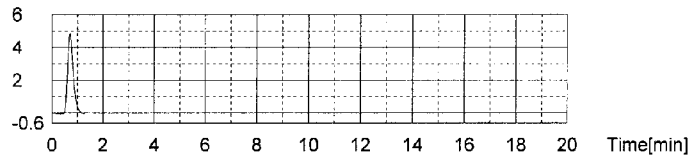


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.400	-0.1411mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 05:56:26 PM

Approved: December 29, 2007

Mean Area 7.400
Mean Conc. -0.1411mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

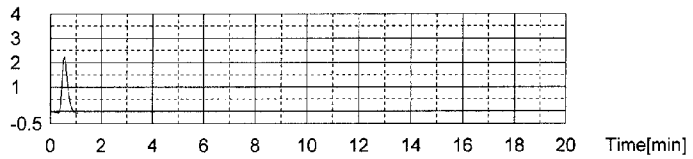
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.04126mg/L TC:-0.2169mg/L IC:-0.2582mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	3.399	-0.2169mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 06:01:08 PM

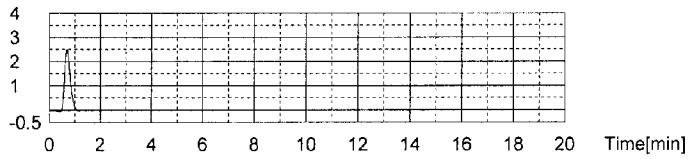
Mean Area 3.399
Mean Conc. -0.2169mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	3.915	-0.2582mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 06:04:31 PM

Mean Area 3.915
Mean Conc. -0.2582mg/L



Sample

Sample Name: L0712431-01 (2)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:15.37mg/L TC:22.07mg/L IC:6.699mg/L

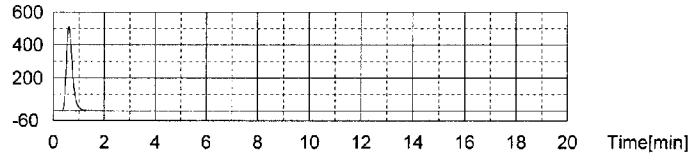
1. Det

Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	841.3	22.07mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 06:11:49 PM

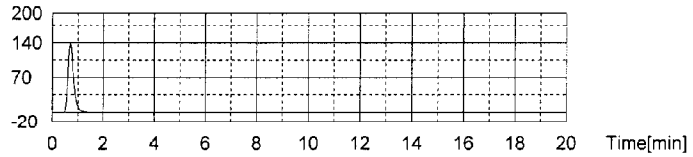
Mean Area 841.3
Mean Conc. 22.07mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	211.0	6.699mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 06:16:13 PM

Mean Area 211.0
Mean Conc. 6.699mg/L



Sample

Sample Name: L0712431-05
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

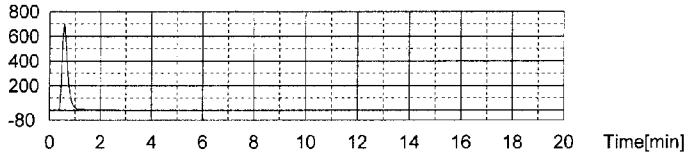
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.771mg/L TC:28.28mg/L IC:19.51mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1075	28.28mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 06:24:11 PM

Mean Area 1075
Mean Conc. 28.28mg/L

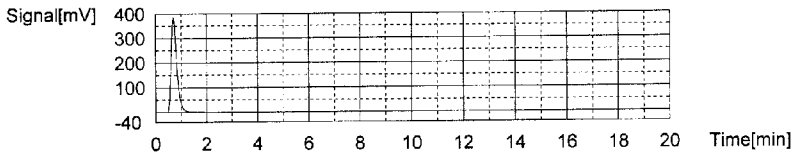


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	592.4	19.51mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 06:28:57 PM

Approved: December 29, 2007

Mean Area 592.4
Mean Conc. 19.51mg/L



Sample

Sample Name: L0712431-06
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

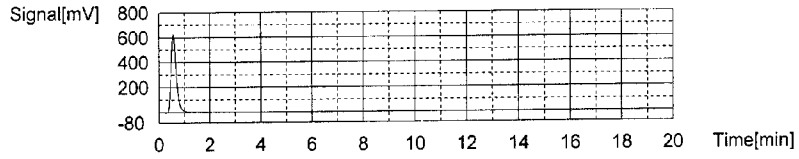
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.5742mg/L TC:23.78mg/L IC:24.36mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	905.8	23.78mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 06:36:48 PM

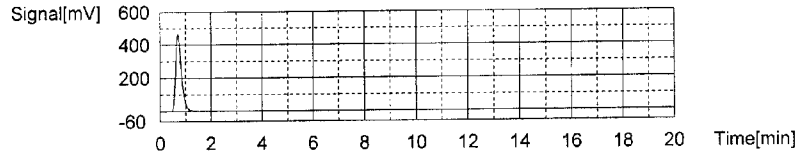
Mean Area 905.8
Mean Conc. 23.78mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	736.6	24.36mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 06:41:50 PM

Mean Area 736.6
Mean Conc. 24.36mg/L



Sample

Sample Name: L0712431-14
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:7.188mg/L TC:25.12mg/L IC:17.93mg/L

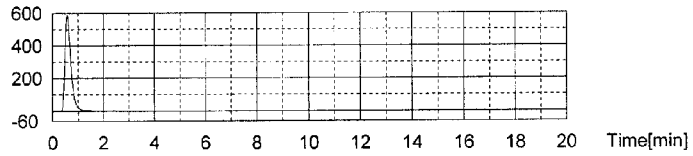
1. Det

Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	956.1	25.12mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 06:49:54 PM

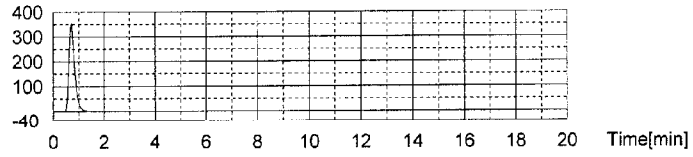
Mean Area 956.1
Mean Conc. 25.12mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	545.4	17.93mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 06:54:43 PM

Mean Area 545.4
Mean Conc. 17.93mg/L



Sample

Sample Name: L0712431-15 MS
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

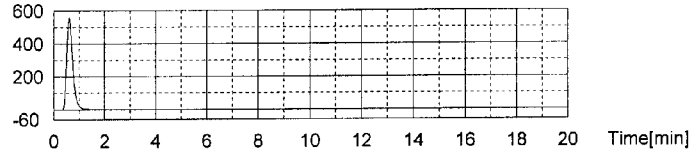
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:15.33mg/L TC:24.29mg/L IC:8.954mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	924.7	24.29mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 07:02:20 PM

Mean Area 924.7
Mean Conc. 24.29mg/L

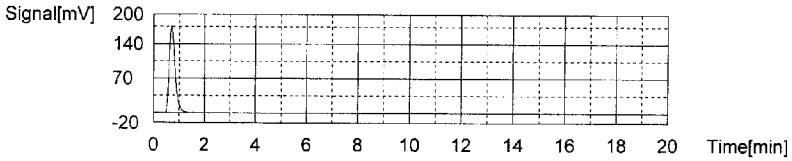


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	278.1	8.954mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 07:06:46 PM

Approved: December 29, 2007

Mean Area 278.1
Mean Conc. 8.954mg/L



Sample

Sample Name: L0712431-16 MSD
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

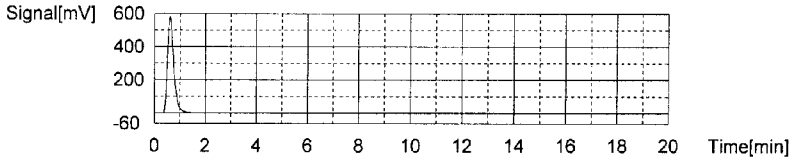
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:16.97mg/L TC:26.48mg/L IC:9.505mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1007	26.48mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 07:14:43 PM

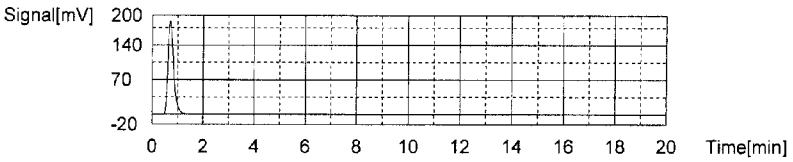
Mean Area 1007
Mean Conc. 26.48mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	294.5	9.505mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 07:19:16 PM

Mean Area 294.5
Mean Conc. 9.505mg/L



Sample

Sample Name: L0712334-07
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.3964mg/L TC:14.99mg/L IC:14.59mg/L

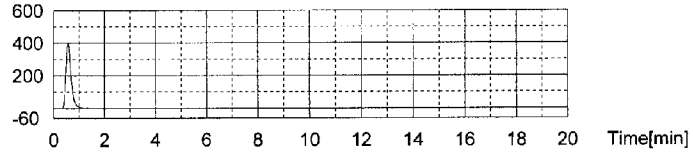
1. Det

Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	575.2	14.99mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 07:26:36 PM

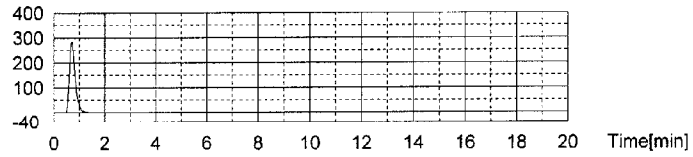
Mean Area 575.2
Mean Conc. 14.99mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	446.0	14.59mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 07:31:15 PM

Mean Area 446.0
Mean Conc. 14.59mg/L



Sample

Sample Name:
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

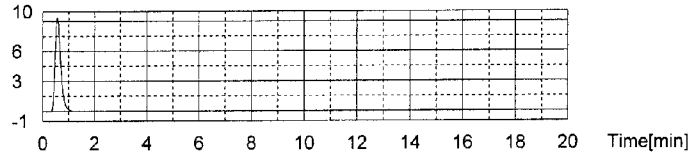
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!Error:!! TOC:0.1961mg/L TC:0.06531mg/L IC:-0.1308mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	14.01	0.06531mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 07:37:54 PM

Mean Area 14.01
Mean Conc. 0.06531mg/L

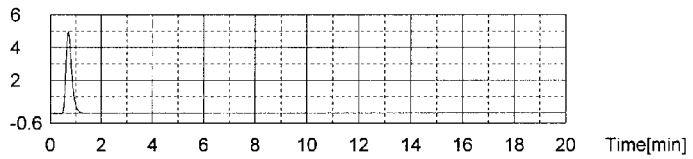


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.706	-0.1308mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 07:41:51 PM

Approved: December 29, 2007

Mean Area 7.706
Mean Conc. -0.1308mg/L



Sample

Sample Name:
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

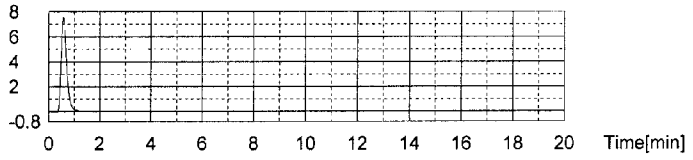
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1457mg/L TC:-0.01421mg/L IC:-0.1599mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	11.02	-0.01421mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 07:48:29 PM

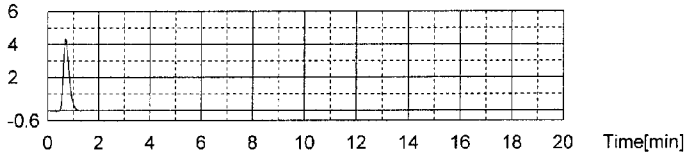
Mean Area 11.02
Mean Conc. -0.01421mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.840	-0.1599mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 07:52:21 PM

Mean Area 6.840
Mean Conc. -0.1599mg/L



Sample

Sample Name:
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1419mg/L TC:-0.04637mg/L IC:-0.1883mg/L

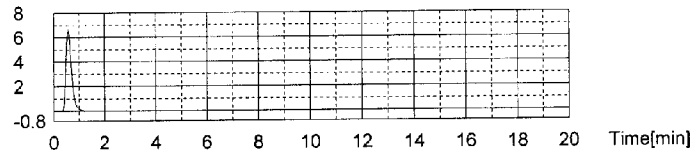
1. Det

Approved: December 29, 2007

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.811	-0.04637mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 07:58:57 PM

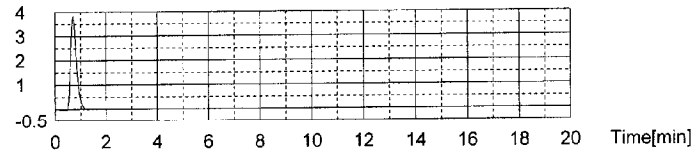
Mean Area 9.811
Mean Conc. -0.04637mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.994	-0.1883mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 08:02:49 PM

Mean Area 5.994
Mean Conc. -0.1883mg/L



Sample

Sample Name: CCV 50
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

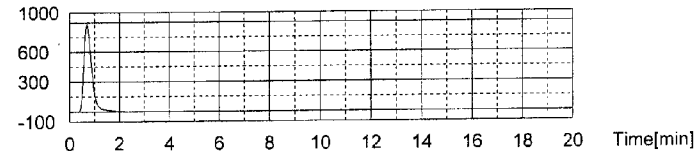
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:51.23mg/L TC:51.08mg/L IC:-0.1534mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1932	51.08mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 08:10:47 PM

Mean Area 1932
Mean Conc. 51.08mg/L

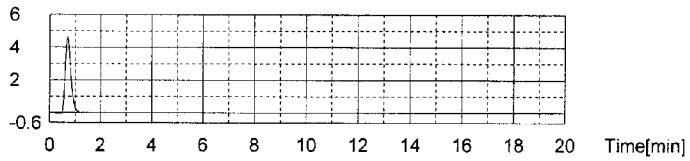


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.033	-0.1534mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/22/2007 08:14:38 PM

Approved: December 29, 2007

Mean Area 7.033
Mean Conc. -0.1534mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

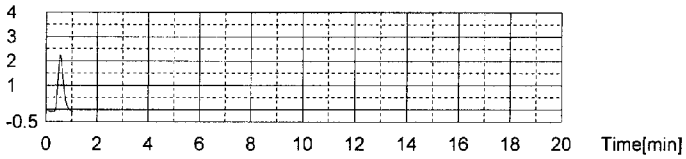
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.04048mg/L TC:-0.2174mg/L IC:-0.2579mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	3.381	-0.2174mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/22/2007 08:19:20 PM

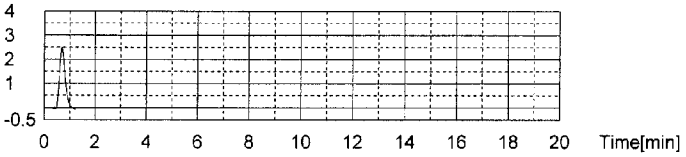
Mean Area 3.381
Mean Conc. -0.2174mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	3.924	-0.2579mg/L	500uL	1		TICCURVE-09-28-2007.2007_09_28_12_35_3	12/22/2007 08:22:40 PM

Mean Area 3.924
Mean Conc. -0.2579mg/L



Approved: December 29, 2007

3.0 Attachments

Kemron Environmental Services
Analyst Listing
January 7, 2008

AJF – AMANDA J. FICKIESEN	ALB – ANNIE L. BROWN	AML – ANTHONY M. LONG
ARA – ADRIAN R. ACHTERMANN	ASP – AARON S. PETRIE	BRG – BRENDA R. GREGORY
CAA – CASSIE A. AUGENSTEIN	CAF – CHERYL A. FLOWERS	CEB – CHAD E. BARNES
CLC – CHRYS L. CRAWFORD	CLW – CHARISSA L. WINTERS	CM – CHARLIE MARTIN
CMS – CRYSTAL M. STEPHENS	CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL
DD – DIANE M. DENNIS	DDE – DEBRA D. ELLIOTT	DEL – DON E. LIGHTFRITZ
DEV – DAVID E. VANDENBERG	DGB – DOUGLAS G. BUTCHER	DIH – DEANNA I. HESSON
DLB – DAVID L. BUMGARNER	DLP – DOROTHY L. PAYNE	DLR – DIANNA L. RAUCH
DR – DEANNA ROBERTS	DRP – DAVE R. PITZER	DSF – DEBRA S. FREDERICK
DST – DENNIS S. TEPE	ECL – ERIC C. LAWSON	ED – EMILY E. DECKER
ERE – ERIN R. ELDER	FJB – FRANCES J. BOLDEN	HAV – HEMA VILASAGAR
HJR – HOLLY J. REED	JAB – JUANITA A. BECKER	JAL – JOHN A. LENT
JBK – JEREMY B. KINNEY	JDH – JUSTIN D. HESSON	JKP – JACQUELINE K. PARSONS
JKT – JANE K. THOMPSON	JWR – JOHN W. RICHARDS	JWS – JACK W. SHEAVES
JYH – JI Y. HU	KCZ – KEVIN C. ZUMBRO	KEB – KATHRYN E. BARNES
KHR – KIM H. RHODES	KJW – KATIE J. WIEFERICH	KRA – KATHY R. ALBERTSON
LKN – LINDA K. NEDEFF	LSB – LESLIE S. BUCINA	MDA – MIKE D. ALBERTSON
MDC – MICHAEL D. COCHRAN	MES – MARY E. SCHILLING	MKZ – MARILYN K. ZUMBRO
MLR – MARY L. ROCHOTTE	MMB – MAREN M. BEERY	MRT – MICHELLE R. TAYLOR
MSW – MATT S. WILSON	NJB – NATALIE J. BOOTH	NPM – NATHANIEL P. MILLER
PJM – PAUL J. MILLER	RAH – ROY A. HALSTEAD	RB – ROBERT BUCHANAN
REK – ROBERT E. KYER	RLF – RACHEL L. FRYE	RLK – ROBIN L. KLINGER
RNP – RICK N. PETTY	RWC – RODNEY W. CAMPBELL	SLM – STEPHANIE L. MOSSBURG
SLP – SHERI L. PFALZGRAF	SMH – SHAUNA M. HYDE	TDH – TRICIA D. HUCK
TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS	VC – VICKI COLLIER
WFM – WALTER F. MARTIN		

KEMRON Environmental Services

List of Valid Qualifiers

January 07, 2008

Qualkey: STD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
C	Confirmed by GC/MS
CG	Confluent growth
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
FL	Free Liquid
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit
ND,L	Not detected; sample reporting limit (RL) elevated due to interference
ND,S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria fail. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Undetected; the concentration is below the reported MDL.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

Chain of Custody

NO. 10231

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Kemron | Address: 156 Starlite Dr. Marietta, OH | Contact: Stephanie Mossburg

Project Name: LHAAP | Project Location: Karnack, TX.

Project No.: 117591.0008A105 | Project Contact: Kay Everett | Project Telephone No.: 713-996-4421

Point of Contact: Kay Everett | Telephone No.: 713-996-4421 | Project Manager/Supervisor: Praveen Srivastav

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOCs	Gases	TOC	Anions				Remarks
								Analysis and Method Desired (Indicate separate containers)								
1	12WW20-121807	12/18/07	10:05		✓	W	Groundwater, Site 12	8	3	3	1	1				
2	12WW20-121807-FD	12/18/07	10:05		✓	W	Groundwater, Site 12	8	3	3	1	1				
3	12WW22-121807	12/18/07	1:35		✓	W	Groundwater, Site 12	8	3	3	1	1				
4	12WW21-121807	12/18/07	3:05		✓	W	Groundwater, Site 12	8	3	3	1	1				
5																
6																
7																
8																
9																
10																

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
Scott Beesinger	12/18/07 4:30	Lynda Fredyke	12-19-07	11 AM
				FedEx Airbill No.:
		Laboratory		Sampler's Signature: Scott Beesinger

TAT: ____ Standard ____ Rush Date ____ Seals Intact? ✓ Y ____ N Received Good Condition ✓ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_1
Rev. 03-19-07

KEMRON Environmental Services

SAMPLE RECEIPT FORM

00114814

156 Starlite Drive
Marietta, OH 45750
(740) 373-4071

Client:	Shaw TX - SB
Workorder Number:	B 71607
Date Received:	12-19-01
Delivered by:	( ) Fedx (X) UPS ( ) Client ( ) Courier **Time:** 11:45
Opened by:	BLM
IR Temp Gun:	(X) D ( ) G
Logged by:	BLG L 12-553

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
2077	4	1Z 66V 7250 1 962 4 0993		Water

Inspection Checklist	**Y**	**N**	**NA**	**Discrepancy ID**
Were shipping coolers sealed?	✓			
Were custody seals intact?	✓			
Were cooler temperatures in range of 0 - 6?	✓			
Was ice present?	✓			
Were COC's received/ information complete/signed and dated?	✓			
Were sample containers and labels intact and match COC?	✓			
Were the correct containers and volumes received?	✓			
Were correct preservatives used? (water only)	✓			
Were pH ranges acceptable? (voa's excluded)	✓			
Were VOA samples free of headspace?	✓			
Were samples received within EPA hold times?	✓			

Discrepancy/Comments/Other Problems

Distribution

Name of KEMRON representative
Client/Company:
Person Contacted:
Date contacted:

Resolution/other comments:

KEMRON Environmental Services

Internal Chain of Custody Report

Login: L0712553
Account: 2773
Project: 2773.025
Samples: 4
Due Date: 28-DEC-2007

Samplenum	Container ID	Products
L0712553-02	411791	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:50	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:22	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 12:47	RLK	FJB

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:50	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:22	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 12:47	RLK	FJB

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:50	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:22	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 12:47	RLK	FJB

Samplenum	Container ID	Products
L0712553-01	411788	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	L1	19-DEC-2007 14:49	BRG	
2	ANALYZ	L1	SEM	19-DEC-2007 15:44	DSF	JKT

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services

Internal Chain of Custody Report

Login: L0712553
Account: 2773
Project: 2773.025
Samples: 4
Due Date: 28-DEC-2007

Samplenum	Container ID	Products
L0712553-02	411790	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:49	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:16	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 14:33	JKT	KJW

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:49	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:16	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 14:33	JKT	KJW

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:49	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:16	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 14:33	JKT	KJW

Samplenum	Container ID	Products
L0712553-03	411797	TOC TIC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	19-DEC-2007 14:51	BRG	
2	ANALYZ	W1	WET	21-DEC-2007 17:06	RLK	ERE
3	STORE	WET	A1	26-DEC-2007 07:57	RLK	DIH

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report

Login: L0712553
Account: 2773
Project: 2773.025
Samples: 4
Due Date: 28-DEC-2007

Samplenum	Container ID	Products
L0712553-01	411787	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:49	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:21	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 12:47	RLK	FJB

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:49	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:22	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 12:47	RLK	FJB

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:49	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:22	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 12:47	RLK	FJB

Samplenum	Container ID	Products
L0712553-02	411792	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	L1	19-DEC-2007 14:50	BRG	
2	ANALYZ	L1	SEM	19-DEC-2007 15:44	DSF	JKT

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report

Login: L0712553
Account: 2773
Project: 2773.025
Samples: 4
Due Date: 28-DEC-2007

Samplenum	Container ID	Products
L0712553-04	411798	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:51	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:16	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 14:33	JKT	KJW

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:51	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:16	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 14:33	JKT	KJW

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:51	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:16	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 14:33	JKT	KJW

Samplenum	Container ID	Products
L0712553-03	411796	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	L1	19-DEC-2007 14:51	BRG	
2	ANALYZ	L1	SEM	19-DEC-2007 15:44	DSF	JKT

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report

Login: L0712553
Account: 2773
Project: 2773.025
Samples: 4
Due Date: 28-DEC-2007

Samplenum	Container ID	Products
L0712553-04	411799	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:51	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:22	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 12:48	RLK	FJB

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:51	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:22	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 12:48	RLK	FJB

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:51	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:22	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 12:48	RLK	FJB

Samplenum	Container ID	Products
L0712553-01	411786	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:48	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:16	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 14:33	JKT	KJW

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:48	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:16	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 14:33	JKT	KJW

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:48	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:16	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 14:33	JKT	KJW

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report

Login: L0712553
Account: 2773
Project: 2773.025
Samples: 4
Due Date: 28-DEC-2007

Samplenum	Container ID	Products
L0712553-03	411794	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:50	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:16	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 14:33	JKT	KJW

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:50	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:16	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 14:33	JKT	KJW

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:50	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:16	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 14:33	JKT	KJW

Samplenum	Container ID	Products
L0712553-01	411789	TOC TIC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	19-DEC-2007 14:49	BRG	
2	ANALYZ	W1	WET	21-DEC-2007 17:06	RLK	ERE
3	STORE	WET	A1	26-DEC-2007 07:57	RLK	DIH

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report

Login: L0712553
Account: 2773
Project: 2773.025
Samples: 4
Due Date: 28-DEC-2007

Samplenum	Container ID	Products
L0712553-03	411795	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:50	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:22	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 12:48	RLK	FJB

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:50	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:22	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 12:48	RLK	FJB

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-DEC-2007 14:50	BRG	
2	ANALYZ	V1	ORG4	20-DEC-2007 10:22	KJW	JKT
3	STORE	ORG4	A1	02-JAN-2008 12:48	RLK	FJB

Samplenum	Container ID	Products
L0712553-02	411793	TOC TIC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	19-DEC-2007 14:50	BRG	
2	ANALYZ	W1	WET	21-DEC-2007 17:06	RLK	ERE
3	STORE	WET	A1	26-DEC-2007 07:57	RLK	DIH

Samplenum	Container ID	Products
L0712553-04	411800	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	L1	19-DEC-2007 14:51	BRG	
2	ANALYZ	L1	SEM	19-DEC-2007 15:44	DSF	JKT

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services

Internal Chain of Custody Report

Login: L0712553
Account: 2773
Project: 2773.025
Samples: 4
Due Date: 28-DEC-2007

Samplenum	Container ID	Products
L0712553-04	411801	TOC TIC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	19-DEC-2007 14:51	BRG	
2	ANALYZ	W1	WET	21-DEC-2007 17:06	RLK	ERE
3	STORE	WET	A1	26-DEC-2007 07:57	RLK	DIH

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

156 Starlite Drive, Marietta, OH 45750 • TEL 740-373-4071 • FAX 740-373-4835 • http://www.kemron.com

Laboratory Report Number: L0712635

Please find enclosed the analytical results for the samples you submitted to KEMRON Environmental Services.

Review and compilation of your report was completed by KEMRON's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box bleow at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Debra Elliott - Team Leader
delliott@kemron-lab.com

Amanda Fickiesen - Client Services Specialist
afickiesen@kemron-lab.com

Kathy Albertson - Team Chemist/Data Specialist
kalbertson@kemron-lab.com

Annie Brown - Client Services Specialist
abrown@kemron-lab.com

Stephanie Mossburg - Team Chemist/Data Specialist
smossburg@kemron-lab.com

Katie Barnes - Team Assistant
kbarnes@kemron-lab.com

Brenda Gregory - Client Services Specialist
bgregory@kemron-lab.com

Jacqueline Parsons - Team Assistant
jparsons@kemron-lab.com

Tony Long - Client Services Specialist
tlong@kemron-lab.com

This report was reviewed on January 08, 2008.

Stephanie Mossburg

STEPHANIE MOSSBURG - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the NELAP standards and other applicable contract terms and conditions. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of KEMRON Environmental Services.

This report was certified on January 08, 2008.

David E. Vandenberg

David Vandenberg - Vice President

FL DOH NELAP ID: E8755
This report contains a total of 248 pages.

Protecting Our Environmental Future

KEMRON REPORT L0712635
PREPARED FOR Shaw E I, Inc.
WORK ID: LONGHORN AAP KARNACK TX

1.0 Introduction 3
2.1 Volatiles Data 23
2.1.1 Volatiles GCMS Data (8260) 24
2.1.1.1 Summary Data 25
2.1.1.2 QC Summary Data 33
2.1.2 RSK 175 95
2.1.2.1 Summary Data 96
2.1.2.2 QC Summary Data 101
2.2 General Chemistry Data 139
2.2.1 Method 9056 140
2.2.1.1 Summary Data 141
2.2.1.2 QC Summary Data 146
2.2.2 Total Organic Carbon Data 168
2.2.2.1 Summary Data 169
2.2.2.2 QC Summary Data 175
2.2.2.3 Raw Data 182
3.0 Attachments 240

1.0 Introduction

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

KEMRON Login No.: L0712635

CHAIN OF CUSTODY: The chain of custody number was 10234.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 3 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 03-JAN-08
Stephanie Mossburg

Laboratory Data Package Cover Page

00114827

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

MICHAEL D. COCHRAN		Semivolatiles Lab Supervisor	January 2, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0712635
Project Name:	798-LONGHORN
Method:	300
Prep Batch Number(s):	WG259602
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	December 28, 2007

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?		✓			1
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?	✓				
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	✓				
Were MS/MSD analyzed at the appropriate frequency?	✓				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				2

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?	✓				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				3
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0712635
Project Name:	798-LONGHORN
Method:	300
Prep Batch Number(s):	WG259602
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	December 28, 2007

EXCEPTIONS REPORT
ER# - Description
1. The samples were analyzed out of hold for nitrite and nitrate. The client has been made aware of this.
2. MS/MSD results were not associated with this sample delivery group.
3. Samples -01 and -02 were analyzed at a dilution only due to high pre-run screen results for chloride and sulfate.

(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00114832

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna I. Hesson	Conventional Lab Supervisor	January 2, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0712635
Project Name:	798-LONGHORN
Method:	TOC
Prep Batch Number(s):	WG259648
Reviewer Name:	DEANNA I. HESSON
LRC Date:	January 02, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?	✓				
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	✓				
Were MS/MSD analyzed at the appropriate frequency?	✓				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?	✓				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0712635
Project Name:	798-LONGHORN
Method:	TOC
Prep Batch Number(s):	WG259648
Reviewer Name:	DEANNA I. HESSON
LRC Date:	January 02, 2008

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00114837

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	January 7, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0712635
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	259579, 259735
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	January 07, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?		✓			1
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		✓			2
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?		✓			2
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT

ER# - Description

#1: Toluene-d8 exceeded the upper control limit in the dilution analysis of sample 02, the method blank analyzed 01/02/08 on HPMS-8, and LCS/LCSD analyzed 01/02/08 on HPMS-8.

#2: The % recoveries for chloromethane and dichlorodifluoromethane exceeded the upper advisory limits in the LCS/LCSD analyzed 01/02/08 on HPMS-8. The % recoveries for dichlorodifluoromethane, 1,1-dichloroethene, trichlorofluoromethane, and vinyl chloride were below the lower advisory limits and the RPDs for carbon tetrachloride, 2-chlorotoluene, dichlorodifluoromethane, 1,1-dichloroethene, and trichlorofluoromethane exceeded the upper advisory limits in the LCS/LCSD analyzed 12/28/07 on HPMS-10.

Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00114841

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	January 7, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0712635
Project Name:	798-LONGHORN
Method:	RSK175
Prep Batch Number(s):	WG259359, WG259490
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	January 07, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT
ER# - Description
There were no exceptions.

Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

L0712635

01/08/08 08:10

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW23-121907	L0712635-01	8260B	1	21-DEC-07
12WW24-121907	L0712635-02	8260B	1	21-DEC-07
12WW24-121907	L0712635-02	8260B	5	21-DEC-07

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114849

Sample Number: **L0712635-01**
Client ID: **12WW23-121907**
Matrix: **Water**
Workgroup Number: **WG259579**
Collect Date: **12/19/2007 09:25**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/28/2007 17:15**
Cal Date: **12/14/2007 17:07**
Run Date: **12/28/2007 17:15**
File ID: **10M61620**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3	0.546	J	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114850

Sample Number: **L0712635-01**
Client ID: **12WW23-121907**
Matrix: **Water**
Workgroup Number: **WG259579**
Collect Date: **12/19/2007 09:25**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/28/2007 17:15**
Cal Date: **12/14/2007 17:07**
Run Date: **12/28/2007 17:15**
File ID: **10M61620**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	96.5	86	118	
1,2-Dichloroethane-d4	98.4	80	120	
Toluene-d8	99.0	88	110	
4-Bromofluorobenzene	97.2	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114851

Sample Number: **L0712635-02**
Client ID: **12WW24-121907**
Matrix: **Water**
Workgroup Number: **WG259579**
Collect Date: **12/19/2007 11:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/28/2007 17:46**
Cal Date: **12/14/2007 17:07**
Run Date: **12/28/2007 17:46**
File ID: **10M61621**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2	1.04		1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7	14.0		1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3	0.576	J	1.00	0.125
Chloromethane	74-87-3	0.952	J	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	4.50		1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3	1.18		1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	1.05		1.00	0.500
cis-1,2-Dichloroethene	156-59-2	103		1.00	0.250
trans-1,2-Dichloroethene	156-60-5	0.404	J	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114852

Sample Number: **L0712635-02**
Client ID: **12WW24-121907**
Matrix: **Water**
Workgroup Number: **WG259579**
Collect Date: **12/19/2007 11:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/28/2007 17:46**
Cal Date: **12/14/2007 17:07**
Run Date: **12/28/2007 17:46**
File ID: **10M61621**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4	1.00		1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	340	I	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4	3.26		1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	96.8	86	118	
1,2-Dichloroethane-d4	91.3	80	120	
Toluene-d8	95.6	88	110	
4-Bromofluorobenzene	94.3	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL
I Semiquantitative result (out of instrument calibration range)

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114853

Sample Number: **L0712635-02**
Client ID: **12WW24-121907**
Matrix: **Water**
Workgroup Number: **WG259735**
Collect Date: **12/19/2007 11:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **5**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **01/02/2008 14:36**
Cal Date: **12/01/2007 16:25**
Run Date: **01/02/2008 14:36**
File ID: **8M342850**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	50.0	12.5
Benzene	71-43-2		U	5.00	0.625
Bromobenzene	108-86-1		U	5.00	0.625
Bromochloromethane	74-97-5		U	5.00	1.00
Bromodichloromethane	75-27-4		U	5.00	1.25
Bromoform	75-25-2		U	5.00	2.50
Bromomethane	74-83-9		U	5.00	2.50
2-Butanone	78-93-3		U	50.0	12.5
n-Butylbenzene	104-51-8		U	5.00	1.25
sec-Butylbenzene	135-98-8		U	5.00	1.25
tert-Butylbenzene	98-06-6		U	5.00	1.25
Carbon disulfide	75-15-0		U	5.00	2.50
Carbon tetrachloride	56-23-5		U	5.00	1.25
Chlorobenzene	108-90-7	13.5		5.00	0.625
Chlorodibromomethane	124-48-1		U	5.00	1.25
Chloroethane	75-00-3		U	5.00	2.50
2-Chloroethyl vinyl ether	110-75-8		U	50.0	10.0
Chloroform	67-66-3		U	5.00	0.625
Chloromethane	74-87-3		U	5.00	1.25
2-Chlorotoluene	95-49-8		U	5.00	0.625
4-Chlorotoluene	106-43-4		U	5.00	1.25
1,2-Dibromo-3-chloropropane	96-12-8		U	25.0	5.00
1,2-Dibromoethane	106-93-4		U	5.00	1.25
Dibromomethane	74-95-3		U	5.00	1.25
1,2-Dichlorobenzene	95-50-1		U	5.00	0.625
1,3-Dichlorobenzene	541-73-1		U	5.00	1.25
1,4-Dichlorobenzene	106-46-7	4.15	J	5.00	0.625
Dichlorodifluoromethane	75-71-8		U	5.00	1.25
1,1-Dichloroethane	75-34-3		U	5.00	0.625
1,2-Dichloroethane	107-06-2		U	5.00	1.25
1,1-Dichloroethene	75-35-4		U	5.00	2.50
cis-1,2-Dichloroethene	156-59-2	89.6		5.00	1.25
trans-1,2-Dichloroethene	156-60-5		U	5.00	1.25
1,2-Dichloropropane	78-87-5		U	5.00	1.00
1,3-Dichloropropane	142-28-9		U	5.00	1.00
2,2-Dichloropropane	594-20-7		U	5.00	1.25
cis-1,3-Dichloropropene	10061-01-5		U	5.00	1.25
trans-1,3-Dichloropropene	10061-02-6		U	5.00	2.50
1,1-Dichloropropene	563-58-6		U	5.00	1.25
Ethylbenzene	100-41-4		U	5.00	1.25
2-Hexanone	591-78-6		U	50.0	12.5
Hexachlorobutadiene	87-68-3		U	5.00	1.25
Isopropylbenzene	98-82-8		U	5.00	1.25
p-Isopropyltoluene	99-87-6		U	5.00	1.25
4-Methyl-2-pentanone	108-10-1		U	50.0	12.5
Methylene chloride	75-09-2		U	25.0	1.25
Naphthalene	91-20-3		U	5.00	1.00
n-Propylbenzene	103-65-1		U	5.00	0.625

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114854

Sample Number: **L0712635-02**
Client ID: **12WW24-121907**
Matrix: **Water**
Workgroup Number: **WG259735**
Collect Date: **12/19/2007 11:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **5**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **01/02/2008 14:36**
Cal Date: **12/01/2007 16:25**
Run Date: **01/02/2008 14:36**
File ID: **8M342850**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	5.00	0.625
1,1,1,2-Tetrachloroethane	630-20-6		U	5.00	1.25
1,1,2,2-Tetrachloroethane	79-34-5		U	5.00	0.625
Tetrachloroethene	127-18-4		U	5.00	1.25
Toluene	108-88-3		U	5.00	1.25
1,2,3-Trichlorobenzene	87-61-6		U	5.00	0.625
1,2,4-Trichlorobenzene	120-82-1		U	5.00	1.00
1,1,1-Trichloroethane	71-55-6		U	5.00	1.25
1,1,2-Trichloroethane	79-00-5		U	5.00	1.25
Trichloroethene	79-01-6	313		5.00	1.25
Trichlorofluoromethane	75-69-4		U	5.00	1.25
1,2,3-Trichloropropane	96-18-4		U	5.00	2.50
1,2,4-Trimethylbenzene	95-63-6		U	5.00	1.25
1,3,5-Trimethylbenzene	108-67-8		U	5.00	1.25
Vinyl acetate	108-05-4		U	50.0	12.5
Vinyl chloride	75-01-4		U	5.00	1.25
o-Xylene	95-47-6		U	5.00	1.25
m-,p-Xylene	136777-61-2		U	5.00	2.50

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	108	86	118	
1,2-Dichloroethane-d4	103	80	120	
Toluene-d8	111	88	110	*
4-Bromofluorobenzene	101	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL
* Surrogate or spike compound out of range

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS8 Dataset: 120107
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 624 SOP: MSV10 Rev: 9
Method: 5030B SOP: PAT01 Rev: 10
Maintenance Log ID: 22033

Internal Standard: STD23364 Surrogate Standard: STD23318
CCV: STD23376 LCS: STD23377 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG257292

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	8M342086	BLANK	NA	1	1		12/01/07 10:05
2	8M342087	BLANK	NA	1	1		12/01/07 10:34
3	8M342088	WG257292-01 BFB 50ng STD 8260	NA	1	1	STD22851	12/01/07 11:20
4	8M342089	WG257292-02 0.30ug/L STD 8260	NA	1	1	STD23376	12/01/07 11:51
5	8M342090	WG257292-03 0.40ug/L STD 8260	NA	1	1	STD23376	12/01/07 12:24
6	8M342091	WG257292-04 1ug/L STD 8260	NA	1	1	STD23376	12/01/07 12:53
7	8M342092	WG257292-05 2ug/L STD 8260	NA	1	1	STD23376	12/01/07 13:24
8	8M342093	WG257292-06 5ug/L STD 8260	NA	1	1	STD23376	12/01/07 13:55
9	8M342094	WG257292-07 20ug/L STD 8260	NA	1	1	STD23376	12/01/07 14:25
10	8M342095	WG257292-08 50ug/L STD 8260	NA	1	1	STD23376	12/01/07 14:55
11	8M342096	WG257292-09 100ug/L STD 8260	NA	1	1	STD23376	12/01/07 15:25
12	8M342097	WG257292-10 200ug/L STD 8260	NA	1	1	STD23376	12/01/07 15:55
13	8M342098	WG257292-11 300ug/L STD 8260	NA	1	1	STD23376	12/01/07 16:25
14	8M342099	SYSTEM BLANK	NA	1	1		12/01/07 16:54
15	8M342100	SYSTEM BLANK	NA	1	1		12/01/07 17:24
16	8M342101	WG257292-12 20ug/L ALT SRC STD 8260	NA	1	1	STD23377	12/01/07 17:54
17	8M342102	SYSTEM BLANK	NA	1	1		12/01/07 18:23

Approved: December 07, 2007

Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS10 Dataset: 121407
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 624 SOP: MSV10 Rev: 9
Method: 5030/5035 SOP: PAT01 Rev: 10
Maintenance Log ID: 22237

Internal Standard: STD23438 Surrogate Standard: STD23368
CCV: STD23642 LCS: STD23647 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG258532

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M61282	WG258532-01 50NG BFB STD 8260	NA	1	1	STD23459	12/14/07 09:47
19	10M61283	WG258532-02 50ug/L WATER STD 8260	NA	1	1	STD23522	12/14/07 10:11
2	10M61284	WG258534-01 VBLK1214 BLANK 8260	NA	1	1		12/14/07 10:43
3	10M61285	WG258534-01 VBLK1214 BLANK 8260	NA	1	1		12/14/07 11:14
18	10M61286	WG258532-01 50NG BFB STD 8260	NA	1	1	STD23459	12/14/07 11:43
4	10M61287	WG258532-01 50NG BFB STD 8260	NA	1	1	STD23459	12/14/07 11:55
5	10M61288	WG258532-02 0.3 ug/L WATER STD 8260	NA	1	1	STD23642	12/14/07 12:19
6	10M61289	WG258532-03 0.4 ug/L WATER STD 8260	NA	1	1	STD23642	12/14/07 12:55
7	10M61290	WG258532-04 1 ug/L WATER STD 8260	NA	1	1	STD23642	12/14/07 13:26
8	10M61291	WG258532-05 2 ug/L WATER STD 8260	NA	1	1	STD23642	12/14/07 13:58
9	10M61292	WG258532-06 5 ug/L WATER STD 8260	NA	1	1	STD23642	12/14/07 14:29
10	10M61293	WG258532-07 20 ug/L WATER STD 8260	NA	1	1	STD23642	12/14/07 15:00
11	10M61294	WG258532-08 50 ug/L WATER STD 8260	NA	1	1	STD23642	12/14/07 15:32
12	10M61295	WG258532-09 100 ug/L WATER STD 8260	NA	1	1	STD23642	12/14/07 16:04
13	10M61296	WG258532-10 200 ug/L WATER STD 8260	NA	1	1	STD23642	12/14/07 16:35
14	10M61297	WG258532-11 300 ug/L WATER STD 8260	NA	1	1	STD23642	12/14/07 17:07
15	10M61298	SYSTEM BLANK	NA	1	1		12/14/07 17:38
16	10M61299	SYSTEM BLANK	NA	1	1		12/14/07 18:09
17	10M61300	WG258532-12 20ug/L ALT SOURCE	NA	1	1	STD23647	12/14/07 18:41

Comments

Seq.	Rerun	Dil.	Reason	Analytes
19				
File ID: 10M61283				
	Several compounds are low. Running a curve.			
18				
File ID: 10M61286				
	RR, BFB failed.			

Approved: December 19, 2007

Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS10 Dataset: 122807
Analyst1: MES Analyst2: CMS
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 22381

Internal Standard: STD23847 Surrogate Standard: STD23644
CCV: STD23818 LCS: STD23815 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG259579

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M61603	SYSTEM BLANK	NA	1	1		12/28/07 07:51
2	10M61604	WG259578-01 50NG BFB 8260	NA	1	1	STD23459	12/28/07 08:48
3	10M61605	WG259578-02 50UG/L WATER STD 8260	NA	1	1	STD23818	12/28/07 09:19
4	10M61606	WG259579-01 VBLK1228 BLANK 8260	NA	1	1		12/28/07 09:52
5	10M61607	WG259579-01 VBLK1228 BLANK 8260	NA	1	1		12/28/07 10:23
6	10M61608	WG259579-02 20UG/L LCS 8260	NA	1	1	STD23815	12/28/07 10:55
7	10M61609	WG259579-03 20UG/L LCSDUP 8260	NA	1	1	STD23815	12/28/07 11:26
8	10M61610	L0712630-04 A 826-BETX	<2	1	1		12/28/07 11:58
9	10M61611	L0712676-06 A 826-LOW	<2	1	1		12/28/07 12:29
10	10M61612	L0712611-02 A 826-LOW	<2	1	1		12/28/07 13:01
11	10M61613	L0712630-05 A 826-BETX	<2	1	1		12/28/07 13:33
12	10M61614	L0712630-06 A 826-BETX	<2	1	1		12/28/07 14:04
13	10M61615	L0712676-01 A 826-LOW	<2	1	1		12/28/07 14:35
14	10M61616	L0712676-02 A 826-LOW	<2	1	1		12/28/07 15:07
15	10M61617	L0712676-03 A 826-LOW	<2	1	1		12/28/07 15:39
16	10M61618	L0712676-04 A 826-LOW	<2	1	1		12/28/07 16:11
17	10M61619	L0712676-05 A 826-LOW	<2	1	1		12/28/07 16:43
18	10M61620	L0712635-01 A 826-LOW	<2	1	1		12/28/07 17:15
19	10M61621	L0712635-02 A 826-LOW	<2	1	1		12/28/07 17:46
20	10M61622	L0712611-01 A 826-LOW	<2	1	1		12/28/07 18:18
21	10M61623	L0712613-01 A 826-SPE	<2	1	1		12/28/07 18:49
22	10M61624	L0712613-02 A 826-SPE	<2	1	1		12/28/07 19:20
23	10M61625	L0712613-07 A 826-SPE	<2	1	1		12/28/07 19:51
24	10M61626	L0712613-08 A 826-SPE	<2	1	1		12/28/07 20:22
25	10M61627	L0712604-04 A 826-SPE	<2	1	1		12/28/07 20:54
26	10M61628	BLANK	NA	1	1		12/28/07 21:25
27	10M61629	BLANK	NA	1	1		12/28/07 21:57

Comments

Seq.	Rerun	Dil.	Reason	Analytes
4	X		Carry-over contamination	
File ID: 10M61606				
DNR				

Approved: January 03, 2008

Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS10 Dataset: 122807
Analyst1: MES Analyst2: CMS
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 22381

Internal Standard: STD23847 Surrogate Standard: STD23644
CCV: STD23818 LCS: STD23815 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG259579

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
12	X	10	Over Calibration Range	Tol., m+p-Xyl., o-Xyl
File ID: 10M61614				
13	X		Carry-over contamination	
File ID: 10M61615				
	DNR			
19	X	5	Over Calibration Range	TCE
File ID: 10M61621				
25	X	5	Missed Tune	
File ID: 10M61627				
	DNR			

Approved: January 03, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS8 Dataset: 010208
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 22401

Internal Standard: STD23765 Surrogate Standard: STD23766
CCV: STD23818 LCS: STD23815 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG259735

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	8M342841	SYSTEM BLANK	NA	1	1		01/02/08 09:39
2	8M342842	WG259734-01 BFB 50ng STD 8260	NA	1	1	STD23459	01/02/08 10:09
3	8M342843	WG259734-02 50ug/L STD 8260	NA	1	1	STD23818	01/02/08 10:34
4	8M342844	WG259734-02 50ug/L STD 8260	NA	1	1	STD23818	01/02/08 11:16
5	8M342845	WG259735-01 VBLK0102 BLANK 8260	NA	1	1		01/02/08 12:06
6	8M342846	WG259735-01 VBLK0102 BLANK 8260	NA	1	1		01/02/08 12:36
7	8M342847	WG259735-02 20ug/L LCS STD 8260	NA	1	1	STD23815	01/02/08 13:07
8	8M342848	WG259735-03 20ug/L LCSDUP STD 8260	NA	1	1	STD23815	01/02/08 13:36
9	8M342849	L0712630-06 B 10X 826-SPE1 D1	<2	1	10		01/02/08 14:06
10	8M342850	L0712635-02 B 5X 826-LOW D1	<2	1	5		01/02/08 14:36
11	8M342851	L0712604-04 B 5X 826-LOW	<2	1	5		01/02/08 15:05
12	8M342852	L0712746-04 A 826-SPE	<2	1	1		01/02/08 15:35
13	8M342853	L0712743-03 A 826-LOW	<2	1	1		01/02/08 16:05
14	8M342854	L0712746-03 A 826-SPE	<2	1	1		01/02/08 16:34
15	8M342855	L0712746-01 A 826-SPE	<2	1	1		01/02/08 17:04
16	8M342856	L0712746-02 A 826-SPE	<2	1	1		01/02/08 17:33
17	8M342857	L0712743-01 A 826-LOW	<2	1	1		01/02/08 18:03
18	8M342858	L0712743-02 A 826-LOW	<2	1	1		01/02/08 18:33
19	8M342859	L0712607-01 A 10X 826-TC	NA	17	10		01/02/08 19:03
20	8M342860	SYSTEM BLANK	NA	1	1		01/02/08 19:32

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X		Check Standard Failure	
File ID: 8M342843				
	DNR			
5	X		Carry-over contamination	
File ID: 8M342845				
	DNR			

Approved: January 07, 2008

Page: 1

KEMRON Environmental Services
Data Checklist

Date: 01-DEC-2007
Analyst: CMS
Analyst: NA
Method: 8260B/624
Instrument: HPMS8
Curve Workgroup: NA
Runlog ID: 19688
Analytical Workgroups: WG257292

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	NA
Project/Client Specific Requirements	NA
Special Standards	NA
Blanks	NA
TCL's	NA
Surrogates	NA
LCS (Laboratory Control Sample)	NA
Recoveries	NA
Surrogates	NA
MS/MSD/Duplicates	NA
Samples	NA
TCL Hits	NA
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Library Searches	NA
Calculations & Correct Factors	NA
Dilutions Run	NA
Reruns	NA
Manual Integrations	NA
Case Narrative	NA
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
07-DEC-2007

Secondary Reviewer:
07-DEC-2007

Generated: DEC-07-2007 16:44:01

KEMRON Environmental Services
Data Checklist

Date: 14-DEC-2007
Analyst: MES
Analyst: NA
Method: 8260/624
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 19920
Analytical Workgroups: WG258532

BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	NA
Project/Client Specific Requirements	NA
Special Standards	NA
Blanks	NA
TCL's	NA
Surrogates	NA
LCS (Laboratory Control Sample)	NA
Recoveries	NA
Surrogates	NA
MS/MSD/Duplicates	NA
Samples	NA
TCL Hits	NA
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	NA
Manual Integrations	NA
Case Narrative	NA
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
19-DEC-2007

Secondary Reviewer:
19-DEC-2007

Generated: DEC-19-2007 15:45:51

KEMRON Environmental Services
Data Checklist

Date: 28-DEC-2007
Analyst: MES
Analyst: CMS
Method: 8260B
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 20089
Analytical Workgroups: WG259579

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
03-JAN-2008

Secondary Reviewer:
03-JAN-2008

Generated: JAN-03-2008 15:06:19

KEMRON Environmental Services
Data Checklist

Date: 02-JAN-2008
Analyst: CMS
Analyst: NA
Method: 8260B
Instrument: HPMS8
Curve Workgroup: NA
Runlog ID: 20114
Analytical Workgroups: WG259735

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	NA
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
04-JAN-2008

Secondary Reviewer:
07-JAN-2008

Generated: JAN-07-2008 08:46:53

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00114867

Analytical Method: 8260B AAB#: WG259579

Login Number: L0712635

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW23-121907	12/19/07	12/21/07	12/28/07	14	9.33	12/28/07	14	9.33	
12WW24-121907	12/19/07	12/21/07	12/28/07	14	9.26	12/28/07	14	9.26	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 988495
Report generated 01/07/2008 12:19

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8260B **AAB#:** WG259735
Login Number: L0712635

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW24-121907	12/19/07	12/21/07	01/02/08	14	14.1	01/02/08	14	14.1	*ANAL

*** EXT = SEE PROJECT QAPP REQUIREMENTS**
***ANAL = SEE PROJECT QAPP REQUIREMENTS**

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 988495
Report generated 01/07/2008 12:19

00114869

SURROGATE STANDARDS

Login Number: L0712635
Instrument Id: HPMS8
Workgroup (AAB#): WG259735

Method: 8260
CAL ID: HPMS8-01-DEC-07
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L0712635-02	5.00	DL01	103	108	101	111
WG259735-01	1.00	01	103	109	103	113
WG259735-02	1.00	01	102	110	102	111
WG259735-03	1.00	01	103	112	103	111

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

KEMRON FORMS - Modified 09/27/2006
Version 1.5 PDF File ID: 988503
Report generated 01/07/2008 12:19

00114870

SURROGATE STANDARDS

Login Number: L0712635
Instrument Id: HPMS10
Workgroup (AAB#): WG259579

Method: 8260
CAL ID: HPMS10-14-DEC-07
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L0712635-01	1.00	01	98.4	96.5	97.2	99.0
L0712635-02	1.00	01	91.3	96.8	94.3	95.6
WG259579-01	1.00	01	95.5	97.9	100	100
WG259579-02	1.00	01	93.4	98.0	94.8	95.1
WG259579-03	1.00	01	94.4	99.9	97.6	99.5

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

KEMRON FORMS - Modified 09/27/2006
Version 1.5 PDF File ID: 988503
Report generated 01/07/2008 12:19

METHOD BLANK SUMMARY

Login Number: L0712635
Work Group: WG259579
Blank File ID: 10M61607
Blank Sample ID: WG259579-01
Prep Date: 12/28/07 10:23
Instrument ID: HPMS10
Analyzed Date: 12/28/07 10:23
Method: 8260B
Analyst: MES

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG259579-02	10M61608	12/28/07 10:55	01
LCS2	WG259579-03	10M61609	12/28/07 11:26	01
12WW23-121907	L0712635-01	10M61620	12/28/07 17:15	01
12WW24-121907	L0712635-02	10M61621	12/28/07 17:46	01

METHOD BLANK SUMMARY

Login Number:	L0712635	Work Group:	WG259735
Blank File ID:	8M342846	Blank Sample ID:	WG259735-01
Prep Date:	01/02/08 12:36	Instrument ID:	HPMS8
Analyzed Date:	01/02/08 12:36	Method:	8260B
Analyst:	CMS		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG259735-02	8M342847	01/02/08 13:07	01
LCS2	WG259735-03	8M342848	01/02/08 13:36	01
12WW24-121907	L0712635-02	8M342850	01/02/08 14:36	DL01

KEMRON FORMS - Modified 01/31/2007
Version 1.5 PDF File ID: 988496
Report generated 01/07/2008 12:19

METHOD BLANK REPORT

00114873

Login Number:L0712635 Prep Date:12/28/07 10:23 Sample ID:WG259579-01
Instrument ID:HPMS10 Run Date:12/28/07 10:23 Prep Method:5030B
File ID:10M61607 Analyst:MES Method:8260B
Workgroup (AAB#):WG259579 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS10-14-DEC-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 988497
Report generated 01/07/2008 12:19

METHOD BLANK REPORT

00114874

Login Number:L0712635 Prep Date:12/28/07 10:23 Sample ID:WG259579-01
Instrument ID:HPMS10 Run Date:12/28/07 10:23 Prep Method:5030B
File ID:10M61607 Analyst:MES Method:8260B
Workgroup (AAB#):WG259579 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS10-14-DEC-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.125	1.00	0.125	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits			Qualifier
Dibromofluoromethane	97.9	86	-	118	PASS
1,2-Dichloroethane-d4	95.5	80	-	120	PASS
Toluene-d8	100	88	-	110	PASS
4-Bromofluorobenzene	100	86	-	115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 988497
Report generated 01/07/2008 12:19

METHOD BLANK REPORT

Login Number: L0712635 Prep Date: 01/02/08 12:36 Sample ID: WG259735-01
Instrument ID: HPMS8 Run Date: 01/02/08 12:36 Prep Method: 5030B
File ID: 8M342846 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG259735 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HPMS8-01-DEC-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 988497
Report generated 01/07/2008 12:19

METHOD BLANK REPORT

00114876

Login Number:L0712635 Prep Date:01/02/08 12:36 Sample ID:WG259735-01
Instrument ID:HPMS8 Run Date:01/02/08 12:36 Prep Method:5030B
File ID:8M342846 Analyst:CMS Method:8260B
Workgroup (AAB#):WG259735 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS8-01-DEC-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.125	1.00	0.125	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	109	86 - 118	PASS
1,2-Dichloroethane-d4	103	80 - 120	PASS
Toluene-d8	113	88 - 110	FAIL
4-Bromofluorobenzene	103	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 988497
Report generated 01/07/2008 12:19

KEMRON Environmental Services

00114877

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0712635 Analyst:CMS Prep Method:5030B
Instrument ID:HPMS8 Matrix:Water Method:8260B
Workgroup (AAB#):WG259735 Units:ug/L
QC Key:STD Lot #:STD23815

Sample ID:WG259735-02 LCS File ID:8M342847 Run Date:01/02/2008 13:07
Sample ID:WG259735-03 LCS2 File ID:8M342848 Run Date:01/02/2008 13:36

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	14.3	71.4	20.0	14.1	70.4	1.44	40 - 142	20	
Benzene	20.0	19.9	99.3	20.0	20.7	103	4.13	80 - 121	20	
Bromobenzene	20.0	20.6	103	20.0	21.7	108	5.04	80 - 120	20	
Bromochloromethane	20.0	21.4	107	20.0	22.3	112	4.19	65 - 130	20	
Bromodichloromethane	20.0	22.6	113	20.0	23.4	117	3.14	80 - 131	20	
Bromoform	20.0	19.2	96.2	20.0	19.3	96.3	0.124	70 - 130	20	
Bromomethane	20.0	22.8	114	20.0	24.1	121	5.70	30 - 145	20	
2-Butanone	20.0	13.2	66.1	20.0	13.6	68.0	2.96	30 - 150	20	
n-Butylbenzene	20.0	20.6	103	20.0	21.7	108	4.83	80 - 131	20	
sec-Butylbenzene	20.0	20.9	105	20.0	22.0	110	4.77	80 - 127	20	
tert-Butylbenzene	20.0	20.7	104	20.0	21.8	109	4.73	80 - 126	20	
Carbon disulfide	20.0	17.3	86.6	20.0	18.5	92.3	6.43	58 - 138	20	
Carbon tetrachloride	20.0	24.8	124	20.0	26.1	130	4.84	65 - 140	20	
Chlorobenzene	20.0	20.8	104	20.0	21.3	107	2.71	80 - 120	20	
Chlorodibromomethane	20.0	19.9	99.5	20.0	20.3	102	1.99	60 - 135	20	
Chloroethane	20.0	18.9	94.7	20.0	20.3	102	7.00	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	15.8	79.1	20.0	16.7	83.4	5.29	58 - 151	20	
Chloroform	20.0	21.9	109	20.0	22.8	114	3.98	80 - 125	20	
Chloromethane	20.0	26.3	132	20.0	27.6	138	4.60	40 - 125	20	*
2-Chlorotoluene	20.0	22.5	112	20.0	21.1	106	6.21	80 - 127	20	
4-Chlorotoluene	20.0	17.7	88.4	20.0	20.6	103	15.4	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	15.4	77.0	20.0	16.0	80.1	3.98	50 - 130	20	
1,2-Dibromoethane	20.0	20.7	103	20.0	20.8	104	0.613	80 - 125	20	
Dibromomethane	20.0	20.8	104	20.0	20.9	105	0.656	75 - 125	20	
1,2-Dichlorobenzene	20.0	20.1	100	20.0	20.5	102	2.15	80 - 125	20	
1,3-Dichlorobenzene	20.0	20.1	101	20.0	21.0	105	4.34	80 - 120	20	
1,4-Dichlorobenzene	20.0	19.7	98.4	20.0	20.4	102	3.62	80 - 120	20	
Dichlorodifluoromethane	20.0	27.8	139	20.0	29.7	148	6.49	50 - 133	20	*
1,1-Dichloroethane	20.0	20.5	102	20.0	21.7	108	5.57	80 - 125	20	
1,2-Dichloroethane	20.0	21.2	106	20.0	21.8	109	2.52	80 - 129	20	
1,1-Dichloroethene	20.0	21.3	107	20.0	22.9	115	7.22	80 - 132	20	
cis-1,2-Dichloroethene	20.0	21.5	108	20.0	22.4	112	4.04	70 - 125	20	
trans-1,2-Dichloroethene	20.0	20.6	103	20.0	22.1	110	6.71	80 - 127	20	
1,2-Dichloropropane	20.0	20.1	101	20.0	20.8	104	3.29	80 - 120	20	
1,3-Dichloropropane	20.0	19.6	97.9	20.0	20.1	101	2.84	80 - 120	20	
2,2-Dichloropropane	20.0	22.3	111	20.0	23.2	116	4.11	80 - 133	20	
cis-1,3-Dichloropropene	20.0	20.8	104	20.0	21.5	108	3.53	70 - 130	20	
trans-1,3-Dichloropropene	20.0	19.2	95.8	20.0	19.5	97.6	1.95	80 - 130	20	
1,1-Dichloropropene	20.0	21.0	105	20.0	22.1	111	5.19	75 - 130	20	
Ethylbenzene	20.0	21.2	106	20.0	22.1	111	4.24	80 - 122	20	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 985831
Report generated 01/07/2008 12:19

KEMRON Environmental Services

00114878

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0712635 Analyst:CMS Prep Method:5030B
Instrument ID:HPMS8 Matrix:Water Method:8260B
Workgroup (AAB#):WG259735 Units:ug/L
QC Key:STD Lot #:STD23815

Sample ID:WG259735-02 LCS File ID:8M342847 Run Date:01/02/2008 13:07
Sample ID:WG259735-03 LCS2 File ID:8M342848 Run Date:01/02/2008 13:36

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	15.2	76.2	20.0	15.6	77.8	2.08	55 - 130	20	
Hexachlorobutadiene	20.0	22.8	114	20.0	24.2	121	5.72	72 - 132	20	
Isopropylbenzene	20.0	19.7	98.5	20.0	20.4	102	3.76	80 - 122	20	
p-Isopropyltoluene	20.0	20.9	104	20.0	21.9	109	4.56	80 - 122	20	
4-Methyl-2-pentanone	20.0	15.9	79.4	20.0	16.5	82.6	4.06	64 - 140	20	
Methylene chloride	20.0	19.1	95.3	20.0	19.8	98.8	3.57	80 - 123	20	
Naphthalene	20.0	17.4	86.9	20.0	17.8	89.2	2.66	59 - 149	20	
n-Propylbenzene	20.0	21.0	105	20.0	21.8	109	3.90	80 - 129	20	
Styrene	20.0	21.3	107	20.0	22.0	110	3.03	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	20.7	103	20.0	21.6	108	4.45	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	18.7	93.7	20.0	19.3	96.3	2.78	79 - 125	20	
Tetrachloroethene	20.0	21.5	107	20.0	22.2	111	3.30	80 - 124	20	
Toluene	20.0	20.3	102	20.0	21.2	106	4.15	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	18.0	89.8	20.0	18.5	92.7	3.20	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	19.7	98.4	20.0	20.1	101	2.15	65 - 135	20	
1,1,1-Trichloroethane	20.0	23.8	119	20.0	25.0	125	4.97	80 - 134	20	
1,1,2-Trichloroethane	20.0	20.1	101	20.0	20.4	102	1.39	80 - 125	20	
Trichloroethene	20.0	22.6	113	20.0	23.5	118	4.01	80 - 122	20	
Trichlorofluoromethane	20.0	18.3	91.6	20.0	19.5	97.7	6.40	62 - 151	20	
1,2,3-Trichloropropane	20.0	19.9	99.6	20.0	19.9	99.5	0.0752	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	21.5	107	20.0	22.5	113	4.94	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	21.3	106	20.0	22.2	111	4.31	80 - 127	20	
Vinyl acetate	20.0	24.4	122	20.0	25.4	127	4.03	10 - 150	20	
Vinyl chloride	20.0	22.8	114	20.0	23.8	119	4.16	65 - 140	20	
o-Xylene	20.0	20.6	103	20.0	21.2	106	3.29	80 - 122	20	
m-,p-Xylene	40.0	40.4	101	40.0	41.8	104	3.44	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	110	112	86 - 118	PASS
1,2-Dichloroethane-d4	102	103	80 - 120	PASS
Toluene-d8	111	111	88 - 110	FAIL
4-Bromofluorobenzene	102	103	86 - 115	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 985831
Report generated 01/07/2008 12:19

KEMRON Environmental Services

00114879

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0712635 Analyst:MES Prep Method:5030B
Instrument ID:HPMS10 Matrix:Water Method:8260B
Workgroup (AAB#):WG259579 Units:ug/L
QC Key:STD Lot #:STD23815

Sample ID:WG259579-02 LCS File ID:10M61608 Run Date:12/28/2007 10:55
Sample ID:WG259579-03 LCS2 File ID:10M61609 Run Date:12/28/2007 11:26

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	21.7	109	20.0	22.4	112	2.88	40 - 142	20	
Benzene	20.0	19.4	97.1	20.0	21.4	107	9.81	80 - 121	20	
Bromobenzene	20.0	19.1	95.6	20.0	20.7	103	7.90	80 - 120	20	
Bromochloromethane	20.0	18.4	91.8	20.0	19.3	96.5	4.95	65 - 130	20	
Bromodichloromethane	20.0	20.6	103	20.0	21.8	109	5.66	80 - 131	20	
Bromoform	20.0	15.2	76.1	20.0	15.6	78.0	2.46	70 - 130	20	
Bromomethane	20.0	17.6	87.9	20.0	19.1	95.3	8.07	30 - 145	20	
2-Butanone	20.0	22.8	114	20.0	22.7	114	0.384	30 - 150	20	
n-Butylbenzene	20.0	17.6	87.9	20.0	20.8	104	16.6	80 - 131	20	
sec-Butylbenzene	20.0	17.5	87.3	20.0	21.0	105	18.6	80 - 127	20	
tert-Butylbenzene	20.0	17.9	89.3	20.0	20.3	101	12.7	80 - 126	20	
Carbon disulfide	20.0	19.4	97.2	20.0	22.7	113	15.2	58 - 138	20	
Carbon tetrachloride	20.0	14.4	72.2	20.0	17.8	89.0	20.8	65 - 140	20	#
Chlorobenzene	20.0	18.4	92.0	20.0	19.7	98.6	6.99	80 - 120	20	
Chlorodibromomethane	20.0	16.6	82.8	20.0	17.2	86.0	3.77	60 - 135	20	
Chloroethane	20.0	17.2	85.8	20.0	19.9	99.5	14.7	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	16.9	84.7	20.0	17.3	86.6	2.19	58 - 151	20	
Chloroform	20.0	19.6	98.0	20.0	21.3	106	8.25	80 - 125	20	
Chloromethane	20.0	13.4	67.2	20.0	15.4	77.0	13.6	40 - 125	20	
2-Chlorotoluene	20.0	18.1	90.6	20.0	23.2	116	24.5	80 - 127	20	#
4-Chlorotoluene	20.0	18.8	93.9	20.0	17.5	87.4	7.20	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	15.0	75.0	20.0	16.0	80.2	6.66	50 - 130	20	
1,2-Dibromoethane	20.0	20.1	100	20.0	21.0	105	4.48	80 - 125	20	
Dibromomethane	20.0	20.1	101	20.0	21.0	105	4.18	75 - 125	20	
1,2-Dichlorobenzene	20.0	17.9	89.7	20.0	19.3	96.3	7.11	80 - 125	20	
1,3-Dichlorobenzene	20.0	18.1	90.7	20.0	19.6	97.8	7.51	80 - 120	20	
1,4-Dichlorobenzene	20.0	17.8	88.8	20.0	18.9	94.6	6.32	80 - 120	20	
Dichlorodifluoromethane	20.0	9.37	46.8	20.0	12.1	60.5	25.4	50 - 133	20	*#
1,1-Dichloroethane	20.0	19.7	98.6	20.0	21.8	109	9.93	80 - 125	20	
1,2-Dichloroethane	20.0	19.9	99.7	20.0	20.8	104	4.40	80 - 129	20	
1,1-Dichloroethene	20.0	15.4	77.0	20.0	19.0	94.8	20.7	80 - 132	20	*#
cis-1,2-Dichloroethene	20.0	20.7	103	20.0	22.4	112	7.92	70 - 125	20	
trans-1,2-Dichloroethene	20.0	17.9	89.7	20.0	20.7	104	14.3	80 - 127	20	
1,2-Dichloropropane	20.0	21.2	106	20.0	22.8	114	7.29	80 - 120	20	
1,3-Dichloropropane	20.0	20.8	104	20.0	21.5	107	3.23	80 - 120	20	
2,2-Dichloropropane	20.0	16.9	84.7	20.0	19.6	98.2	14.8	80 - 133	20	
cis-1,3-Dichloropropene	20.0	20.7	103	20.0	21.9	109	5.67	70 - 130	20	
trans-1,3-Dichloropropene	20.0	18.2	91.2	20.0	18.7	93.3	2.27	80 - 130	20	
1,1-Dichloropropene	20.0	16.7	83.6	20.0	20.2	101	19.1	75 - 130	20	
Ethylbenzene	20.0	18.2	91.2	20.0	20.4	102	11.0	80 - 122	20	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 985831
Report generated 01/07/2008 12:19

KEMRON Environmental Services

00114880

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0712635 Analyst:MES Prep Method:5030B
Instrument ID:HPMS10 Matrix:Water Method:8260B
Workgroup (AAB#):WG259579 Units:ug/L
QC Key:STD Lot #:STD23815

Sample ID:WG259579-02 LCS File ID:10M61608 Run Date:12/28/2007 10:55
Sample ID:WG259579-03 LCS2 File ID:10M61609 Run Date:12/28/2007 11:26

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	20.4	102	20.0	20.7	104	1.76	55 - 130	20	
Hexachlorobutadiene	20.0	16.0	80.2	20.0	19.4	96.9	18.8	72 - 132	20	
Isopropylbenzene	20.0	16.7	83.7	20.0	19.1	95.4	13.1	80 - 122	20	
p-Isopropyltoluene	20.0	17.3	86.7	20.0	20.2	101	15.2	80 - 122	20	
4-Methyl-2-pentanone	20.0	21.6	108	20.0	22.0	110	1.48	64 - 140	20	
Methylene chloride	20.0	19.4	97.2	20.0	20.5	103	5.55	80 - 123	20	
Naphthalene	20.0	16.6	83.1	20.0	17.9	89.6	7.46	59 - 149	20	
n-Propylbenzene	20.0	18.5	92.6	20.0	21.4	107	14.3	80 - 129	20	
Styrene	20.0	17.8	88.8	20.0	18.7	93.6	5.28	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	19.3	96.4	20.0	20.5	103	6.32	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	21.9	109	20.0	22.5	112	2.75	79 - 125	20	
Tetrachloroethene	20.0	16.4	82.1	20.0	19.7	98.4	18.0	80 - 124	20	
Toluene	20.0	18.8	94.1	20.0	20.7	103	9.32	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	18.1	90.4	20.0	19.6	98.1	8.19	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	17.9	89.7	20.0	19.4	96.8	7.59	65 - 135	20	
1,1,1-Trichloroethane	20.0	16.9	84.6	20.0	19.8	99.0	15.7	80 - 134	20	
1,1,2-Trichloroethane	20.0	21.2	106	20.0	21.9	109	2.88	80 - 125	20	
Trichloroethene	20.0	18.5	92.6	20.0	21.0	105	12.7	80 - 122	20	
Trichlorofluoromethane	20.0	10.9	54.5	20.0	13.8	68.9	23.3	62 - 151	20	*#
1,2,3-Trichloropropane	20.0	19.7	98.5	20.0	20.3	101	2.99	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	19.6	97.8	20.0	21.6	108	9.66	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	19.0	95.2	20.0	21.5	107	12.0	80 - 127	20	
Vinyl acetate	20.0	27.6	138	20.0	28.6	143	3.58	10 - 150	20	
Vinyl chloride	20.0	13.0	64.8	20.0	15.5	77.6	18.0	65 - 140	20	*
o-Xylene	20.0	19.1	95.4	20.0	21.0	105	9.66	80 - 122	20	
m-,p-Xylene	40.0	36.9	92.4	40.0	41.2	103	11.0	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	98.0	99.9	86 - 118	PASS
1,2-Dichloroethane-d4	93.4	94.4	80 - 120	PASS
Toluene-d8	95.1	99.5	88 - 110	PASS
4-Bromofluorobenzene	94.8	97.6	86 - 115	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 985831
Report generated 01/07/2008 12:19

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L0712635
Instrument: HPMS10
Analyst: MES
Workgroup: WG258532

Tune ID: WG258532-01
Run Date: 12/14/2007
Run Time: 11:55
File ID: 10M61287
Cal ID: HPMS10-14-DEC-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.4	4117	PASS
75.0	95.0	30.0	60.0	47.0	9954	PASS
95.0	95.0	100	100	100	21197	PASS
96.0	95.0	5.00	9.00	7.70	1633	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	91.8	19456	PASS
175	174	5.00	9.00	7.80	1517	PASS
176	174	95.0	101	99.2	19304	PASS
177	176	5.00	9.00	6.29	1214	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG258532-02	STD	01	12/14/2007 12:19	
WG258532-03	STD	01	12/14/2007 12:55	
WG258532-04	STD	01	12/14/2007 13:26	
WG258532-05	STD	01	12/14/2007 13:58	
WG258532-06	STD	01	12/14/2007 14:29	
WG258532-07	STD	01	12/14/2007 15:00	
WG258532-08	STD-CCV	01	12/14/2007 15:32	
WG258532-09	STD	01	12/14/2007 16:04	
WG258532-10	STD	01	12/14/2007 16:35	
WG258532-11	STD	01	12/14/2007 17:07	
WG258532-12	SSCV	01	12/14/2007 18:41	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 988500
Report generated 01/07/2008 12:19

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L0712635 Tune ID: WG259578-01
Instrument: HPMS10 Run Date: 12/28/2007
Analyst: MES Run Time: 08:48
Workgroup: WG259578 File ID: 10M61604
Cal ID: HPMS10-14-DEC-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.1	6839	PASS
75.0	95.0	30.0	60.0	48.2	17299	PASS
95.0	95.0	100	100	100	35858	PASS
96.0	95.0	5.00	9.00	6.16	2208	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	92.2	33045	PASS
175	174	5.00	9.00	7.72	2552	PASS
176	174	95.0	101	96.8	31976	PASS
177	176	5.00	9.00	6.01	1921	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG259578-02	CCV	01	12/28/2007 09:19	
WG259579-01	BLANK	01	12/28/2007 10:23	
WG259579-02	LCS	01	12/28/2007 10:55	
WG259579-03	LCS2	01	12/28/2007 11:26	
L0712635-01	12WW23-121907	01	12/28/2007 17:15	
L0712635-02	12WW24-121907	01	12/28/2007 17:46	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 988500
Report generated 01/07/2008 12:19

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L0712635 Tune ID: WG257292-01
Instrument: HPMS8 Run Date: 12/01/2007
Analyst: CMS Run Time: 11:20
Workgroup: WG257292 File ID: 8M342088
Cal ID: HPMS8-01-DEC-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.2	9499	PASS
75.0	95.0	30.0	60.0	46.7	23128	PASS
95.0	95.0	100	100	100	49552	PASS
96.0	95.0	5.00	9.00	7.16	3546	PASS
173	174	0	2.00	0.285	114	PASS
174	95.0	50.0	100	80.8	40034	PASS
175	174	5.00	9.00	7.48	2993	PASS
176	174	95.0	101	97.7	39104	PASS
177	176	5.00	9.00	6.53	2555	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG257292-02	STD	01	12/01/2007 11:51	
WG257292-03	STD	01	12/01/2007 12:24	
WG257292-04	STD	01	12/01/2007 12:53	
WG257292-05	STD	01	12/01/2007 13:24	
WG257292-06	STD	01	12/01/2007 13:55	
WG257292-07	STD	01	12/01/2007 14:25	
WG257292-08	STD-CCV	01	12/01/2007 14:55	
WG257292-09	STD	01	12/01/2007 15:25	
WG257292-10	STD	01	12/01/2007 15:55	
WG257292-11	STD	01	12/01/2007 16:25	
WG257292-12	SSCV	01	12/01/2007 17:54	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 988500
Report generated 01/07/2008 12:19

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L0712635 Tune ID: WG259734-01
Instrument: HPMS8 Run Date: 01/02/2008
Analyst: CMS Run Time: 10:09
Workgroup: WG259734 File ID: 8M342842
Cal ID: HPMS8-01-DEC-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.0	5267	PASS
75.0	95.0	30.0	60.0	45.9	12704	PASS
95.0	95.0	100	100	100	27685	PASS
96.0	95.0	5.00	9.00	6.82	1887	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	85.8	23744	PASS
175	174	5.00	9.00	7.56	1795	PASS
176	174	95.0	101	97.5	23146	PASS
177	176	5.00	9.00	6.83	1581	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG259734-02	CCV	01	01/02/2008 11:16	
WG259735-01	BLANK	01	01/02/2008 12:36	
WG259735-02	LCS	01	01/02/2008 13:07	
WG259735-03	LCS2	01	01/02/2008 13:36	
L0712635-02	12WW24-121907	DL01	01/02/2008 14:36	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 988500
Report generated 01/07/2008 12:19

INITIAL CALIBRATION SUMMARY

Login Number: L0712635 **Instrument ID:** HPMS10

Analytical Method: 8260B **Initial Calibration Date:** 14-DEC-07 17:07

ICAL Workgroup: WG258532 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.2628	21.1		1.00
1,2-Dichloropropane	CCC	0.2848	7.80		
Chloroform	CCC	0.6162	8.00		
Ethylbenzene	CCC	0.5473	7.44		
Toluene	CCC	1.410	6.68		
Vinyl Chloride	CCC	0.2662	14.0		
1,1,2,2-Tetrachloroethane	SPCC	0.3652	14.5		
1,1-Dichloroethane	SPCC	0.5966	6.51		
Bromoform	SPCC	0.1900	21.2		1.00
Chlorobenzene	SPCC	1.049	5.18		
Chloromethane	SPCC	0.3091	12.3		
1,1,1,2-Tetrachloroethane		0.4038	13.2		
1,1,1-Trichloroethane		0.5887	8.85		
1,1,2-Trichloroethane		0.2231	11.3		
1,1-Dichloropropene		0.4573	4.95		
1,2,3-Trichlorobenzene		0.7199	7.29		
1,2,3-Trichloropropane		0.1512	6.82		
1,2,4-Trichlorobenzene		0.8913	6.23		
1,2,4-Trimethylbenzene		2.538	9.97		
1,2-Dibromo-3-Chloropropane		0.07782	22.8	1.00	
1,2-Dibromoethane		0.2476	14.0		
1,2-Dichlorobenzene		1.386	4.55		
1,2-Dichloroethane		0.4533	7.77		
1,3,5-Trimethylbenzene		2.425	11.5		
1,3-Dichlorobenzene		1.545	3.96		
1,3-Dichloropropane		0.4137	7.30		
1,4-Dichlorobenzene		1.612	3.91		
2,2-Dichloropropane		0.5586	12.5		
2-Butanone		0.06638	5.66		
2-Chloroethyl Vinyl Ether		0.1219	17.4		1.00
2-Chlorotoluene		2.093	5.73		
2-Hexanone		0.1053	6.26		
4-Chlorotoluene		2.126	6.40		
4-Methyl-2-Pentanone		0.05990	5.31		
Acetone		0.04982	7.74		
Benzene		1.172	4.32		
Bromobenzene		0.7890	8.41		
Bromochloromethane		0.1555	16.3		1.00
Bromodichloromethane		0.4155	11.7		
Bromomethane		0.2581	7.81		
Carbon Disulfide		0.8677	5.76		
Carbon Tetrachloride		0.5371	18.5		1.00
Chloroethane		0.2333	3.60		
Dibromochloromethane		0.3229	19.9		1.00
Dibromomethane		0.1586	8.29		

KEMRON FORMS - Modified 01/18/2007
Version 1.5 PDF File ID: 988498
Report generated 01/07/2008 12:19

INITIAL CALIBRATION SUMMARY

Login Number: L0712635 **Instrument ID:** HPMS10

Analytical Method: 8260B **Initial Calibration Date:** 14-DEC-07 17:07

ICAL Workgroup: WG258532 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Dichlorodifluoromethane		0.4499	5.53		
Hexachlorobutadiene		0.4072	11.7		
Isopropylbenzene		1.599	10.0		
Methylene Chloride		0.4705	61.8		1.00
Naphthalene		1.231	15.0		1.00
Styrene		0.9798	17.3		1.00
Tetrachloroethene		0.3493	11.2		
Trichloroethene		0.3586	10.7		
Trichlorofluoromethane		0.6823	20.4		1.00
Vinyl Acetate		0.2740	7.58		
cis-1,2-Dichloroethene		0.3279	9.69		
cis-1,3-Dichloropropene		0.4466	12.9		
m-,p-Xylene		0.6678	7.25		
n-Butylbenzene		2.052	12.6		
n-Propylbenzene		3.101	12.2		
o-Xylene		0.6218	10.7		
p-Isopropyltoluene		2.556	11.4		
sec-Butylbenzene		2.893	9.72		
tert-Butylbenzene		0.5475	13.2		
trans-1,2-Dichloroethene		0.3138	11.2		
trans-1,3-Dichloropropene		0.4676	12.2		

R = Correlation coefficient; 0.995 minimum

R^2 = Coefficient of determination; 0.99 minimum

INITIAL CALIBRATION SUMMARY

Login Number: L0712635 **Instrument ID:** HPMS8

Analytical Method: 8260B **Initial Calibration Date:** 01-DEC-07 16:25

ICAL Workgroup: WG257292 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.3023	12.0		
1,2-Dichloropropane	CCC	0.2006	6.83		
Chloroform	CCC	0.3554	6.05		
Ethylbenzene	CCC	0.4231	16.7		1.00
Toluene	CCC	1.078	12.2		
Vinyl Chloride	CCC	0.1037	8.98		
1,1,2,2-Tetrachloroethane	SPCC	0.3297	14.7		
1,1-Dichloroethane	SPCC	0.3765	5.81		
Bromoform	SPCC	0.1182	15.8		1.00
Chlorobenzene	SPCC	0.7774	14.9		
Chloromethane	SPCC	0.1561	19.3		1.00
1,1,1,2-Tetrachloroethane		0.2630	15.6		1.00
1,1,1-Trichloroethane		0.3105	12.5		
1,1,2-Trichloroethane		0.1653	11.2		
1,1-Dichloropropene		0.2914	4.43		
1,2,3-Trichlorobenzene		0.6339	12.9		
1,2,3-Trichloropropane		0.1070	11.9		
1,2,4-Trichlorobenzene		0.7346	13.0		
1,2,4-Trimethylbenzene		2.110	12.9		
1,2-Dibromo-3-Chloropropane		0.06402	5.73		
1,2-Dibromoethane		0.1747	10.8		
1,2-Dichlorobenzene		1.084	11.5		
1,2-Dichloroethane		0.2423	6.80		
1,3,5-Trimethylbenzene		2.017	12.0		
1,3-Dichlorobenzene		1.224	13.2		
1,3-Dichloropropane		0.3149	9.95		
1,4-Dichlorobenzene		1.239	13.2		
2,2-Dichloropropane		0.3340	2.03		
2-Butanone		0.04380	5.88		
2-Chloroethyl Vinyl Ether		0.08497	10.4		
2-Chlorotoluene		1.740	13.6		
2-Hexanone		0.04760	10.5		
4-Chlorotoluene		1.797	14.7		
4-Methyl-2-Pentanone		0.03977	10.4		
Acetone		0.02833	4.46		
Benzene		0.8363	10.8		
Bromobenzene		0.5948	12.8		
Bromochloromethane		0.1130	12.4		
Bromodichloromethane		0.2487	10.2		
Bromomethane		0.1350	3.91		
Carbon Disulfide		0.5437	7.83		
Carbon Tetrachloride		0.2789	6.57		
Chloroethane		0.1512	4.01		
Dibromochloromethane		0.2077	20.9		1.00
Dibromomethane		0.09264	6.90		

KEMRON FORMS - Modified 01/18/2007
Version 1.5 PDF File ID: 988498
Report generated 01/07/2008 12:19

INITIAL CALIBRATION SUMMARY

Login Number: L0712635 **Instrument ID:** HPMS8

Analytical Method: 8260B **Initial Calibration Date:** 01-DEC-07 16:25

ICAL Workgroup: WG257292 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Dichlorodifluoromethane		0.2164	2.35		
Hexachlorobutadiene		0.2591	14.4		
Isopropylbenzene		1.252	13.0		
Methylene Chloride		0.2381	31.9		1.00
Naphthalene		1.278	9.21		
Styrene		0.8170	12.0		
Tetrachloroethene		0.2179	16.2		1.00
Trichloroethene		0.2153	12.5		
Trichlorofluoromethane		0.3767	2.88		
Vinyl Acetate		0.1275	7.86		
cis-1,2-Dichloroethene		0.2078	8.89		
cis-1,3-Dichloropropene		0.3072	7.48		
m-,p-Xylene		0.5428	13.4		
n-Butylbenzene		1.774	11.4		
n-Propylbenzene		2.654	13.4		
o-Xylene		0.5276	12.7		
p-Isopropyltoluene		2.060	11.9		
sec-Butylbenzene		2.384	12.9		
tert-Butylbenzene		0.4494	10.6		
trans-1,2-Dichloroethene		0.2939	11.9		
trans-1,3-Dichloropropene		0.3341	10.4		

R = Correlation coefficient; 0.995 minimum

R^2 = Coefficient of determination; 0.99 minimum

INITIAL CALIBRATION DATA

00114889

Login Number: L0712635 **Instrument ID:** HPMS10

Analytical Method: 8260B **Initial Calibration Date:** 14-DEC-07 17:07

Column ID: F

Analyte	WG258532-02			WG258532-03			WG258532-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	1043.00000	0.1336	1.00	4664.00000	0.2395
1,2-Dichloropropane	NA	NA	NA	0.400	1934.00000	0.2478	1.00	5050.00000	0.2593
Chloroform	0.300	3434.00000	0.5699	0.400	4046.00000	0.5183	1.00	11691.0000	0.6003
Ethylbenzene	NA	NA	NA	0.400	3153.00000	0.4635	1.00	8792.00000	0.5170
Toluene	NA	NA	NA	0.400	8266.00000	1.215	1.00	23001.0000	1.353
Vinyl Chloride	NA	NA	NA	0.400	1669.00000	0.2138	1.00	6240.00000	0.3204
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	1048.00000	0.2747	1.00	3062.00000	0.3196
1,1-Dichloroethane	NA	NA	NA	0.400	4048.00000	0.5186	1.00	11412.0000	0.5860
Bromoform	NA	NA	NA	NA	NA	NA	1.00	2321.00000	0.1365
Chlorobenzene	NA	NA	NA	0.400	6522.00000	0.9587	1.00	17840.0000	1.049
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	7136.00000	0.3664
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	2021.00000	0.2971	1.00	6149.00000	0.3616
1,1,1-Trichloroethane	NA	NA	NA	0.400	3708.00000	0.4750	1.00	11295.0000	0.5800
1,1,2-Trichloroethane	NA	NA	NA	0.400	1219.00000	0.1792	1.00	3292.00000	0.1936
1,1-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	8096.00000	0.4157
1,2,3-Trichlorobenzene	0.300	2153.00000	0.7360	0.400	2335.00000	0.6120	1.00	6533.00000	0.6818
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	1322.00000	0.1380
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	3159.00000	0.8280	1.00	7759.00000	0.8098
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	7759.00000	2.034	1.00	22135.0000	2.310
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	1286.00000	0.1890	1.00	3536.00000	0.2079
1,2-Dichlorobenzene	0.300	4388.00000	1.500	0.400	5164.00000	1.354	1.00	12961.0000	1.353
1,2-Dichloroethane	NA	NA	NA	0.400	3066.00000	0.3928	1.00	8985.00000	0.4614
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	7223.00000	1.893	1.00	20674.0000	2.158
1,3-Dichlorobenzene	NA	NA	NA	0.400	5548.00000	1.454	1.00	14707.0000	1.535
1,3-Dichloropropane	NA	NA	NA	0.400	2537.00000	0.3729	1.00	6529.00000	0.3839
1,4-Dichlorobenzene	0.300	4533.00000	1.550	0.400	6599.00000	1.730	1.00	15341.0000	1.601
2,2-Dichloropropane	NA	NA	NA	0.400	3225.00000	0.4131	1.00	9611.00000	0.4935
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	NA	NA	NA	0.400	7714.00000	2.022	1.00	18407.0000	1.921
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	6971.00000	1.827	1.00	19881.0000	2.075
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	8403.00000	1.077	1.00	22405.0000	1.151
Bromobenzene	0.300	2008.00000	0.6865	0.400	2652.00000	0.6951	1.00	7335.00000	0.7655
Bromochloromethane	NA	NA	NA	0.400	762.000000	0.09760	1.00	2996.00000	0.1538
Bromodichloromethane	NA	NA	NA	0.400	2686.00000	0.3441	1.00	7057.00000	0.3624
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	4698.00000	0.2412
Carbon Disulfide	NA	NA	NA	0.400	6075.00000	0.7782	1.00	16174.0000	0.8306
Carbon Tetrachloride	NA	NA	NA	0.400	2397.00000	0.3071	1.00	9739.00000	0.5001

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 988498
Report generated 01/07/2008 12:19

INITIAL CALIBRATION DATA

Login Number: L0712635 **Instrument ID:** HPMS10

Analytical Method: 8260B **Initial Calibration Date:** 14-DEC-07 17:07

Column ID: F

Analyte	WG258532-05			WG258532-06			WG258532-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	10717.0000	0.2757	5.00	27655.0000	0.2903	20.0	115788.000	0.2955
1,2-Dichloropropane	2.00	10681.0000	0.2748	5.00	28602.0000	0.3002	20.0	120101.000	0.3065
Chloroform	2.00	24572.0000	0.6321	5.00	63851.0000	0.6702	20.0	257876.000	0.6580
Ethylbenzene	2.00	18361.0000	0.5465	5.00	48283.0000	0.5791	20.0	200969.000	0.5820
Toluene	2.00	46524.0000	1.385	5.00	123887.000	1.486	20.0	508704.000	1.473
Vinyl Chloride	2.00	10670.0000	0.2745	5.00	28683.0000	0.3011	20.0	105397.000	0.2689
1,1,2,2-Tetrachloroethane	2.00	6170.00000	0.3222	5.00	19192.0000	0.4027	20.0	83981.0000	0.4203
1,1-Dichloroethane	2.00	22511.0000	0.5791	5.00	60545.0000	0.6355	20.0	245399.000	0.6262
Bromoform	2.00	4624.00000	0.1376	5.00	14634.0000	0.1755	20.0	75894.0000	0.2198
Chlorobenzene	2.00	36157.0000	1.076	5.00	92530.0000	1.110	20.0	378031.000	1.095
Chloromethane	2.00	12640.0000	0.3252	5.00	32060.0000	0.3365	20.0	121257.000	0.3094
1,1,1,2-Tetrachloroethane	2.00	13550.0000	0.4033	5.00	35812.0000	0.4295	20.0	157165.000	0.4552
1,1,1-Trichloroethane	2.00	22545.0000	0.5800	5.00	58969.0000	0.6190	20.0	249584.000	0.6369
1,1,2-Trichloroethane	2.00	7522.00000	0.2239	5.00	20032.0000	0.2403	20.0	86347.0000	0.2501
1,1-Dichloropropene	2.00	17264.0000	0.4441	5.00	44950.0000	0.4718	20.0	188157.000	0.4801
1,2,3-Trichlorobenzene	2.00	13216.0000	0.6902	5.00	35766.0000	0.7505	20.0	155784.000	0.7797
1,2,3-Trichloropropane	2.00	2697.00000	0.1408	5.00	7648.00000	0.1605	20.0	32738.0000	0.1639
1,2,4-Trichlorobenzene	2.00	16254.0000	0.8488	5.00	43381.0000	0.9103	20.0	190110.000	0.9515
1,2,4-Trimethylbenzene	2.00	47302.0000	2.470	5.00	129581.000	2.719	20.0	544035.000	2.723
1,2-Dibromo-3-Chloropropane	2.00	970.000000	0.05070	5.00	2881.00000	0.06050	20.0	16670.0000	0.08340
1,2-Dibromoethane	2.00	7749.00000	0.2307	5.00	22899.0000	0.2746	20.0	95589.0000	0.2768
1,2-Dichlorobenzene	2.00	25943.0000	1.355	5.00	69030.0000	1.449	20.0	285370.000	1.428
1,2-Dichloroethane	2.00	16651.0000	0.4283	5.00	46182.0000	0.4847	20.0	192715.000	0.4917
1,3,5-Trimethylbenzene	2.00	44037.0000	2.300	5.00	122859.000	2.578	20.0	526707.000	2.636
1,3-Dichlorobenzene	2.00	28529.0000	1.490	5.00	77430.0000	1.625	20.0	322218.000	1.613
1,3-Dichloropropane	2.00	13162.0000	0.3918	5.00	37140.0000	0.4455	20.0	154874.000	0.4485
1,4-Dichlorobenzene	2.00	31416.0000	1.641	5.00	78219.0000	1.641	20.0	328622.000	1.645
2,2-Dichloropropane	2.00	22205.0000	0.5712	5.00	56698.0000	0.5951	20.0	238109.000	0.6076
2-Butanone	NA	NA	NA	5.00	6083.00000	0.06380	20.0	27427.0000	0.07000
2-Chloroethyl Vinyl Ether	2.00	3152.00000	0.08110	5.00	11157.0000	0.1171	20.0	51924.0000	0.1325
2-Chlorotoluene	2.00	40371.0000	2.108	5.00	109602.000	2.300	20.0	420324.000	2.104
2-Hexanone	NA	NA	NA	5.00	8251.00000	0.09900	20.0	37996.0000	0.1100
4-Chlorotoluene	2.00	40652.0000	2.123	5.00	103127.000	2.164	20.0	457477.000	2.290
4-Methyl-2-Pentanone	NA	NA	NA	5.00	5508.00000	0.05780	20.0	24124.0000	0.06160
Acetone	NA	NA	NA	5.00	5254.00000	0.05510	20.0	19903.0000	0.05080
Benzene	2.00	44405.0000	1.142	5.00	115842.000	1.216	20.0	479506.000	1.224
Bromobenzene	2.00	14996.0000	0.7831	5.00	41735.0000	0.8758	20.0	171504.000	0.8584
Bromochloromethane	2.00	6267.00000	0.1612	5.00	16111.0000	0.1691	20.0	69912.0000	0.1784
Bromodichloromethane	2.00	14524.0000	0.3736	5.00	41574.0000	0.4364	20.0	181823.000	0.4640
Bromomethane	2.00	8860.00000	0.2279	5.00	23342.0000	0.2450	20.0	102919.000	0.2626
Carbon Disulfide	2.00	32345.0000	0.8321	5.00	85906.0000	0.9017	20.0	359475.000	0.9173
Carbon Tetrachloride	2.00	21780.0000	0.5603	5.00	56182.0000	0.5897	20.0	237088.000	0.6050

INITIAL CALIBRATION DATA

Login Number: L0712635
Instrument ID: HPMS10
Analytical Method: 8260B
Initial Calibration Date: 14-DEC-07 17:07
Column ID: F

Analyte	WG258532-08			WG258532-09			WG258532-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	293429.000	0.2958	100	600406.000	0.2951	200	1215115.00	0.2765
1,2-Dichloropropane	50.0	301235.000	0.3036	100	612942.000	0.3013	200	1251854.00	0.2849
Chloroform	50.0	650399.000	0.6556	100	1306818.00	0.6424	200	2632622.00	0.5991
Ethylbenzene	50.0	498071.000	0.5752	100	1013814.00	0.5728	200	2024862.00	0.5422
Toluene	50.0	1289184.00	1.489	100	2609943.00	1.475	200	5259652.00	1.408
Vinyl Chloride	50.0	252078.000	0.2541	100	469160.000	0.2306	NA	NA	NA
1,1,2,2-Tetrachloroethane	50.0	208568.000	0.4058	100	404622.000	0.3997	200	789586.000	0.3767
1,1-Dichloroethane	50.0	620189.000	0.6251	100	1263503.00	0.6211	200	2552305.00	0.5808
Bromoform	50.0	200173.000	0.2312	100	395732.000	0.2236	200	767420.000	0.2055
Chlorobenzene	50.0	936224.000	1.081	100	1850401.00	1.045	200	3654906.00	0.9787
Chloromethane	50.0	293337.000	0.2957	100	565327.000	0.2779	200	1109649.00	0.2525
1,1,1,2-Tetrachloroethane	50.0	389816.000	0.4502	100	775284.000	0.4380	200	1476044.00	0.3953
1,1,1-Trichloroethane	50.0	625375.000	0.6304	100	1251974.00	0.6154	200	2517278.00	0.5729
1,1,2-Trichloroethane	50.0	210231.000	0.2428	100	419368.000	0.2369	200	814980.000	0.2182
1,1-Dichloropropene	50.0	467946.000	0.4717	100	955565.000	0.4697	200	1968565.00	0.4480
1,2,3-Trichlorobenzene	50.0	389604.000	0.7581	100	770884.000	0.7615	200	1486674.00	0.7092
1,2,3-Trichloropropane	50.0	80243.0000	0.1561	100	157701.000	0.1558	200	300105.000	0.1432
1,2,4-Trichlorobenzene	50.0	482070.000	0.9380	100	957035.000	0.9454	200	1883568.00	0.8986
1,2,4-Trimethylbenzene	50.0	1381496.00	2.688	100	2776288.00	2.743	200	5481818.00	2.615
1,2-Dibromo-3-Chloropropane	50.0	45888.0000	0.08930	100	93901.0000	0.09280	200	189007.000	0.09020
1,2-Dibromoethane	50.0	241148.000	0.2785	100	480327.000	0.2714	200	939373.000	0.2515
1,2-Dichlorobenzene	50.0	702837.000	1.368	100	1399060.00	1.382	200	2699499.00	1.288
1,2-Dichloroethane	50.0	478576.000	0.4824	100	940493.000	0.4623	200	1857382.00	0.4227
1,3,5-Trimethylbenzene	50.0	1346327.00	2.620	100	2693743.00	2.661	200	5354787.00	2.555
1,3-Dichlorobenzene	50.0	804090.000	1.565	100	1602399.00	1.583	200	3142718.00	1.499
1,3-Dichloropropane	50.0	380430.000	0.4393	100	759987.000	0.4294	200	1487687.00	0.3984
1,4-Dichlorobenzene	50.0	821697.000	1.599	100	1614959.00	1.595	200	3162313.00	1.509
2,2-Dichloropropane	50.0	601977.000	0.6068	100	1232627.00	0.6059	200	2529972.00	0.5758
2-Butanone	50.0	70241.0000	0.07080	100	136873.000	0.06730	200	267601.000	0.06090
2-Chloroethyl Vinyl Ether	50.0	135997.000	0.1371	100	276102.000	0.1357	200	562343.000	0.1280
2-Chlorotoluene	50.0	1085168.00	2.112	100	2220950.00	2.194	200	4153268.00	1.981
2-Hexanone	50.0	99207.0000	0.1146	100	191332.000	0.1081	200	369014.000	0.09880
4-Chlorotoluene	50.0	1129391.00	2.198	100	2218222.00	2.191	200	4478393.00	2.137
4-Methyl-2-Pentanone	50.0	63923.0000	0.06440	100	125599.000	0.06170	200	245587.000	0.05590
Acetone	50.0	51332.0000	0.05170	100	102668.000	0.05050	200	202864.000	0.04620
Benzene	50.0	1203539.00	1.213	100	2443690.00	1.201	200	5067013.00	1.153
Bromobenzene	50.0	423441.000	0.8239	100	840311.000	0.8301	200	1640289.00	0.7825
Bromochloromethane	50.0	170297.000	0.1717	100	334628.000	0.1645	200	649585.000	0.1478
Bromodichloromethane	50.0	460328.000	0.4640	100	931917.000	0.4581	200	1852499.00	0.4216
Bromomethane	50.0	271842.000	0.2740	100	563993.000	0.2772	200	1225263.00	0.2788
Carbon Disulfide	50.0	906174.000	0.9134	100	1834253.00	0.9017	200	3809350.00	0.8669
Carbon Tetrachloride	50.0	597245.000	0.6020	100	1194514.00	0.5872	200	2395867.00	0.5452

INITIAL CALIBRATION DATA

00114892

Login Number: L0712635 **Instrument ID:** HPMS10

Analytical Method: 8260B **Initial Calibration Date:** 14-DEC-07 17:07

Column ID: F

Analyte	WG258532-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	419813.000	0.06550
2-Chloroethyl Vinyl Ether	NA	NA	NA
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	554487.000	0.1010
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	371602.000	0.05800
Acetone	300	285454.000	0.04460
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 988498
Report generated 01/07/2008 12:19

INITIAL CALIBRATION DATA

Login Number: L0712635
Instrument ID: HPMS10
Analytical Method: 8260B
Initial Calibration Date: 14-DEC-07 17:07
Column ID: F

Analyte	WG258532-02			WG258532-03			WG258532-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	4646.00000	0.2386
Dibromochloromethane	NA	NA	NA	0.400	1317.00000	0.1936	1.00	4879.00000	0.2869
Dibromomethane	NA	NA	NA	NA	NA	NA	1.00	2638.00000	0.1355
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	8699.00000	0.4467
Hexachlorobutadiene	NA	NA	NA	0.400	1134.00000	0.2972	1.00	4183.00000	0.4366
Isopropylbenzene	NA	NA	NA	0.400	8851.00000	1.301	1.00	24717.0000	1.453
Methylene Chloride	NA	NA	NA	0.400	8852.00000	1.134	1.00	12076.0000	0.6201
Naphthalene	NA	NA	NA	0.400	3737.00000	0.9795	1.00	9934.00000	1.037
Styrene	NA	NA	NA	0.400	4680.00000	0.6879	1.00	14043.0000	0.8258
Tetrachloroethene	NA	NA	NA	0.400	1772.00000	0.2605	1.00	5736.00000	0.3373
Trichloroethene	NA	NA	NA	0.400	2142.00000	0.2744	1.00	6705.00000	0.3443
Trichlorofluoromethane	NA	NA	NA	0.400	2712.00000	0.3474	1.00	14177.0000	0.7280
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	2145.00000	0.2748	1.00	5616.00000	0.2884
cis-1,3-Dichloropropene	NA	NA	NA	0.400	2881.00000	0.3691	1.00	7346.00000	0.3772
m-,p-Xylene	NA	NA	NA	0.800	8022.00000	0.5896	2.00	20934.0000	0.6155
n-Butylbenzene	NA	NA	NA	0.400	5796.00000	1.519	1.00	17807.0000	1.859
n-Propylbenzene	NA	NA	NA	0.400	8957.00000	2.348	1.00	26639.0000	2.780
o-Xylene	NA	NA	NA	0.400	3319.00000	0.4879	1.00	9542.00000	0.5611
p-Isopropyltoluene	NA	NA	NA	0.400	7663.00000	2.009	1.00	21481.0000	2.242
sec-Butylbenzene	NA	NA	NA	0.400	8838.00000	2.316	1.00	25401.0000	2.651
tert-Butylbenzene	NA	NA	NA	0.400	1460.00000	0.3827	1.00	4977.00000	0.5194
trans-1,2-Dichloroethene	NA	NA	NA	0.400	1822.00000	0.2334	1.00	5899.00000	0.3029
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	6369.00000	0.3745

INITIAL CALIBRATION DATA

00114894

Login Number: L0712635 **Instrument ID:** HPMS10

Analytical Method: 8260B **Initial Calibration Date:** 14-DEC-07 17:07

Column ID: F

Analyte	WG258532-05			WG258532-06			WG258532-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	8490.00000	0.2184	5.00	22183.0000	0.2328	20.0	93767.0000	0.2393
Dibromochloromethane	2.00	9670.00000	0.2878	5.00	27824.0000	0.3337	20.0	128843.000	0.3731
Dibromomethane	2.00	5842.00000	0.1503	5.00	15912.0000	0.1670	20.0	67427.0000	0.1721
Dichlorodifluoromethane	2.00	17005.0000	0.4375	5.00	45078.0000	0.4732	20.0	185336.000	0.4729
Hexachlorobutadiene	2.00	7347.00000	0.3837	5.00	20832.0000	0.4371	20.0	84344.0000	0.4222
Isopropylbenzene	2.00	51366.0000	1.529	5.00	141411.000	1.696	20.0	601268.000	1.741
Methylene Chloride	2.00	17170.0000	0.4417	5.00	35478.0000	0.3724	20.0	124148.000	0.3168
Naphthalene	2.00	20162.0000	1.053	5.00	58002.0000	1.217	20.0	276524.000	1.384
Styrene	2.00	28660.0000	0.8531	5.00	85065.0000	1.020	20.0	382369.000	1.107
Tetrachloroethene	2.00	11775.0000	0.3505	5.00	32095.0000	0.3849	20.0	128877.000	0.3732
Trichloroethene	2.00	13491.0000	0.3471	5.00	36663.0000	0.3848	20.0	152296.000	0.3886
Trichlorofluoromethane	2.00	27894.0000	0.7176	5.00	72658.0000	0.7626	20.0	299842.000	0.7651
Vinyl Acetate	2.00	9079.00000	0.2336	5.00	25153.0000	0.2640	20.0	115086.000	0.2937
cis-1,2-Dichloroethene	2.00	12204.0000	0.3139	5.00	33268.0000	0.3492	20.0	138329.000	0.3530
cis-1,3-Dichloropropene	2.00	15227.0000	0.3917	5.00	45222.0000	0.4747	20.0	196478.000	0.5014
m-,p-Xylene	4.00	42888.0000	0.6383	10.0	118000.000	0.7076	40.0	489396.000	0.7087
n-Butylbenzene	2.00	37632.0000	1.965	5.00	103229.000	2.166	20.0	446182.000	2.233
n-Propylbenzene	2.00	56535.0000	2.952	5.00	159756.000	3.352	20.0	677538.000	3.391
o-Xylene	2.00	20588.0000	0.6128	5.00	54520.0000	0.6539	20.0	231787.000	0.6713
p-Isopropyltoluene	2.00	47186.0000	2.464	5.00	129861.000	2.725	20.0	555091.000	2.778
sec-Butylbenzene	2.00	54375.0000	2.840	5.00	144271.000	3.027	20.0	622654.000	3.117
tert-Butylbenzene	2.00	10234.0000	0.5344	5.00	28298.0000	0.5938	20.0	117997.000	0.5906
trans-1,2-Dichloroethene	2.00	11933.0000	0.3070	5.00	32385.0000	0.3399	20.0	130805.000	0.3338
trans-1,3-Dichloropropene	2.00	13607.0000	0.4050	5.00	39080.0000	0.4687	20.0	177059.000	0.5128

INITIAL CALIBRATION DATA

00114895

Login Number: L0712635
Instrument ID: HPMS10
Analytical Method: 8260B
Initial Calibration Date: 14-DEC-07 17:07
Column ID: F

Analyte	WG258532-08			WG258532-09			WG258532-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	235589.000	0.2375	100	490205.000	0.2410	200	990399.000	0.2254
Dibromochloromethane	50.0	330537.000	0.3817	100	667911.000	0.3774	200	1304039.00	0.3492
Dibromomethane	50.0	167486.000	0.1688	100	334336.000	0.1644	200	667729.000	0.1520
Dichlorodifluoromethane	50.0	464677.000	0.4684	100	908766.000	0.4467	200	1774443.00	0.4038
Hexachlorobutadiene	50.0	218163.000	0.4245	100	437719.000	0.4324	200	888978.000	0.4241
Isopropylbenzene	50.0	1511802.00	1.746	100	3036489.00	1.716	200	6013327.00	1.610
Methylene Chloride	50.0	299582.000	0.3020	100	606453.000	0.2981	200	1224725.00	0.2787
Naphthalene	50.0	726263.000	1.413	100	1448959.00	1.431	200	2788071.00	1.330
Styrene	50.0	986440.000	1.139	100	2008884.00	1.135	200	3995344.00	1.070
Tetrachloroethene	50.0	321780.000	0.3716	100	647953.000	0.3661	200	1308527.00	0.3504
Trichloroethene	50.0	384207.000	0.3873	100	772962.000	0.3800	200	1590876.00	0.3620
Trichlorofluoromethane	50.0	748330.000	0.7543	100	1471892.00	0.7236	200	2900353.00	0.6601
Vinyl Acetate	50.0	280905.000	0.2831	100	592102.000	0.2911	200	1186019.00	0.2699
cis-1,2-Dichloroethene	50.0	350411.000	0.3532	100	720973.000	0.3544	200	1477667.00	0.3363
cis-1,3-Dichloropropene	50.0	494669.000	0.4986	100	1015188.00	0.4990	200	2024908.00	0.4608
m-,p-Xylene	100	1237010.00	0.7142	200	2489366.00	0.7032	400	4970272.00	0.6655
n-Butylbenzene	50.0	1135185.00	2.209	100	2295874.00	2.268	200	4607621.00	2.198
n-Propylbenzene	50.0	1707432.00	3.322	100	3438698.00	3.397	200	6849687.00	3.268
o-Xylene	50.0	588732.000	0.6799	100	1186254.00	0.6702	200	2379289.00	0.6371
p-Isopropyltoluene	50.0	1405647.00	2.735	100	2836559.00	2.802	200	5644214.00	2.693
sec-Butylbenzene	50.0	1565543.00	3.046	100	3155243.00	3.117	200	6348500.00	3.029
tert-Butylbenzene	50.0	298150.000	0.5801	100	603750.000	0.5964	200	1220639.00	0.5823
trans-1,2-Dichloroethene	50.0	331824.000	0.3345	100	683775.000	0.3361	200	1419690.00	0.3231
trans-1,3-Dichloropropene	50.0	451377.000	0.5212	100	905802.000	0.5118	200	1789732.00	0.4793

INITIAL CALIBRATION DATA

00114896

Login Number: L0712635
Instrument ID: HPMS10
Analytical Method: 8260B
Initial Calibration Date: 14-DEC-07 17:07
Column ID: F

Analyte	WG258532-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	300	1809437.00	0.2825
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

INITIAL CALIBRATION DATA

00114897

Login Number: L0712635 **Instrument ID:** HPMS8

Analytical Method: 8260B **Initial Calibration Date:** 01-DEC-07 16:25

Column ID: F

Analyte	WG257292-02			WG257292-03			WG257292-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	2033.00000	0.2152	1.00	7584.00000	0.3220
1,2-Dichloropropane	NA	NA	NA	0.400	1681.00000	0.1779	1.00	4910.00000	0.2085
Chloroform	0.300	2378.00000	0.3283	0.400	3125.00000	0.3308	1.00	8726.00000	0.3705
Ethylbenzene	NA	NA	NA	NA	NA	NA	1.00	8286.00000	0.4569
Toluene	NA	NA	NA	0.400	7888.00000	1.086	1.00	21462.0000	1.184
Vinyl Chloride	NA	NA	NA	NA	NA	NA	1.00	2740.00000	0.1164
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	899.000000	0.2283	1.00	3295.00000	0.3326
1,1-Dichloroethane	NA	NA	NA	0.400	3155.00000	0.3340	1.00	9189.00000	0.3902
Bromoform	NA	NA	NA	NA	NA	NA	1.00	1445.00000	0.07970
Chlorobenzene	NA	NA	NA	0.400	5666.00000	0.7798	1.00	15493.0000	0.8543
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	4756.00000	0.2020
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	1393.00000	0.1917	1.00	4973.00000	0.2742
1,1,1-Trichloroethane	NA	NA	NA	0.400	2041.00000	0.2161	1.00	7523.00000	0.3195
1,1,2-Trichloroethane	NA	NA	NA	0.400	1035.00000	0.1424	1.00	2876.00000	0.1586
1,1-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	7253.00000	0.3080
1,2,3-Trichlorobenzene	0.300	2200.00000	0.7451	0.400	2591.00000	0.6580	1.00	6841.00000	0.6905
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	841.000000	0.08490
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	3070.00000	0.7797	1.00	7772.00000	0.7844
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	7924.00000	2.012	1.00	22576.0000	2.279
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	1014.00000	0.1396	1.00	2930.00000	0.1616
1,2-Dichlorobenzene	0.300	3284.00000	1.112	0.400	4119.00000	1.046	1.00	11300.0000	1.141
1,2-Dichloroethane	NA	NA	NA	0.400	2054.00000	0.2174	1.00	5942.00000	0.2523
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	7074.00000	1.797	1.00	21605.0000	2.181
1,3-Dichlorobenzene	NA	NA	NA	0.400	4796.00000	1.218	1.00	12653.0000	1.277
1,3-Dichloropropane	NA	NA	NA	0.400	2005.00000	0.2759	1.00	5870.00000	0.3237
1,4-Dichlorobenzene	0.300	4052.00000	1.372	0.400	4709.00000	1.196	1.00	13090.0000	1.321
2,2-Dichloropropane	NA	NA	NA	NA	NA	NA	1.00	7922.00000	0.3364
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	NA	NA	NA	0.400	6473.00000	1.644	1.00	18513.0000	1.869
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	7102.00000	1.804	1.00	18781.0000	1.896
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	8511.00000	0.9010	1.00	21734.0000	0.9229
Bromobenzene	0.300	1543.00000	0.5226	0.400	2343.00000	0.5950	1.00	6218.00000	0.6276
Bromochloromethane	NA	NA	NA	0.400	767.000000	0.08120	1.00	2708.00000	0.1150
Bromodichloromethane	NA	NA	NA	0.400	1858.00000	0.1967	1.00	5353.00000	0.2273
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	2999.00000	0.1274
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	12869.0000	0.5465
Carbon Tetrachloride	NA	NA	NA	NA	NA	NA	1.00	5760.00000	0.2446

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 988498
Report generated 01/07/2008 12:19

INITIAL CALIBRATION DATA

Login Number: L0712635
Instrument ID: HPMS8
Analytical Method: 8260B
Initial Calibration Date: 01-DEC-07 16:25
Column ID: F

Analyte	WG257292-05			WG257292-06			WG257292-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	14626.0000	0.3117	5.00	38741.0000	0.3286	20.0	141452.000	0.3035
1,2-Dichloropropane	2.00	10256.0000	0.2186	5.00	24516.0000	0.2080	20.0	96304.0000	0.2066
Chloroform	2.00	18092.0000	0.3856	5.00	44174.0000	0.3747	20.0	168110.000	0.3606
Ethylbenzene	2.00	18520.0000	0.5134	5.00	42957.0000	0.4763	20.0	159476.000	0.4386
Toluene	2.00	45209.0000	1.253	5.00	104976.000	1.164	20.0	393891.000	1.083
Vinyl Chloride	2.00	4909.00000	0.1046	5.00	13380.0000	0.1135	20.0	48774.0000	0.1046
1,1,2,2-Tetrachloroethane	2.00	7985.00000	0.4035	5.00	16289.0000	0.3340	20.0	69528.0000	0.3492
1,1-Dichloroethane	2.00	18572.0000	0.3958	5.00	46875.0000	0.3976	20.0	176226.000	0.3781
Bromoform	2.00	4512.00000	0.1251	5.00	9791.00000	0.1086	20.0	45788.0000	0.1259
Chlorobenzene	2.00	34369.0000	0.9528	5.00	76022.0000	0.8430	20.0	286901.000	0.7890
Chloromethane	2.00	8409.00000	0.1792	5.00	18904.0000	0.1604	20.0	64496.0000	0.1384
1,1,1,2-Tetrachloroethane	2.00	11589.0000	0.3213	5.00	25578.0000	0.2836	20.0	100229.000	0.2756
1,1,1-Trichloroethane	2.00	15370.0000	0.3276	5.00	39292.0000	0.3333	20.0	149625.000	0.3210
1,1,2-Trichloroethane	2.00	7373.00000	0.2044	5.00	15208.0000	0.1686	20.0	62529.0000	0.1720
1,1-Dichloropropene	2.00	13710.0000	0.2922	5.00	35710.0000	0.3029	20.0	133470.000	0.2863
1,2,3-Trichlorobenzene	2.00	14298.0000	0.7225	5.00	30805.0000	0.6316	20.0	124285.000	0.6242
1,2,3-Trichloropropane	2.00	2541.00000	0.1284	5.00	5059.00000	0.1037	20.0	22014.0000	0.1106
1,2,4-Trichlorobenzene	2.00	17554.0000	0.8871	5.00	37626.0000	0.7714	20.0	145890.000	0.7327
1,2,4-Trimethylbenzene	2.00	50372.0000	2.546	5.00	112027.000	2.297	20.0	422890.000	2.124
1,2-Dibromo-3-Chloropropane	2.00	1322.00000	0.06680	5.00	2789.00000	0.05720	20.0	12444.0000	0.06250
1,2-Dibromoethane	2.00	7319.00000	0.2029	5.00	15640.0000	0.1734	20.0	68056.0000	0.1872
1,2-Dichlorobenzene	2.00	26092.0000	1.319	5.00	55688.0000	1.142	20.0	218052.000	1.095
1,2-Dichloroethane	2.00	12373.0000	0.2637	5.00	29492.0000	0.2502	20.0	116729.000	0.2504
1,3,5-Trimethylbenzene	2.00	47254.0000	2.388	5.00	107195.000	2.198	20.0	410001.000	2.059
1,3-Dichlorobenzene	2.00	29838.0000	1.508	5.00	64544.0000	1.323	20.0	246569.000	1.238
1,3-Dichloropropane	2.00	13686.0000	0.3794	5.00	28665.0000	0.3179	20.0	116532.000	0.3205
1,4-Dichlorobenzene	2.00	29635.0000	1.498	5.00	64144.0000	1.315	20.0	246612.000	1.239
2,2-Dichloropropane	2.00	15474.0000	0.3298	5.00	40186.0000	0.3409	20.0	154982.000	0.3325
2-Butanone	NA	NA	NA	5.00	4655.00000	0.03950	20.0	20681.0000	0.04440
2-Chloroethyl Vinyl Ether	2.00	3537.00000	0.07540	5.00	8530.00000	0.07240	20.0	41719.0000	0.08950
2-Chlorotoluene	2.00	41698.0000	2.107	5.00	89603.0000	1.837	20.0	351329.000	1.765
2-Hexanone	NA	NA	NA	5.00	3382.00000	0.03750	20.0	18134.0000	0.04990
4-Chlorotoluene	2.00	43838.0000	2.215	5.00	94306.0000	1.934	20.0	343288.000	1.724
4-Methyl-2-Pentanone	NA	NA	NA	5.00	3764.00000	0.03190	20.0	19365.0000	0.04150
Acetone	NA	NA	NA	5.00	3196.00000	0.02710	20.0	13016.0000	0.02790
Benzene	2.00	43710.0000	0.9316	5.00	102818.000	0.8722	20.0	386620.000	0.8294
Bromobenzene	2.00	14920.0000	0.7540	5.00	31142.0000	0.6385	20.0	119498.000	0.6002
Bromochloromethane	2.00	5780.00000	0.1232	5.00	14141.0000	0.1200	20.0	56406.0000	0.1210
Bromodichloromethane	2.00	12832.0000	0.2735	5.00	29918.0000	0.2538	20.0	123560.000	0.2651
Bromomethane	2.00	6067.00000	0.1293	5.00	16592.0000	0.1408	20.0	61997.0000	0.1330
Carbon Disulfide	2.00	22581.0000	0.4813	5.00	61406.0000	0.5209	20.0	270611.000	0.5805
Carbon Tetrachloride	2.00	12797.0000	0.2727	5.00	34291.0000	0.2909	20.0	134004.000	0.2875

INITIAL CALIBRATION DATA

Login Number: L0712635
Instrument ID: HPMS8
Analytical Method: 8260B
Initial Calibration Date: 01-DEC-07 16:25
Column ID: F

Analyte	WG257292-08			WG257292-09			WG257292-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	370225.000	0.3213	100	719892.000	0.3143	200	1316027.00	0.3020
1,2-Dichloropropane	50.0	237432.000	0.2061	100	446463.000	0.1949	200	803557.000	0.1844
Chloroform	50.0	421844.000	0.3661	100	807898.000	0.3527	200	1433908.00	0.3291
Ethylbenzene	50.0	368757.000	0.4088	100	647735.000	0.3627	200	1058720.00	0.3053
Toluene	50.0	947289.000	1.050	100	1716957.00	0.9613	200	2909189.00	0.8388
Vinyl Chloride	50.0	117316.000	0.1018	100	210699.000	0.09200	200	403963.000	0.09270
1,1,2,2-Tetrachloroethane	50.0	171077.000	0.3420	100	324420.000	0.3289	200	607878.000	0.3189
1,1-Dichloroethane	50.0	445319.000	0.3865	100	856236.000	0.3738	200	1550751.00	0.3559
Bromoform	50.0	119543.000	0.1325	100	231481.000	0.1296	200	436909.000	0.1260
Chlorobenzene	50.0	679586.000	0.7534	100	1196384.00	0.6699	200	1999920.00	0.5767
Chloromethane	50.0	146881.000	0.1275	100	295085.000	0.1288	NA	NA	NA
1,1,1,2-Tetrachloroethane	50.0	236484.000	0.2622	100	415494.000	0.2326	NA	NA	NA
1,1,1-Trichloroethane	50.0	385567.000	0.3346	100	734051.000	0.3204	200	1356287.00	0.3113
1,1,2-Trichloroethane	50.0	150438.000	0.1668	100	281970.000	0.1579	200	526612.000	0.1518
1,1-Dichloropropene	50.0	342558.000	0.2973	100	648920.000	0.2833	200	1175694.00	0.2698
1,2,3-Trichlorobenzene	50.0	297334.000	0.5944	100	540972.000	0.5485	200	933931.000	0.4900
1,2,3-Trichloropropane	50.0	54333.0000	0.1086	100	105862.000	0.1073	200	200622.000	0.1053
1,2,4-Trichlorobenzene	50.0	350466.000	0.7006	100	637667.000	0.6465	200	1094683.00	0.5743
1,2,4-Trimethylbenzene	50.0	1033327.00	2.066	100	1870012.00	1.896	200	3159037.00	1.657
1,2-Dibromo-3-Chloropropane	50.0	32874.0000	0.06570	100	65224.0000	0.06610	200	125395.000	0.06580
1,2-Dibromoethane	50.0	166360.000	0.1844	100	317008.000	0.1775	200	592071.000	0.1707
1,2-Dichlorobenzene	50.0	528335.000	1.056	100	960421.000	0.9737	200	1655084.00	0.8683
1,2-Dichloroethane	50.0	286658.000	0.2488	100	540940.000	0.2361	200	956954.000	0.2196
1,3,5-Trimethylbenzene	50.0	1005267.00	2.010	100	1832658.00	1.858	200	3134933.00	1.645
1,3-Dichlorobenzene	50.0	590854.000	1.181	100	1070220.00	1.085	200	1836985.00	0.9637
1,3-Dichloropropane	50.0	285211.000	0.3162	100	535899.000	0.3001	200	990697.000	0.2857
1,4-Dichlorobenzene	50.0	590483.000	1.180	100	1068173.00	1.083	200	1800725.00	0.9447
2,2-Dichloropropane	50.0	395850.000	0.3436	100	757080.000	0.3305	200	1412308.00	0.3241
2-Butanone	50.0	51565.0000	0.04480	100	102444.000	0.04470	200	204909.000	0.04700
2-Chloroethyl Vinyl Ether	50.0	107856.000	0.09360	100	203483.000	0.08880	200	392398.000	0.09010
2-Chlorotoluene	50.0	858499.000	1.716	100	1690284.00	1.714	200	2421980.00	1.271
2-Hexanone	50.0	45767.0000	0.05070	100	88605.0000	0.04960	200	172029.000	0.04960
4-Chlorotoluene	50.0	819988.000	1.639	100	1350573.00	1.369	NA	NA	NA
4-Methyl-2-Pentanone	50.0	48985.0000	0.04250	100	95811.0000	0.04180	200	184978.000	0.04250
Acetone	50.0	34839.0000	0.03020	100	65267.0000	0.02850	200	127726.000	0.02930
Benzene	50.0	935584.000	0.8120	100	1714646.00	0.7485	200	2930170.00	0.6725
Bromobenzene	50.0	289382.000	0.5785	100	533992.000	0.5414	200	944137.000	0.4953
Bromochloromethane	50.0	140500.000	0.1219	100	265314.000	0.1158	200	462784.000	0.1062
Bromodichloromethane	50.0	309565.000	0.2687	100	587597.000	0.2565	200	1081618.00	0.2482
Bromomethane	50.0	156808.000	0.1361	100	316597.000	0.1382	200	611184.000	0.1403
Carbon Disulfide	50.0	692289.000	0.6008	100	1300166.00	0.5676	200	2213726.00	0.5080
Carbon Tetrachloride	50.0	347149.000	0.3013	100	650456.000	0.2839	200	1183303.00	0.2716

INITIAL CALIBRATION DATA

00114900

Login Number: L0712635
Analytical Method: 8260B
Instrument ID: HPMS8
Initial Calibration Date: 01-DEC-07 16:25
Column ID: F

Analyte	WG257292-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	297220.000	0.04240
2-Chloroethyl Vinyl Ether	NA	NA	NA
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	260089.000	0.04830
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	269771.000	0.03840
Acetone	300	189595.000	0.02700
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 988498
Report generated 01/07/2008 12:19

Login Number: L0712635 **Instrument ID:** HPMS8

Analytical Method: 8260B **Initial Calibration Date:** 01-DEC-07 16:25

Column ID: F

Analyte	WG257292-02			WG257292-03			WG257292-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	3254.00000	0.1382
Dibromochloromethane	NA	NA	NA	0.400	805.000000	0.1108	1.00	3302.00000	0.1821
Dibromomethane	NA	NA	NA	NA	NA	NA	1.00	1953.00000	0.08290
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	4960.00000	0.2106
Hexachlorobutadiene	NA	NA	NA	0.400	670.000000	0.1702	1.00	2669.00000	0.2694
Isopropylbenzene	NA	NA	NA	0.400	7693.00000	1.059	1.00	24907.0000	1.374
Methylene Chloride	NA	NA	NA	NA	NA	NA	1.00	9039.00000	0.3838
Naphthalene	NA	NA	NA	0.400	4901.00000	1.245	1.00	12601.0000	1.272
Styrene	NA	NA	NA	0.400	5173.00000	0.7119	1.00	14685.0000	0.8098
Tetrachloroethene	NA	NA	NA	0.400	1058.00000	0.1456	1.00	4346.00000	0.2397
Trichloroethene	NA	NA	NA	0.400	1474.00000	0.1560	1.00	5409.00000	0.2297
Trichlorofluoromethane	NA	NA	NA	NA	NA	NA	1.00	8560.00000	0.3635
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	1612.00000	0.1706	1.00	5057.00000	0.2147
cis-1,3-Dichloropropene	NA	NA	NA	0.400	2542.00000	0.2691	1.00	6809.00000	0.2891
m-,p-Xylene	NA	NA	NA	0.800	7221.00000	0.4969	2.00	21627.0000	0.5963
n-Butylbenzene	NA	NA	NA	0.400	6262.00000	1.590	1.00	19463.0000	1.964
n-Propylbenzene	NA	NA	NA	0.400	8918.00000	2.265	1.00	29067.0000	2.934
o-Xylene	NA	NA	NA	0.400	3597.00000	0.4950	1.00	10273.0000	0.5665
p-Isopropyltoluene	NA	NA	NA	0.400	7091.00000	1.801	1.00	21921.0000	2.213
sec-Butylbenzene	NA	NA	NA	0.400	7714.00000	1.959	1.00	25928.0000	2.617
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	1.00	4655.00000	0.4698
trans-1,2-Dichloroethene	NA	NA	NA	0.400	2021.00000	0.2139	1.00	7287.00000	0.3094
trans-1,3-Dichloropropene	NA	NA	NA	0.400	1923.00000	0.2647	1.00	5958.00000	0.3285

INITIAL CALIBRATION DATA

Login Number: L0712635
Instrument ID: HPMS8
Analytical Method: 8260B
Initial Calibration Date: 01-DEC-07 16:25
Column ID: F

Analyte	WG257292-05			WG257292-06			WG257292-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	7063.00000	0.1505	5.00	18372.0000	0.1559	20.0	70442.0000	0.1511
Dibromochloromethane	2.00	8723.00000	0.2418	5.00	18862.0000	0.2092	20.0	83823.0000	0.2305
Dibromomethane	2.00	4800.00000	0.1023	5.00	11098.0000	0.09410	20.0	44936.0000	0.09640
Dichlorodifluoromethane	2.00	10118.0000	0.2156	5.00	26375.0000	0.2237	20.0	103219.000	0.2214
Hexachlorobutadiene	2.00	5697.00000	0.2879	5.00	13928.0000	0.2856	20.0	52534.0000	0.2638
Isopropylbenzene	2.00	53851.0000	1.493	5.00	122840.000	1.362	20.0	466782.000	1.284
Methylene Chloride	2.00	13721.0000	0.2924	5.00	28077.0000	0.2382	20.0	93157.0000	0.1998
Naphthalene	2.00	30008.0000	1.516	5.00	63144.0000	1.295	20.0	261734.000	1.315
Styrene	2.00	35341.0000	0.9798	5.00	79438.0000	0.8809	20.0	315073.000	0.8665
Tetrachloroethene	2.00	9193.00000	0.2549	5.00	21905.0000	0.2429	20.0	82861.0000	0.2279
Trichloroethene	2.00	11204.0000	0.2388	5.00	27378.0000	0.2322	20.0	104880.000	0.2250
Trichlorofluoromethane	2.00	17738.0000	0.3781	5.00	46618.0000	0.3955	20.0	178429.000	0.3828
Vinyl Acetate	NA	NA	NA	5.00	13536.0000	0.1148	20.0	63171.0000	0.1355
cis-1,2-Dichloroethene	2.00	10636.0000	0.2267	5.00	26142.0000	0.2218	20.0	99661.0000	0.2138
cis-1,3-Dichloropropene	2.00	15804.0000	0.3368	5.00	36893.0000	0.3130	20.0	152569.000	0.3273
m-,p-Xylene	4.00	46929.0000	0.6505	10.0	105551.000	0.5852	40.0	387376.000	0.5327
n-Butylbenzene	2.00	40559.0000	2.050	5.00	94869.0000	1.945	20.0	354460.000	1.780
n-Propylbenzene	2.00	62131.0000	3.140	5.00	144683.000	2.966	20.0	542118.000	2.723
o-Xylene	2.00	22902.0000	0.6349	5.00	51278.0000	0.5686	20.0	197530.000	0.5432
p-Isopropyltoluene	2.00	47810.0000	2.416	5.00	110731.000	2.270	20.0	416069.000	2.090
sec-Butylbenzene	2.00	55520.0000	2.806	5.00	128541.000	2.635	20.0	483143.000	2.427
tert-Butylbenzene	2.00	10130.0000	0.5119	5.00	23874.0000	0.4895	20.0	89374.0000	0.4489
trans-1,2-Dichloroethene	2.00	14691.0000	0.3131	5.00	38193.0000	0.3240	20.0	141716.000	0.3040
trans-1,3-Dichloropropene	2.00	13825.0000	0.3833	5.00	30545.0000	0.3387	20.0	129501.000	0.3561

INITIAL CALIBRATION DATA

00114903

Login Number: L0712635
Instrument ID: HPMS8
Analytical Method: 8260B
Initial Calibration Date: 01-DEC-07 16:25
Column ID: F

Analyte	WG257292-08			WG257292-09			WG257292-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	177462.000	0.1540	100	352072.000	0.1537	200	675591.000	0.1550
Dibromochloromethane	50.0	213121.000	0.2363	100	408803.000	0.2289	200	769031.000	0.2217
Dibromomethane	50.0	109188.000	0.09480	100	208990.000	0.09120	200	378046.000	0.08680
Dichlorodifluoromethane	50.0	252358.000	0.2190	100	486103.000	0.2122	200	924619.000	0.2122
Hexachlorobutadiene	50.0	135780.000	0.2714	100	263547.000	0.2672	200	490449.000	0.2573
Isopropylbenzene	50.0	1141502.00	1.266	100	2069099.00	1.159	200	3541868.00	1.021
Methylene Chloride	50.0	224571.000	0.1949	100	418938.000	0.1829	200	762365.000	0.1750
Naphthalene	50.0	639176.000	1.278	100	1183717.00	1.200	200	2099227.00	1.101
Styrene	50.0	761288.000	0.8440	100	1373635.00	0.7691	200	2337568.00	0.6740
Tetrachloroethene	50.0	207023.000	0.2295	100	382063.000	0.2139	200	655518.000	0.1890
Trichloroethene	50.0	261821.000	0.2272	100	489146.000	0.2135	200	869883.000	0.1996
Trichlorofluoromethane	50.0	436275.000	0.3786	100	854604.000	0.3731	200	1592912.00	0.3656
Vinyl Acetate	50.0	157988.000	0.1371	100	300102.000	0.1310	200	518535.000	0.1190
cis-1,2-Dichloroethene	50.0	249687.000	0.2167	100	474470.000	0.2071	200	831258.000	0.1908
cis-1,3-Dichloropropene	50.0	374529.000	0.3250	100	703766.000	0.3072	200	1265596.00	0.2904
m-,p-Xylene	100	907349.000	0.5030	200	1554166.00	0.4351	NA	NA	NA
n-Butylbenzene	50.0	877152.000	1.753	100	1620048.00	1.643	200	2800694.00	1.469
n-Propylbenzene	50.0	1324418.00	2.648	100	2393162.00	2.426	200	4065808.00	2.133
o-Xylene	50.0	471138.000	0.5223	100	848163.000	0.4749	200	1440997.00	0.4155
p-Isopropyltoluene	50.0	1042665.00	2.084	100	1888093.00	1.914	200	3230649.00	1.695
sec-Butylbenzene	50.0	1209497.00	2.418	100	2199604.00	2.230	200	3780984.00	1.984
tert-Butylbenzene	50.0	221985.000	0.4437	100	406289.000	0.4119	200	705437.000	0.3701
trans-1,2-Dichloroethene	50.0	357391.000	0.3102	100	685508.000	0.2992	200	1208601.00	0.2774
trans-1,3-Dichloropropene	50.0	317324.000	0.3518	100	596035.000	0.3337	200	1095971.00	0.3160

INITIAL CALIBRATION DATA

Login Number: L0712635
Analytical Method: 8260B
Instrument ID: HPMS8
Initial Calibration Date: 01-DEC-07 16:25
Column ID: F

Analyte	WG257292-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

Login Number:L0712635 Run Date:12/14/2007 Sample ID:WG258532-12
Instrument ID:HPMS10 Run Time:18:41 Method:8260B
File ID:10M61300 Analyst:MES QC Key:STD
ICal Workgroup:WG258532 Cal ID:HPMS10 - 14-DEC-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	20.6	ug/L	0.634	2.80	30	
1,1-Dichloroethene	CCC	20.0	20.0	ug/L	0.302	0.100	30	
1,2-Dichloropropane	CCC	20.0	21.3	ug/L	0.303	6.50	30	
Ethylbenzene	CCC	20.0	20.8	ug/L	0.570	4.20	30	
Toluene	CCC	20.0	21.0	ug/L	1.48	5.00	30	
Vinyl Chloride	CCC	20.0	19.6	ug/L	0.260	2.20	30	
Bromoform	SPCC	20.0	16.7	ug/L	0.189	16.7	30	
Chlorobenzene	SPCC	20.0	20.5	ug/L	1.07	2.50	30	
Chloromethane	SPCC	20.0	19.6	ug/L	0.303	1.80	30	
1,1-Dichloroethane	SPCC	20.0	20.7	ug/L	0.616	3.30	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	21.7	ug/L	0.396	8.40	30	
Acetone		20.0	20.6	ug/L	0.0514	3.20	30	
Benzene		20.0	20.9	ug/L	1.23	4.70	30	
Bromobenzene		20.0	21.5	ug/L	0.847	7.40	30	
Bromochloromethane		20.0	19.5	ug/L	0.172	2.50	30	
Bromodichloromethane		20.0	21.5	ug/L	0.447	7.70	30	
Bromomethane		20.0	21.4	ug/L	0.276	6.90	30	
2-Butanone		20.0	22.0	ug/L	0.0731	10.0	30	
n-Butylbenzene		20.0	21.0	ug/L	2.15	4.90	30	
sec-Butylbenzene		20.0	20.9	ug/L	3.03	4.70	30	
tert-Butylbenzene		20.0	21.0	ug/L	0.574	4.80	30	
Carbon Disulfide		20.0	18.7	ug/L	0.810	6.70	30	
Carbon Tetrachloride		20.0	18.5	ug/L	0.565	7.60	30	
Dibromochloromethane		20.0	18.0	ug/L	0.346	10.1	30	
Chloroethane		20.0	20.8	ug/L	0.243	4.10	30	
2-Chloroethyl Vinyl Ether		20.0	17.5	ug/L	0.118	12.3	30	
2-Chlorotoluene		20.0	23.0	ug/L	2.41	15.0	30	
4-Chlorotoluene		20.0	17.5	ug/L	1.86	12.3	30	
1,2-Dibromo-3-Chloropropane		20.0	19.1	ug/L	0.0825	4.70	30	
1,2-Dibromoethane		20.0	22.3	ug/L	0.276	11.5	30	
Dibromomethane		20.0	20.6	ug/L	0.163	2.80	30	
1,2-Dichlorobenzene		20.0	20.2	ug/L	1.40	0.800	30	
1,3-Dichlorobenzene		20.0	20.2	ug/L	1.56	1.00	30	
1,4-Dichlorobenzene		20.0	19.9	ug/L	1.60	0.500	30	
Dichlorodifluoromethane		20.0	21.4	ug/L	0.482	7.20	30	
1,2-Dichloroethane		20.0	20.3	ug/L	0.459	1.30	30	
cis-1,2-Dichloroethene		20.0	21.7	ug/L	0.356	8.60	30	
trans-1,2-Dichloroethene		20.0	20.9	ug/L	0.328	4.60	30	
1,3-Dichloropropane		20.0	21.2	ug/L	0.438	5.80	30	
2,2-Dichloropropane		20.0	19.4	ug/L	0.542	3.00	30	
cis-1,3-Dichloropropene		20.0	21.1	ug/L	0.470	5.30	30	
trans-1,3-Dichloropropene		20.0	19.2	ug/L	0.449	4.00	30	

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 988499
Report generated 01/07/2008 12:19

Login Number:L0712635 Run Date:12/14/2007 Sample ID:WG258532-12
Instrument ID:HPMS10 Run Time:18:41 Method:8260B
File ID:10M61300 Analyst:MES QC Key:STD
ICal Workgroup:WG258532 Cal ID:HPMS10 - 14-DEC-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	20.2	ug/L	0.462	0.900	30	
2-Hexanone		20.0	20.0	ug/L	0.105	0	30	
Hexachlorobutadiene		20.0	20.4	ug/L	0.415	1.90	30	
Isopropylbenzene		20.0	19.6	ug/L	1.57	2.10	30	
p-Isopropyltoluene		20.0	20.8	ug/L	2.66	3.90	30	
4-Methyl-2-Pentanone		20.0	21.2	ug/L	0.0635	6.10	30	
Methylene Chloride		20.0	19.9	ug/L	0.318	0.700	30	
Naphthalene		20.0	18.6	ug/L	1.33	7.10	30	
n-Propylbenzene		20.0	21.1	ug/L	3.27	5.30	30	
Styrene		20.0	19.3	ug/L	1.11	3.50	30	
1,1,1,2-Tetrachloroethane		20.0	21.6	ug/L	0.435	7.80	30	
Tetrachloroethene		20.0	21.4	ug/L	0.374	7.10	30	
1,2,3-Trichlorobenzene		20.0	21.3	ug/L	0.768	6.70	30	
1,2,4-Trichlorobenzene		20.0	20.9	ug/L	0.931	4.40	30	
1,1,1-Trichloroethane		20.0	20.7	ug/L	0.610	3.60	30	
1,1,2-Trichloroethane		20.0	21.6	ug/L	0.241	7.90	30	
Trichloroethene		20.0	21.7	ug/L	0.390	8.70	30	
Trichlorofluoromethane		20.0	15.7	ug/L	0.605	21.4	30	
1,2,3-Trichloropropane		20.0	20.5	ug/L	0.155	2.70	30	
1,2,4-Trimethylbenzene		20.0	21.9	ug/L	2.78	9.50	30	
1,3,5-Trimethylbenzene		20.0	21.5	ug/L	2.61	7.50	30	
Vinyl Acetate		20.0	15.5	ug/L	0.212	22.5	40	
o-Xylene		20.0	21.4	ug/L	0.666	7.00	30	
m-,p-Xylene		40.0	41.5	ug/L	0.693	3.70	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 988499
Report generated 01/07/2008 12:19

Login Number:L0712635 Run Date:12/01/2007 Sample ID:WG257292-12
Instrument ID:HPMS8 Run Time:17:54 Method:8260B
File ID:8M342101 Analyst:CMS QC Key:STD
ICal Workgroup:WG257292 Cal ID: HPMS8 - 01-DEC-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	20.6	ug/L	0.365	2.80	30	
1,1-Dichloroethene	CCC	20.0	20.4	ug/L	0.308	2.00	30	
1,2-Dichloropropane	CCC	20.0	20.9	ug/L	0.210	4.60	30	
Ethylbenzene	CCC	20.0	21.9	ug/L	0.464	9.40	30	
Toluene	CCC	20.0	20.9	ug/L	1.12	4.30	30	
Vinyl Chloride	CCC	20.0	20.1	ug/L	0.104	0.300	30	
Bromoform	SPCC	20.0	18.7	ug/L	0.122	6.40	30	
Chlorobenzene	SPCC	20.0	21.0	ug/L	0.816	5.00	30	
Chloromethane	SPCC	20.0	21.3	ug/L	0.141	6.60	30	
1,1-Dichloroethane	SPCC	20.0	20.0	ug/L	0.376	0.200	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	20.7	ug/L	0.341	3.30	30	
Acetone		20.0	18.4	ug/L	0.0261	8.10	30	
Benzene		20.0	20.5	ug/L	0.856	2.30	30	
Bromobenzene		20.0	21.0	ug/L	0.623	4.80	30	
Bromochloromethane		20.0	21.2	ug/L	0.120	5.90	30	
Bromodichloromethane		20.0	22.0	ug/L	0.273	9.80	30	
Bromomethane		20.0	22.0	ug/L	0.149	10.0	30	
2-Butanone		20.0	19.6	ug/L	0.0429	2.00	30	
n-Butylbenzene		20.0	21.3	ug/L	1.89	6.50	30	
sec-Butylbenzene		20.0	21.7	ug/L	2.59	8.70	30	
tert-Butylbenzene		20.0	21.1	ug/L	0.473	5.30	30	
Carbon Disulfide		20.0	16.9	ug/L	0.460	15.4	30	
Carbon Tetrachloride		20.0	21.4	ug/L	0.298	6.90	30	
Dibromochloromethane		20.0	19.5	ug/L	0.228	2.50	30	
Chloroethane		20.0	20.5	ug/L	0.155	2.40	30	
2-Chloroethyl Vinyl Ether		20.0	18.7	ug/L	0.0795	6.40	30	
2-Chlorotoluene		20.0	20.7	ug/L	1.80	3.70	30	
4-Chlorotoluene		20.0	20.2	ug/L	1.82	1.10	30	
1,2-Dibromo-3-Chloropropane		20.0	18.7	ug/L	0.0597	6.70	30	
1,2-Dibromoethane		20.0	21.3	ug/L	0.186	6.50	30	
Dibromomethane		20.0	20.4	ug/L	0.0944	1.90	30	
1,2-Dichlorobenzene		20.0	20.6	ug/L	1.12	3.10	30	
1,3-Dichlorobenzene		20.0	20.6	ug/L	1.26	2.90	30	
1,4-Dichlorobenzene		20.0	20.1	ug/L	1.25	0.700	30	
Dichlorodifluoromethane		20.0	21.8	ug/L	0.236	9.10	30	
1,2-Dichloroethane		20.0	20.0	ug/L	0.242	0	30	
cis-1,2-Dichloroethene		20.0	20.9	ug/L	0.217	4.40	30	
trans-1,2-Dichloroethene		20.0	20.4	ug/L	0.300	1.90	30	
1,3-Dichloropropane		20.0	20.6	ug/L	0.325	3.20	30	
2,2-Dichloropropane		20.0	19.0	ug/L	0.318	4.90	30	
cis-1,3-Dichloropropene		20.0	21.1	ug/L	0.324	5.30	30	
trans-1,3-Dichloropropene		20.0	19.2	ug/L	0.321	3.90	30	

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 988499
Report generated 01/07/2008 12:19

Login Number:L0712635 Run Date:12/01/2007 Sample ID:WG257292-12
Instrument ID:HPMS8 Run Time:17:54 Method:8260B
File ID:8M342101 Analyst:CMS QC Key:STD
ICal Workgroup:WG257292 Cal ID: HPMS8 - 01-DEC-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	20.9	ug/L	0.304	4.50	30	
2-Hexanone		20.0	18.6	ug/L	0.0442	7.20	30	
Hexachlorobutadiene		20.0	21.8	ug/L	0.283	9.10	30	
Isopropylbenzene		20.0	20.1	ug/L	1.26	0.600	30	
p-Isopropyltoluene		20.0	21.1	ug/L	2.18	5.60	30	
4-Methyl-2-Pentanone		20.0	18.3	ug/L	0.0363	8.60	30	
Methylene Chloride		20.0	19.7	ug/L	0.198	1.40	30	
Naphthalene		20.0	20.1	ug/L	1.28	0.300	30	
n-Propylbenzene		20.0	21.6	ug/L	2.86	7.90	30	
Styrene		20.0	22.3	ug/L	0.912	11.6	30	
1,1,1,2-Tetrachloroethane		20.0	20.4	ug/L	0.284	2.10	30	
Tetrachloroethene		20.0	20.9	ug/L	0.244	4.30	30	
1,2,3-Trichlorobenzene		20.0	19.2	ug/L	0.607	4.20	30	
1,2,4-Trichlorobenzene		20.0	20.0	ug/L	0.736	0.100	30	
1,1,1-Trichloroethane		20.0	21.9	ug/L	0.340	9.40	30	
1,1,2-Trichloroethane		20.0	21.0	ug/L	0.174	5.00	30	
Trichloroethene		20.0	22.4	ug/L	0.241	11.9	30	
Trichlorofluoromethane		20.0	16.0	ug/L	0.301	20.2	30	
1,2,3-Trichloropropane		20.0	20.5	ug/L	0.109	2.30	30	
1,2,4-Trimethylbenzene		20.0	22.1	ug/L	2.34	10.7	30	
1,3,5-Trimethylbenzene		20.0	21.8	ug/L	2.20	9.10	30	
Vinyl Acetate		20.0	16.4	ug/L	0.105	17.9	40	
o-Xylene		20.0	21.6	ug/L	0.571	8.20	30	
m-,p-Xylene		40.0	41.3	ug/L	0.561	3.30	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CONTINUING CALIBRATION VERIFICATION (CCV)

00114909

Login Number:L0712635 Run Date:12/28/2007 Sample ID:WG259578-02
Instrument ID:HPMS10 Run Time:09:19 Method:8260B
File ID:10M61605 Analyst:MES QC Key:STD
Workgroup (AAB#):WG259579 Cal ID:HPMS10 - 14-DEC-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	51.5	ug/L	0.635	2.98	20	
1,1-Dichloroethene	CCC	50.0	49.2	ug/L	0.295	1.66	20	
1,2-Dichloropropane	CCC	50.0	54.4	ug/L	0.310	8.75	20	
Ethylbenzene	CCC	50.0	49.1	ug/L	0.538	1.75	20	
Toluene	CCC	50.0	49.2	ug/L	1.39	1.51	20	
Vinyl Chloride	CCC	50.0	45.2	ug/L	0.241	9.50	20	
Bromoform	SPCC	50.0	39.5	ug/L	0.183	20.9	40	
Chlorobenzene	SPCC	50.0	46.6	ug/L	0.979	6.74	40	
Chloromethane	SPCC	50.0	47.7	ug/L	0.295	4.65	40	
1,1-Dichloroethane	SPCC	50.0	53.8	ug/L	0.642	7.60	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	51.7	ug/L	0.377	3.33	40	
Acetone		50.0	46.1	ug/L	0.0459	7.76	40	
Benzene		50.0	51.9	ug/L	1.22	3.81	40	
Bromobenzene		50.0	49.4	ug/L	0.780	1.16	40	
Bromochloromethane		50.0	47.2	ug/L	0.163	5.58	40	
Bromodichloromethane		50.0	51.7	ug/L	0.430	3.48	40	
Bromomethane		50.0	46.0	ug/L	0.238	7.98	40	
2-Butanone		50.0	42.9	ug/L	0.0570	14.2	40	
n-Butylbenzene		50.0	53.1	ug/L	2.18	6.20	40	
sec-Butylbenzene		50.0	53.4	ug/L	3.09	6.76	40	
tert-Butylbenzene		50.0	52.2	ug/L	0.571	4.35	40	
Carbon Disulfide		50.0	54.6	ug/L	0.948	9.29	40	
Carbon Tetrachloride		50.0	45.2	ug/L	0.547	9.70	40	
Dibromochloromethane		50.0	41.4	ug/L	0.321	17.1	40	
Chloroethane		50.0	52.8	ug/L	0.246	5.51	40	
2-Chloroethyl Vinyl Ether		50.0	32.8	ug/L	0.0900	34.5	40	
2-Chlorotoluene		50.0	57.1	ug/L	2.39	14.2	40	
4-Chlorotoluene		50.0	45.2	ug/L	1.92	9.55	40	
1,2-Dibromo-3-Chloropropane		50.0	37.3	ug/L	0.0663	25.3	40	
1,2-Dibromoethane		50.0	47.8	ug/L	0.237	4.45	40	
Dibromomethane		50.0	48.7	ug/L	0.154	2.67	40	
1,2-Dichlorobenzene		50.0	46.5	ug/L	1.29	7.02	40	
1,3-Dichlorobenzene		50.0	48.7	ug/L	1.51	2.58	40	
1,4-Dichlorobenzene		50.0	47.0	ug/L	1.51	6.04	40	
Dichlorodifluoromethane		50.0	44.2	ug/L	0.398	11.6	40	
1,2-Dichloroethane		50.0	48.9	ug/L	0.443	2.26	40	
cis-1,2-Dichloroethene		50.0	54.6	ug/L	0.358	9.28	40	
trans-1,2-Dichloroethene		50.0	53.7	ug/L	0.337	7.35	40	
1,3-Dichloropropane		50.0	47.6	ug/L	0.394	4.78	40	
2,2-Dichloropropane		50.0	51.4	ug/L	0.574	2.80	40	
cis-1,3-Dichloropropene		50.0	53.1	ug/L	0.474	6.18	40	
trans-1,3-Dichloropropene		50.0	48.7	ug/L	0.456	2.52	40	

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988501
Report generated 01/07/2008 12:19

CONTINUING CALIBRATION VERIFICATION (CCV)

00114910

Login Number:L0712635 Run Date:12/28/2007 Sample ID:WG259578-02
Instrument ID:HPMS10 Run Time:09:19 Method:8260B
File ID:10M61605 Analyst:MES QC Key:STD
Workgroup (AAB#):WG259579 Cal ID:HPMS10 - 14-DEC-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	50.0	ug/L	0.458	0.0432	40	
2-Hexanone		50.0	43.4	ug/L	0.0914	13.2	40	
Hexachlorobutadiene		50.0	48.2	ug/L	0.393	3.62	40	
Isopropylbenzene		50.0	50.0	ug/L	1.60	0.0464	40	
p-Isopropyltoluene		50.0	52.6	ug/L	2.69	5.20	40	
4-Methyl-2-Pentanone		50.0	45.8	ug/L	0.0549	8.44	40	
Methylene Chloride		50.0	51.2	ug/L	0.314	2.32	40	
Naphthalene		50.0	38.9	ug/L	1.13	22.2	40	
n-Propylbenzene		50.0	54.3	ug/L	3.37	8.54	40	
Styrene		50.0	45.5	ug/L	1.05	9.08	40	
1,1,1,2-Tetrachloroethane		50.0	48.6	ug/L	0.393	2.75	40	
Tetrachloroethene		50.0	47.5	ug/L	0.332	5.06	40	
1,2,3-Trichlorobenzene		50.0	44.4	ug/L	0.639	11.3	40	
1,2,4-Trichlorobenzene		50.0	45.7	ug/L	0.815	8.54	40	
1,1,1-Trichloroethane		50.0	49.6	ug/L	0.584	0.857	40	
1,1,2-Trichloroethane		50.0	48.0	ug/L	0.214	3.90	40	
Trichloroethene		50.0	51.1	ug/L	0.367	2.27	40	
Trichlorofluoromethane		50.0	46.6	ug/L	0.705	6.71	40	
1,2,3-Trichloropropane		50.0	45.4	ug/L	0.137	9.14	40	
1,2,4-Trimethylbenzene		50.0	52.5	ug/L	2.67	5.07	40	
1,3,5-Trimethylbenzene		50.0	53.6	ug/L	2.60	7.24	40	
Vinyl Acetate		50.0	48.9	ug/L	0.268	2.21	40	
o-Xylene		50.0	50.5	ug/L	0.629	1.08	40	
m-,p-Xylene		100	97.4	ug/L	0.651	2.60	40	
1,2-Dichloroethene		100	108	ug/L	0.348	8.31	40	
Xylenes		150	148	ug/L	0.640	1.37	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988501
Report generated 01/07/2008 12:19

CONTINUING CALIBRATION VERIFICATION (CCV)

00114911

Login Number:L0712635 Run Date:01/02/2008 Sample ID:WG259734-02
Instrument ID:HPMS8 Run Time:11:16 Method:8260B
File ID:8M342844 Analyst:CMS QC Key:STD
Workgroup (AAB#):WG259735 Cal ID: HPMS8 - 01-DEC-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	54.6	ug/L	0.388	9.25	20	
1,1-Dichloroethene	CCC	50.0	55.4	ug/L	0.335	10.8	20	
1,2-Dichloropropane	CCC	50.0	50.1	ug/L	0.201	0.227	20	
Ethylbenzene	CCC	50.0	54.0	ug/L	0.429	8.02	20	
Toluene	CCC	50.0	50.3	ug/L	1.08	0.593	20	
Vinyl Chloride	CCC	50.0	49.2	ug/L	0.102	1.61	20	
Bromoform	SPCC	50.0	52.0	ug/L	0.136	3.97	40	
Chlorobenzene	SPCC	50.0	50.6	ug/L	0.786	1.11	40	
Chloromethane	SPCC	50.0	55.6	ug/L	0.143	11.2	40	
1,1-Dichloroethane	SPCC	50.0	52.8	ug/L	0.398	5.67	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	46.8	ug/L	0.309	6.42	40	
Acetone		50.0	41.8	ug/L	0.0237	16.5	40	
Benzene		50.0	49.3	ug/L	0.825	1.36	40	
Bromobenzene		50.0	51.3	ug/L	0.610	2.56	40	
Bromochloromethane		50.0	54.5	ug/L	0.123	9.07	40	
Bromodichloromethane		50.0	56.3	ug/L	0.280	12.6	40	
Bromomethane		50.0	48.5	ug/L	0.131	2.90	40	
2-Butanone		50.0	38.8	ug/L	0.0339	22.5	40	
n-Butylbenzene		50.0	51.1	ug/L	1.81	2.18	40	
sec-Butylbenzene		50.0	52.4	ug/L	2.50	4.85	40	
tert-Butylbenzene		50.0	51.9	ug/L	0.466	3.73	40	
Carbon Disulfide		50.0	49.7	ug/L	0.541	0.515	40	
Carbon Tetrachloride		50.0	62.6	ug/L	0.349	25.3	40	
Dibromochloromethane		50.0	52.3	ug/L	0.244	4.70	40	
Chloroethane		50.0	44.0	ug/L	0.133	12.0	40	
2-Chloroethyl Vinyl Ether		50.0	45.2	ug/L	0.0768	9.63	40	
2-Chlorotoluene		50.0	52.9	ug/L	1.84	5.76	40	
4-Chlorotoluene		50.0	44.8	ug/L	1.61	10.4	40	
1,2-Dibromo-3-Chloropropane		50.0	42.6	ug/L	0.0545	14.8	40	
1,2-Dibromoethane		50.0	51.5	ug/L	0.180	3.04	40	
Dibromomethane		50.0	51.7	ug/L	0.0958	3.44	40	
1,2-Dichlorobenzene		50.0	48.6	ug/L	1.05	2.80	40	
1,3-Dichlorobenzene		50.0	49.8	ug/L	1.22	0.361	40	
1,4-Dichlorobenzene		50.0	49.0	ug/L	1.21	1.96	40	
Dichlorodifluoromethane		50.0	53.4	ug/L	0.231	6.86	40	
1,2-Dichloroethane		50.0	53.2	ug/L	0.258	6.43	40	
cis-1,2-Dichloroethene		50.0	53.5	ug/L	0.222	6.94	40	
trans-1,2-Dichloroethene		50.0	54.3	ug/L	0.319	8.55	40	
1,3-Dichloropropane		50.0	48.2	ug/L	0.304	3.50	40	
2,2-Dichloropropane		50.0	58.0	ug/L	0.387	16.0	40	
cis-1,3-Dichloropropene		50.0	53.0	ug/L	0.326	5.95	40	
trans-1,3-Dichloropropene		50.0	52.3	ug/L	0.350	4.65	40	

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988501
Report generated 01/07/2008 12:19

CONTINUING CALIBRATION VERIFICATION (CCV)

00114912

Login Number:L0712635 Run Date:01/02/2008 Sample ID:WG259734-02
Instrument ID:HPMS8 Run Time:11:16 Method:8260B
File ID:8M342844 Analyst:CMS QC Key:STD
Workgroup (AAB#):WG259735 Cal ID: HPMS8 - 01-DEC-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	54.4	ug/L	0.317	8.72	40	
2-Hexanone		50.0	41.8	ug/L	0.0398	16.4	40	
Hexachlorobutadiene		50.0	58.5	ug/L	0.303	17.0	40	
Isopropylbenzene		50.0	53.1	ug/L	1.33	6.12	40	
p-Isopropyltoluene		50.0	53.2	ug/L	2.19	6.44	40	
4-Methyl-2-Pentanone		50.0	42.5	ug/L	0.0338	15.0	40	
Methylene Chloride		50.0	49.4	ug/L	0.189	1.28	40	
Naphthalene		50.0	43.5	ug/L	1.11	13.0	40	
n-Propylbenzene		50.0	51.7	ug/L	2.75	3.47	40	
Styrene		50.0	52.6	ug/L	0.860	5.21	40	
1,1,1,2-Tetrachloroethane		50.0	54.1	ug/L	0.280	8.11	40	
Tetrachloroethene		50.0	56.1	ug/L	0.253	12.2	40	
1,2,3-Trichlorobenzene		50.0	44.5	ug/L	0.565	10.9	40	
1,2,4-Trichlorobenzene		50.0	47.9	ug/L	0.704	4.16	40	
1,1,1-Trichloroethane		50.0	60.3	ug/L	0.374	20.5	40	
1,1,2-Trichloroethane		50.0	48.9	ug/L	0.162	2.25	40	
Trichloroethene		50.0	56.8	ug/L	0.245	13.6	40	
Trichlorofluoromethane		50.0	53.0	ug/L	0.399	5.95	40	
1,2,3-Trichloropropane		50.0	49.4	ug/L	0.106	1.25	40	
1,2,4-Trimethylbenzene		50.0	50.7	ug/L	2.14	1.42	40	
1,3,5-Trimethylbenzene		50.0	52.1	ug/L	2.10	4.16	40	
Vinyl Acetate		50.0	53.5	ug/L	0.136	7.02	40	
o-Xylene		50.0	50.6	ug/L	0.534	1.13	40	
m-,p-Xylene		100	96.8	ug/L	0.525	3.23	40	
1,2-Dichloroethene		100	108	ug/L	0.271	7.74	40	
Xylenes		150	147	ug/L	0.529	1.78	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988501
Report generated 01/07/2008 12:19

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number:L0712635
Instrument ID:HPMS10
Workgroup (AAB#):WG259579

CCV Number:WG259578-02
CAL ID: HPMS10-14-DEC-07
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG259578-02	NA	NA	312298	572142	633042
Upper Limit	NA	NA	624596	1144284	1266084
Lower Limit	NA	NA	156149	286071	316521
L0712635-01	1.00	01	262470	464208	524446
L0712635-02	1.00	01	266432	477591	541932
WG259579-01	1.00	01	277281	494802	556031
WG259579-02	1.00	01	305486	531351	587934
WG259579-03	1.00	01	297922	522851	578518

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

KEMRON FORMS - Modified 02/20/2007
Version 1.3 PDF File ID: 988502
Report generated 01/07/2008 12:19

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number: L0712635
Instrument ID: HPMS8
Workgroup (AAB#): WG259735

CCV Number: WG259734-02
CAL ID: HPMS8-01-DEC-07
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG259734-02	NA	NA	224801	406158	512360
Upper Limit	NA	NA	449602	812316	1024720
Lower Limit	NA	NA	112401	203079	256180
L0712635-02	5.00	DL01	213339	386562	489206
WG259735-01	1.00	01	216882	392792	502343
WG259735-02	1.00	01	215125	389577	489347
WG259735-03	1.00	01	212785	388804	486807

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

KEMRON FORMS - Modified 02/20/2007
Version 1.3 PDF File ID: 988502
Report generated 01/07/2008 12:19

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number:L0712635
Instrument ID:HPMS10
Workgroup (AAB#):WG259579

CCV Number:WG259578-02
CAL ID: HPMS10-14-DEC-07
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG259578-02	NA	NA	17.73	14.73	10.85
Upper Limit	NA	NA	18.23	15.23	11.35
Lower Limit	NA	NA	17.23	14.23	10.35
L0712635-01	1.00	01	17.73	14.73	10.85
L0712635-02	1.00	01	17.73	14.73	10.85
WG259579-01	1.00	01	17.73	14.73	10.85
WG259579-02	1.00	01	17.73	14.73	10.85
WG259579-03	1.00	01	17.73	14.73	10.85

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

KEMRON FORMS - Modified 02/20/2007
Version 1.3 PDF File ID: 988504
Report generated 01/07/2008 12:19

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number:L0712635
Instrument ID:HPMS8
Workgroup (AAB#):WG259735

CCV Number:WG259734-02
CAL ID: HPMS8-01-DEC-07
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG259734-02	NA	NA	17.38	14.37	10.5
Upper Limit	NA	NA	17.88	14.87	11
Lower Limit	NA	NA	16.88	13.87	10
L0712635-02	5.00	DL01	17.38	14.37	10.51
WG259735-01	1.00	01	17.38	14.37	10.5
WG259735-02	1.00	01	17.38	14.37	10.5
WG259735-03	1.00	01	17.38	14.36	10.51

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

KEMRON FORMS - Modified 02/20/2007
Version 1.3 PDF File ID: 988504
Report generated 01/07/2008 12:19

2.1.2 RSK 175

2.1.2.1 Summary Data

LABORATORY REPORT

L0712635

01/08/08 08:10

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW23-121907	L0712635-01	RSK175	1	21-DEC-07
12WW23-121907	L0712635-01	RSK175	50	21-DEC-07
12WW24-121907	L0712635-02	RSK175	1	21-DEC-07

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114920

Sample Number: **L0712635-01**
Client ID: **12WW23-121907**
Matrix: **Water**
Workgroup Number: **WG259359**
Collect Date: **12/19/2007 09:25**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **12/27/2007 03:15**
Cal Date: **11/02/2007 13:03**
Run Date: **12/27/2007 03:15**
File ID: **16G11057**

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	5020	I	0.500	0.250
ethene	74-85-1	0.342	J	0.500	0.250
ethane	74-84-0		U	0.500	0.250

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL
I Semiquantitative result (out of instrument calibration range)

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114921

Sample Number: **L0712635-01**
Client ID: **12WW23-121907**
Matrix: **Water**
Workgroup Number: **WG259490**
Collect Date: **12/19/2007 09:25**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **50**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **12/27/2007 23:49**
Cal Date: **11/02/2007 13:03**
Run Date: **12/27/2007 23:49**
File ID: **16G11113**

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	3700		25.0	12.5
ethene	74-85-1		U	25.0	12.5
ethane	74-84-0		U	25.0	12.5

U Not detected at or above adjusted sample detection limit

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114922

Sample Number: **L0712635-02**
Client ID: **12WW24-121907**
Matrix: **Water**
Workgroup Number: **WG259359**
Collect Date: **12/19/2007 11:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **12/27/2007 03:33**
Cal Date: **11/02/2007 13:03**
Run Date: **12/27/2007 03:33**
File ID: **16G11058**

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	6.03		0.500	0.250
ethene	74-85-1	0.323	J	0.500	0.250
ethane	74-84-0		U	0.500	0.250

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

2.1.2.2 QC Summary Data

KEMRON Environmental Services
Data Checklist

Date: 02-NOV-2007
Analyst: FJB
Analyst: NA
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 19118
Analytical Workgroups: WG254544,WG254621

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	SMH
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
06-NOV-2007

Secondary Reviewer:
07-NOV-2007

Generated: NOV-07-2007 08:41:58

KEMRON Environmental Services
Data Checklist

Date: 26-DEC-2007
Analyst: FJB
Analyst: NA
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 20021
Analytical Workgroups: WG259358,WG259359, WG259360

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	SMH
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
28-DEC-2007

Secondary Reviewer:
03-JAN-2008

Generated: JAN-03-2008 11:13:22

KEMRON Environmental Services
Data Checklist

Date: 27-DEC-2007
Analyst: FJB
Analyst: NA
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 20056
Analytical Workgroups: WG259489,WG259490,WG259558

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	SMH
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
03-JAN-2008

Secondary Reviewer:
04-JAN-2008

Generated: JAN-04-2008 11:57:31

RSK-175 - Example Calculation for Methane

ICAL Plot - Linear Regression (y = ax)

1.0 Calculate the Regression Constant (a)

Where:
ICAL_x = the ICAL concentration = x
ICAL_r = the ICAL response (area) = y

ICAL_x	ICAL_r	[ICAL_r}^2	[ICAL-x][ICAL-r]
0.1	21538	463885444	2153.8
1	77578	6018346084	77578
10	665937	4.43472E+11	6659370
20	1376031	1.89346E+12	27520620
50	3424931	1.17302E+13	171246550
100	6927945	4.79964E+13	692794500
200	14533928	2.11235E+14	2906785600
300	21776507	4.74216E+14	6532952100
		7.47521E+14	10338038472
		a:	**72307.84758**

2.0 Calculate the concentration in extract, x:

Where:
y = response of methane from quant report = **37493410**
x = y/a = 37493410/72307 = 518.52

3.0 Calculate the concentration in sample, Cs:

Cs = x (MW/Tf) (HS/S) (DF)

Where:

x = Concentration in extract	**518.5247695**	umol/mol
MW = molecular weight of analyte	**16.04**	ug/umol
TF = temperature factor = (22.45)(313/273)	**25.68**	L/mol
HS = headspace volume	**0.015**	L
S = sample volume remaining after headspace removal	**0.00547**	L
DF = dilution factor	**10**	
Cs = calculated sample concentration	**8881.427692**	ug/L

RSK-175 - Example Calculation for Carbon Dioxide

ICAL Plot - Quadratic Regression (y = Ax^2 + Bx +C)

Ax^2 + Bx + (C - y) = 0

Step 1 - Calculate the concentration in extract, x:

Data from quadratic regression plot:		
Value of A from plot:	**0.916**	
Value of B from plot:	**1540**	
Value of C from plot:	**0**	
Response for carbon dioxide from quantitation report (y):	**8763828**	
Value of C - y	**-8763828**	
Solving for x using the quadratic formula:		
Root 1 - Computed x1:	**2364.716284**	umol/mol
Root 2 - Computed x2:	**-4045.938991**	

Step 2 - Calculate the concentration in sample, Cs:

Cs = x (MW/Tf) (HS/S) (DF)

Where:

x = Concentration in extract :	**2364.716284**	umol/mol
MW = molecular weight of analyte:	**44**	ug/umol
TF = temperature factor = (22.45)(313/273):	**25.68**	L/mol
HS = initial headspace volume (extraction log):	**0.015**	L
S = final volume (extraction log):	**0.00547**	L
DF = dilution factor:	**1**	
Cs = calculated sample concentration:	**11110.6798**	ug/L

Note: Temperature = 40 C = 313 K

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 110207
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 21573

Internal Standard: NA Surrogate Standard: NA
CCV: STD22747 LCS: STD22747 MS/MSD: NA

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG254544, WG254621

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G9354	WG254544-01 0.1umol/mol STD	NA	1	1	STD22747	11/02/07 10:27
2	16G9355	WG254544-01 0.1umol/mol STD	NA	1	1	STD22747	11/02/07 10:53
3	16G9356	WG254544-02 1umol/mol STD	NA	1	1	STD22747	11/02/07 11:12
4	16G9357	WG254544-03 10umol/mol STD	NA	1	1	STD22747	11/02/07 11:30
5	16G9358	WG254544-04 20umol/mol STD	NA	1	1	STD22747	11/02/07 11:48
6	16G9359	WG254544-05 50umol/mol STD	NA	1	1	STD22747	11/02/07 12:07
7	16G9360	WG254544-06 100umol/mol STD	NA	1	1	STD22747	11/02/07 12:25
8	16G9361	WG254544-07 200umol/mol STD	NA	1	1	STD22747	11/02/07 12:44
9	16G9362	WG254544-08 300umol/mol STD	NA	1	1	STD22747	11/02/07 13:03
10	16G9363	ACETYLENE 50umol/mol STD	NA	1	1	STD22747	11/02/07 13:32
11	16G9364	WG254544-09 20umol/mol ALT SRC	NA	1	1	STD22747	11/02/07 14:10
12	16G9365	L0701196-01 0.1umol/mol MDL	NA	1	1	STD22747	11/02/07 14:41
13	16G9366	L0701196-02 0.1umol/mol MDL	NA	1	1	STD22747	11/02/07 14:59
14	16G9367	L0701196-03 0.1umol/mol MDL	NA	1	1	STD22747	11/02/07 15:17
15	16G9368	L0701196-04 0.1umol/mol MDL	NA	1	1	STD22747	11/02/07 15:36
16	16G9369	L0701196-05 0.1umol/mol MDL	NA	1	1	STD22747	11/02/07 15:55
17	16G9370	L0701196-06 0.1umol/mol MDL	NA	1	1	STD22747	11/02/07 16:13
18	16G9371	L0701196-07 0.1umol/mol MDL	NA	1	1	STD22747	11/02/07 16:32
19	16G9372	WG255791-01 50umol/mol STD	NA	1	1	STD22747	11/02/07 16:50
20	16G9373	WG254620-01 50umol/mol STD	NA	1	1	STD22747	11/02/07 22:22
21	16G9374	WG254621-01 BLANK	NA	1	1		11/02/07 22:44
22	16G9375	WG254621-02 20umol/mol LCS	NA	1	1	STD22747	11/02/07 23:02
23	16G9376	WG254621-03 20umol/mol LCSD	NA	1	1	STD22747	11/02/07 23:35
24	16G9377	L0710611-01 A 10X	7	1	10		11/02/07 23:55
25	16G9378	L0710611-03 A 10X	7	1	10		11/03/07 00:13
26	16G9379	L0710611-05 A 10X	7	1	10		11/03/07 00:32
27	16G9380	L0710611-07 A 10X	7	1	10		11/03/07 00:50
28	16G9381	WG254620-02 50umol/mol STD	NA	1	1	STD22747	11/03/07 01:08
29	16G9382	L0710602-01 A	7	1	1		11/03/07 01:26
30	16G9383	L0710602-02 A	7	1	1		11/03/07 01:44
31	16G9384	L0710602-03 A	7	1	1		11/03/07 02:03
32	16G9385	L0710602-04 A	5	1	1		11/03/07 02:21
33	16G9386	L0710602-05 A	7	1	1		11/03/07 02:39
34	16G9387	L0710602-06 A	7	1	1		11/03/07 02:57

Approved: November 07, 2007

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 110207
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 21573

Internal Standard: NA Surrogate Standard: NA
CCV: STD22747 LCS: STD22747 MS/MSD: NA

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG254544, WG254621

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
35	16G9388	L0710616-02 A	7	1	1		11/03/07 03:16
36	16G9389	L0710616-03 A	7	1	1		11/03/07 03:34
37	16G9390	L0710616-04 A	7	1	1		11/03/07 03:52
38	16G9391	L0710616-05 A	7	1	1		11/03/07 04:10
39	16G9392	WG254620-03 50umol/mol STD	NA	1	1	STD22747	11/03/07 04:28
40	16G9393	L0710616-06 A	7	1	1		11/03/07 04:46
41	16G9394	L0710663-01 A	7	1	1		11/03/07 05:04
42	16G9395	L0710663-02 A	7	1	1		11/03/07 05:23
43	16G9396	L0710663-03 A	7	1	1		11/03/07 05:41
44	16G9397	L0710663-04 A	7	1	1		11/03/07 05:59
45	16G9398	L0710663-05 A	5	1	1		11/03/07 06:17
46	16G9399	WG254620-04 50umol/mol STD	NA	1	1	STD22747	11/03/07 06:35

Comments

Seq.	Rerun	Dil.	Reason	Analytes
1	X			
File ID: 16G9354				
24	X		Check Standard Failure	CO2
File ID: 16G9377				
25	X	20	Check Standard Failure	CO2
File ID: 16G9378				
26	X	20	Check Standard Failure	CO2
File ID: 16G9379				
27	X	50	Over Calibration Range	CO2
File ID: 16G9380				
41	X	1000	Over Calibration Range	METHANE
File ID: 16G9394				
DETECTOR SATURATED - COULD NOT CALCULATE CONCENTRATION				
42	X	10	Over Calibration Range	METHANE
File ID: 16G9395				

Approved: November 07, 2007

Page: 2

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 110207
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 21573

Internal Standard: NA Surrogate Standard: NA
CCV: STD22747 LCS: STD22747 MS/MSD: NA

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG254544, WG254621

Comments

Seq.	Rerun	Dil.	Reason	Analytes
43	X	1000	Over Calibration Range	METHANE
File ID: 16G9396				
DETECTOR SATURATED - COULD NOT CALCULATE CONCENTRATION				

Approved: November 07, 2007

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122607
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22326

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259358,WG259359,WG259360

Comments: RERUN WG259359 CO2 FAILED LOW IN CCV'S (-04,-06-07) AND LCS'S. L0712553-04 AND L0712632-02 CO2 IS NONTARGET CPD.
RERUN WG259360 LAST CCV FAILED ETHANE AND ETHENE

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G11008	WG259357-01 50umol/mol STD	NA	1	1	STD23589	12/26/07 11:26
2	16G11009	WG259358-01 BLANK	NA	1	1		12/26/07 11:50
3	16G11010	WG259358-02 20umol/mol LCS	NA	1	1	STD23589	12/26/07 12:08
4	16G11011	L0712444-02 C 100X	7	1	100		12/26/07 13:26
5	16G11012	L0712444-03 C 100X	7	1	100		12/26/07 13:44
6	16G11013	L0712444-05 C 100X	7	1	100		12/26/07 14:02
7	16G11014	L0712444-13 C 25X	7	1	25		12/26/07 14:20
8	16G11015	L0712444-14 C 25X	7	1	25		12/26/07 14:38
9	16G11016	L0712444-15 C 100X	7	1	100		12/26/07 14:56
10	16G11017	L0712497-01 C 100X	7	1	100		12/26/07 15:14
11	16G11018	L0712497-02 C 100X	7	1	100		12/26/07 15:32
12	16G11019	WG259357-02 50umol/mol STD	NA	1	1	STD23589	12/26/07 15:50
13	16G11020	L0712497-03 B 25X	7	1	25		12/26/07 16:08
14	16G11021	L0712497-04 B 25X	7	1	25		12/26/07 16:26
15	16G11022	L0712497-05 B 25X	7	1	25		12/26/07 16:45
16	16G11023	L0712497-06 B 25X MS	7	1	25	STD23589	12/26/07 17:03
17	16G11024	L0712497-07 B 25X MSD	7	1	25	STD23589	12/26/07 17:21
18	16G11025	L0712497-08 B 25X	7	1	25		12/26/07 17:39
19	16G11026	L0712497-09 B 25X	7	1	25		12/26/07 17:57
20	16G11027	L0712497-10 B 25X	7	1	25		12/26/07 18:16
21	16G11028	L0712497-11 B 25X	7	1	25		12/26/07 18:34
22	16G11029	L0712497-13 B 25X	7	1	25		12/26/07 18:52
23	16G11030	WG259357-03 50umol/mol STD	NA	1	1	STD23589	12/26/07 19:09
24	16G11031	L0712497-14 B 25X	7	1	25		12/26/07 19:27
25	16G11032	L0712497-15 B 25X	7	1	25		12/26/07 19:45
26	16G11033	WG259357-04 50umol/mol STD	NA	1	1	STD23589	12/26/07 20:03
27	16G11034	WG259359-01 BLANK	NA	1	1		12/26/07 20:21
28	16G11035	WG259359-02 20umol/mol LCS	NA	1	1	STD23589	12/26/07 20:39
29	16G11036	WG259359-03 20umol/mol LCS DUP	NA	1	1	STD23589	12/26/07 20:57
30	16G11037	L0712497-16 B 25X	7	1	25		12/26/07 21:15
31	16G11038	L0712497-17 B 25X	7	1	25		12/26/07 21:33
32	16G11039	L0712553-04 B 10X	7	1	10		12/26/07 21:51

Approved: January 03, 2008

Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122607
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22326

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259358,WG259359,WG259360

Comments: RERUN WG259359 CO2 FAILED LOW IN CCV'S (-04,-06-07) AND LCS'S. L0712553-04 AND L0712632-02 CO2 IS NONTARGET CPD.
RERUN WG259360 LAST CCV FAILED ETHANE AND ETHENE

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
33	16G11040	L0712562-01 A 25X	7	1	25		12/26/07 22:09
34	16G11041	L0712562-02 A 25X	7	1	25		12/26/07 22:27
35	16G11042	L0712562-03 A 25X	7	1	25		12/26/07 22:45
36	16G11043	L0712562-04 A 25X	7	1	25		12/26/07 23:03
37	16G11044	WG259357-05 50umol/mol STD	NA	1	1	STD23589	12/26/07 23:21
38	16G11045	L0712562-05 A 25X	7	1	25		12/26/07 23:39
39	16G11046	L0712562-07 A 25X	7	1	25		12/26/07 23:57
40	16G11047	L0712562-08 A 25X	7	1	25		12/27/07 00:15
41	16G11048	L0712562-09 A 25X	7	1	25		12/27/07 00:33
42	16G11049	L0712562-10 A 25X	7	1	25		12/27/07 00:51
43	16G11050	L0712562-11 A 25X	7	1	25		12/27/07 01:09
44	16G11051	L0712562-12 A 25X	7	1	25		12/27/07 01:27
45	16G11052	L0712562-13 A 25X	7	1	25		12/27/07 01:45
46	16G11053	L0712562-14 A 25X	7	1	25		12/27/07 02:03
47	16G11054	L0712562-15 A 25X	7	1	25		12/27/07 02:21
48	16G11055	WG259357-06 50umol/mol STD	NA	1	1	STD23589	12/27/07 02:39
49	16G11056	L0712562-16 A 25X	7	1	25		12/27/07 02:57
50	16G11057	L0712635-01 A	7	1	1		12/27/07 03:15
51	16G11058	L0712635-02 A	7	1	1		12/27/07 03:33
52	16G11059	WG259357-07 50umol/mol STD	NA	1	1	STD23589	12/27/07 03:51
53	16G11060	WG259360-01 BLANK	NA	1	1		12/27/07 04:09
54	16G11061	WG259360-02 20umol/mol LCS	NA	1	1	STD23589	12/27/07 04:27
55	16G11062	L0712666-01 A	7	1	1		12/27/07 04:45
56	16G11063	L0712666-02 A MS	7	1	1	STD23589	12/27/07 05:03
57	16G11064	L0712666-03 A MSD	7	1	1	STD23589	12/27/07 05:21
58	16G11065	L0712666-04 A	7	1	1		12/27/07 05:39
59	16G11066	L0712666-05 A	7	1	1		12/27/07 05:57
60	16G11067	L0712666-06 A	7	1	1		12/27/07 06:15
61	16G11068	L0712666-07 A	7	1	1		12/27/07 06:33
62	16G11069	L0712666-08 A	7	1	1		12/27/07 06:51
63	16G11070	WG259357-08 50umol/mol STD	NA	1	1	STD23589	12/27/07 07:09
64	16G11071	L0712666-09 A	7	1	1		12/27/07 07:27

Approved: January 03, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122607
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22326

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259358,WG259359,WG259360

Comments: RERUN WG259359 CO2 FAILED LOW IN CCV'S (-04,-06-07) AND LCS'S. L0712553-04 AND L0712632-02 CO2 IS NONTARGET CPD.
RERUN WG259360 LAST CCV FAILED ETHANE AND ETHENE

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
65	16G11072	L0712666-10 A	7	1	1		12/27/07 07:45
66	16G11073	L0712666-11 A	7	1	1		12/27/07 08:02
67	16G11074	L0712666-12 A	7	1	1		12/27/07 08:20
68	16G11075	L0712666-13 A	7	1	1		12/27/07 08:38
69	16G11076	L0712666-14 A	7	1	1		12/27/07 08:56
70	16G11077	WG259357-09 50umol/mol STD	NA	1	1	STD23589	12/27/07 09:14

Comments

Seq.	Rerun	Dil.	Reason	Analytes
24	X		Check Standard Failure	CO2
File ID: 16G11031				
25	X		Check Standard Failure	CO2
File ID: 16G11032				
34	X	100	Over Calibration Range	CO2
File ID: 16G11041				
39	X	100	Over Calibration Range	CO2
File ID: 16G11046				
40	X	100	Over Calibration Range	CO2
File ID: 16G11047				
50	X	50	Over Calibration Range	METHANE
File ID: 16G11057				
55	X	100	Over Calibration Range	METHANE
File ID: 16G11062				
56	X	100	Over Calibration Range	METHANE
File ID: 16G11063				
57	X	100	Over Calibration Range	METHANE

Approved: January 03, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122607
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22326

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259358,WG259359,WG259360

Comments: RERUN WG259359 CO2 FAILED LOW IN CCV'S (-04,-06-07) AND LCS'S. L0712553-04 AND L0712632-02 CO2 IS NONTARGET CPD.
RERUN WG259360 LAST CCV FAILED ETHANE AND ETHENE

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 16G11064				
58	X	100	Over Calibration Range	METHANE
File ID: 16G11065				
59	X	100	Over Calibration Range	METHANE
File ID: 16G11066				
60	X	100	Over Calibration Range	METHANE
File ID: 16G11067				
61	X	100	Over Calibration Range	METHANE
File ID: 16G11068				
62	X	100	Over Calibration Range	METHANE
File ID: 16G11069				
64	X	100	Over Calibration Range	METHANE
File ID: 16G11071				
65	X	50	Over Calibration Range	METHANE
File ID: 16G11072				
66	X	50	Over Calibration Range	METHANE
File ID: 16G11073				
67	X	50	Over Calibration Range	METHANE
File ID: 16G11074				
68	X	100	Over Calibration Range	METHANE
File ID: 16G11075				
69	X	50	Over Calibration Range	METHANE

Approved: January 03, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122607
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22326

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA

Workgroups: WG259358,WG259359,WG259360

Comments: RERUN WG259359 CO2 FAILED LOW IN CCV'S (-04,-06-07) AND LCS'S. L0712553-04 AND L0712632-02 CO2 IS NONTARGET CPD.
RERUN WG259360 LAST CCV FAILED ETHANE AND ETHENE

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 16G11076				

Approved: January 03, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122707
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22357

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259489,WG259490,WG259558

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G11078	WG259488-01 50umol/mol STD	NA	1	1	STD23589	12/27/07 11:43
2	16G11079	WG259489-01 BLANK	NA	1	1		12/27/07 12:06
3	16G11080	WG259489-02 20umol/mol LCS	NA	1	1	STD23589	12/27/07 12:24
4	16G11081	WG259489-03 20umol/mol LCS DUP	NA	1	1	STD23589	12/27/07 12:43
5	16G11082	L0712601-03 A 25X	7	1	25		12/27/07 14:06
6	16G11083	L0712601-04 A 25X	7	1	25		12/27/07 14:24
7	16G11084	L0712601-05 A 25X	7	1	25		12/27/07 14:42
8	16G11085	L0712666-15 A 50X	7	1	50		12/27/07 15:00
9	16G11086	L0712666-16 A 50X	7	1	50		12/27/07 15:18
10	16G11087	L0712666-17 A 50X	7	1	50		12/27/07 15:36
11	16G11088	L0712497-14 C 25X	7	1	25		12/27/07 15:54
12	16G11089	WG259488-02 50umol/mol STD	NA	1	1	STD23589	12/27/07 16:12
13	16G11090	L0712497-15 C 25X	7	1	25		12/27/07 16:30
14	16G11091	L0712497-16 C 25X	7	1	25		12/27/07 16:47
15	16G11092	L0712497-17 C 25X	7	1	25		12/27/07 17:05
16	16G11093	L0712562-01 B 25X	7	1	25		12/27/07 17:23
17	16G11094	L0712562-02 B 100X	7	1	100		12/27/07 17:42
18	16G11095	L0712562-03 B 25X	7	1	25		12/27/07 18:00
19	16G11096	L0712562-04 B 25X	7	1	25		12/27/07 18:18
20	16G11097	L0712562-05 B 25X	7	1	25		12/27/07 18:36
21	16G11098	L0712562-07 B 100X	7	1	100		12/27/07 18:54
22	16G11099	L0712562-08 B 100X	7	1	100		12/27/07 19:12
23	16G11100	WG259488-03 50umol/mol STD	NA	1	1	STD23589	12/27/07 19:30
24	16G11101	L0712562-09 B 25X	7	1	25		12/27/07 19:49
25	16G11102	L0712562-10 B 25X	7	1	25		12/27/07 20:07
26	16G11103	L0712562-11 B 25X	7	1	25		12/27/07 20:25
27	16G11104	WG259488-04 50umol/mol STD	NA	1	1	STD23589	12/27/07 20:43
28	16G11105	WG259490-01 BLANK	NA	1	1		12/27/07 21:01
29	16G11106	WG259490-02 20umol/mol LCS	NA	1	1	STD23589	12/27/07 21:19
30	16G11107	L0712562-12 B 25X	7	1	25		12/27/07 22:01
31	16G11108	L0712562-13 B 25X	7	1	25		12/27/07 22:19
32	16G11109	L0712562-14 B 25X	7	1	25		12/27/07 22:37
33	16G11110	L0712562-15 B 25X	7	1	25		12/27/07 22:55
34	16G11111	L0712562-16 B 25X	7	1	25		12/27/07 23:13

Approved: January 04, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122707
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22357

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259489,WG259490,WG259558

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
35	16G11112	WG259488-05 50umol/mol STD	NA	1	1	STD23589	12/27/07 23:31
36	16G11113	L0712635-01 B 50X	7	1	50		12/27/07 23:49
37	16G11114	L0712666-01 B 100X	7	1	100		12/28/07 00:07
38	16G11115	L0712666-02 B 100X MS	7	1	100	STD23589	12/28/07 00:25
39	16G11116	L0712666-03 B 100X MSD	7	1	100	STD23589	12/28/07 00:43
40	16G11117	L0712666-04 B 100X	7	1	100		12/28/07 01:01
41	16G11118	L0712666-05 B 100X	7	1	100		12/28/07 01:19
42	16G11119	L0712666-06 B 100X	7	1	100		12/28/07 01:37
43	16G11120	L0712666-07 B 100X	7	1	100		12/28/07 01:55
44	16G11121	L0712666-08 B 100X	7	1	100		12/28/07 02:13
45	16G11122	L0712666-09 B 100X	7	1	100		12/28/07 02:31
46	16G11123	WG259488-06 50umol/mol STD	NA	1	1	STD23589	12/28/07 02:48
47	16G11124	L0712666-10 B 50X	7	1	50		12/28/07 03:07
48	16G11125	L0712666-11 B 50X	7	1	50		12/28/07 03:25
49	16G11126	L0712666-12 B 50X	7	1	50		12/28/07 03:43
50	16G11127	L0712666-13 B 100X	7	1	100		12/28/07 04:01
51	16G11128	L0712666-14 B 50X	7	1	50		12/28/07 04:19
52	16G11129	WG259488-07 50umol/mol STD	NA	1	1	STD23589	12/28/07 04:36
53	16G11130	SYSTEM BLANK	NA	1	1		12/28/07 04:54
54	16G11131	WG259557-01 50umol/mol STD	NA	1	1	STD23589	12/28/07 10:23
55	16G11132	WG259558-01 BLANK	NA	1	1		12/28/07 10:41
56	16G11133	WG259558-02 20umol/mol LCS	NA	1	1	STD23589	12/28/07 10:59
57	16G11134	WG259558-03 20umol/mol LCS DUP	NA	1	1	STD23589	12/28/07 11:17
58	16G11135	L0712601-04 B	7	1	1		12/28/07 11:35
59	16G11136	L0712562-01 C 25X	7	1	25		12/28/07 11:53
60	16G11137	L0712562-02 C 100X	7	1	100		12/28/07 12:12
61	16G11138	L0712562-03 C 25X	7	1	25		12/28/07 12:30
62	16G11139	L0712562-04 C 25X	7	1	25		12/28/07 12:47
63	16G11140	L0712562-05 C 25X	7	1	25		12/28/07 13:05
64	16G11141	L0712562-07 C 100X	7	1	100		12/28/07 13:23
65	16G11142	WG259557-02 50umol/mol STD	NA	1	1	STD23589	12/28/07 13:41
66	16G11143	L0712562-08 C 100X	7	1	100		12/28/07 13:59
67	16G11144	L0712562-09 C 25X	7	1	25		12/28/07 14:17
68	16G11145	L0712562-10 C 25X	7	1	25		12/28/07 14:35

Approved: January 04, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122707
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22357

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259489,WG259490,WG259558

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
69	16G11146	L0712562-11 C 25X	7	1	25		12/28/07 14:53
70	16G11147	L0712562-12 C 25X	7	1	25		12/28/07 15:11
71	16G11148	L0712562-13 C 25X	7	1	25		12/28/07 15:29
72	16G11149	L0712562-14 C 25X	7	1	25		12/28/07 15:47
73	16G11150	L0712562-15 C 25X	7	1	25		12/28/07 16:06
74	16G11151	L0712562-16 C 25X	7	1	25		12/28/07 16:24
75	16G11152	WG259557-03 50umol/mol STD	NA	1	1	STD23589	12/28/07 16:42

Comments

Seq.	Rerun	Dil.	Reason	Analytes
6	X		Carry-over contamination	
File ID: 16G11083				
16	X		Check Standard Failure	CO2
File ID: 16G11093				
17	X		Check Standard Failure	CO2
File ID: 16G11094				
18	X		Check Standard Failure	CO2
File ID: 16G11095				
19	X		Check Standard Failure	CO2
File ID: 16G11096				
20	X		Check Standard Failure	CO2
File ID: 16G11097				
21	X		Check Standard Failure	CO2
File ID: 16G11098				
22	X		Check Standard Failure	CO2
File ID: 16G11099				
24	X		Check Standard Failure	CO2

Approved: January 04, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 122707
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 10

Maintenance Log ID: 22357

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: NA
Workgroups: WG259489,WG259490,WG259558

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 16G11101				
25	X		Check Standard Failure	CO2
File ID: 16G11102				
26	X		Check Standard Failure	CO2
File ID: 16G11103				
30	X		Check Standard Failure	CO2
File ID: 16G11107				
31	X		Check Standard Failure	CO2
File ID: 16G11108				
32	X		Check Standard Failure	CO2
File ID: 16G11109				
33	X		Check Standard Failure	CO2
File ID: 16G11110				
34	X		Check Standard Failure	CO2
File ID: 16G11111				
58	X		Check Standard Failure	
File ID: 16G11135				

Approved: January 04, 2008

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: RSK175 **AAB#:** WG259490
Login Number: L0712635

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW23-121907	12/19/07	12/21/07	12/27/07	14	8.60	12/27/07	14	8.60	

*** EXT = SEE PROJECT QAPP REQUIREMENTS**
***ANAL = SEE PROJECT QAPP REQUIREMENTS**

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 988953
Report generated 01/07/2008 16:19

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00114942

Analytical Method: RSK175 AAB#: WG259359

Login Number: L0712635

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW23-121907	12/19/07	12/21/07	12/27/07	14	7.74	12/27/07	14	7.74	
12WW24-121907	12/19/07	12/21/07	12/27/07	14	7.67	12/27/07	14	7.67	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 988953
Report generated 01/07/2008 16:19

METHOD BLANK SUMMARY

Login Number: L0712635
Work Group: WG259359
Blank File ID: 16G11034
Blank Sample ID: WG259359-01
Prep Date: 12/26/07 20:21
Instrument ID: HP16
Analyzed Date: 12/26/07 20:21
Method: RSK175
Analyst: FJB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG259359-02	16G11035	12/26/07 20:39	01
LCS2	WG259359-03	16G11036	12/26/07 20:57	01
12WW23-121907	L0712635-01	16G11057	12/27/07 03:15	01
12WW24-121907	L0712635-02	16G11058	12/27/07 03:33	01

METHOD BLANK SUMMARY

Login Number: L0712635
Work Group: WG259490
Blank File ID: 16G11105
Blank Sample ID: WG259490-01
Prep Date: 12/27/07 21:01
Instrument ID: HP16
Analyzed Date: 12/27/07 21:01
Method: RSK175
Analyst: FJB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG259490-02	16G11106	12/27/07 21:19	01
12WW23-121907	L0712635-01	16G11113	12/27/07 23:49	DL01

KEMRON FORMS - Modified 01/31/2007
Version 1.5 PDF File ID: 982982
Report generated 01/07/2008 16:19

KEMRON Environmental Services

METHOD BLANK REPORT

00114945

Login Number:L0712635 Prep Date:12/26/07 20:21 Sample ID:WG259359-01
Instrument ID:HP16 Run Date:12/26/07 20:21 Prep Method:5021
File ID:16G11034 Analyst:FJB Method:RSK175
Workgroup (AAB#):WG259359 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HP16-02-NOV-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
methane	0.250	0.500	0.250	1	U
ethene	0.250	0.500	0.250	1	U
ethane	0.250	0.500	0.250	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 982983
Report generated 01/07/2008 16:19

KEMRON Environmental Services

METHOD BLANK REPORT

00114946

Login Number:L0712635 Prep Date:12/27/07 21:01 Sample ID:WG259490-01
Instrument ID:HP16 Run Date:12/27/07 21:01 Prep Method:5021
File ID:16G11105 Analyst:FJB Method:RSK175
Workgroup (AAB#):WG259490 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HP16-02-NOV-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
methane	0.250	0.500	0.250	1	U
ethene	0.250	0.500	0.250	1	U
ethane	0.250	0.500	0.250	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 982983
Report generated 01/07/2008 16:19

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00114947

Login Number: L0712635 Run Date: 12/27/2007 Sample ID: WG259490-02

Instrument ID: HP16 Run Time: 21:19 Prep Method: 5021

File ID: 16G11106 Analyst: FJB Method: RSK175

Workgroup (AAB#): WG259490 Matrix: Water Units: ug/L

QC Key: STD Lot#: STD23589 Cal ID: HP16-02-NOV-07

Analytes	Expected	Found	% Rec	LCS Limits	Q
methane	34.3	29.5	86.0	56 - 140	
ethene	59.9	49.7	83.0	56 - 140	
ethane	64.2	53.4	83.1	56 - 137	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 988957
Report generated 01/07/2008 16:19

KEMRON Environmental Services

00114948

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0712635 Analyst:FJB Prep Method:5021
Instrument ID:HP16 Matrix:Water Method:RSK175
Workgroup (AAB#):WG259359 Units:ug/L
QC Key:STD Lot #:STD23589

Sample ID:WG259359-02 LCS File ID:16G11035 Run Date:12/26/2007 20:39
Sample ID:WG259359-03 LCS2 File ID:16G11036 Run Date:12/26/2007 20:57

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
methane	34.3	31.6	92.3	34.3	29.3	85.4	7.80	56 - 140	40	
ethene	59.9	54.0	90.1	59.9	49.7	82.9	8.26	56 - 140	40	
ethane	64.2	58.3	90.8	64.2	53.6	83.5	8.41	56 - 137	40	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 982984
Report generated 01/07/2008 16:19

INITIAL CALIBRATION SUMMARY

Login Number: L0712635 **Instrument ID:** HP16

Analytical Method: RSK175 **Initial Calibration Date:** 02-NOV-07 13:03

ICAL Workgroup: WG254544 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
ethane		56210	11.3	0.999	
ethene		51660	13.0	0.999	
methane		33590	18.6	0.999	

R = Correlation coefficient; 0.995 minimum

R^2 = Coefficient of determination; 0.99 minimum

KEMRON Environmental Services

INITIAL CALIBRATION DATA

00114950

Login Number:L0712635

Analytical Method:RSK175

Instrument ID:HP16

Initial Calibration Date:02-NOV-07 13:03

Column ID:F

Analyte	WG254544-01			WG254544-02			WG254544-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
ethane	0.100	4228.00000	42280	1.00	64156.0000	64160	10.0	558897.000	55890
ethene	0.100	3633.00000	36330	1.00	56893.0000	56890	10.0	502742.000	50270
methane	0.100	4787.00000	47870	1.00	37043.0000	37040	10.0	302922.000	30290

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 988954
Report generated 01/07/2008 16:19

KEMRON Environmental Services

INITIAL CALIBRATION DATA

00114951

Login Number:L0712635

Analytical Method:RSK175

Instrument ID:HP16

Initial Calibration Date:02-NOV-07 13:03

Column ID:F

Analyte	WG254544-04			WG254544-05			WG254544-06		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
ethane	20.0	1091194.00	54560	50.0	2903635.00	58070	100	6019101.00	60190
ethene	20.0	1013568.00	50680	50.0	2737844.00	54760	100	5678133.00	56780
methane	20.0	582994.000	29150	50.0	1551339.00	31030	100	3223736.00	32240

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 988954
Report generated 01/07/2008 16:19

INITIAL CALIBRATION DATA

Login Number: L0712635
Instrument ID: HP16
Analytical Method: RSK175
Initial Calibration Date: 02-NOV-07 13:03
Column ID: F

Analyte	WG254544-07			WG254544-08		
	CONC	RESP	RF	CONC	RESP	RF
ethane	200	11630243.0	58150	300	16907777.0	56360
ethene	200	11026584.0	55130	300	15720407.0	52400
methane	200	6210085.00	31050	300	9021296.00	30070

KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00114953

Login Number:L0712635 Run Date:11/02/2007 Sample ID:WG254544-09

Instrument ID:HP16 Run Time:14:10 Method:RSK175

File ID:16G9364 Analyst:FJB QC Key:STD

ICal Workgroup:WG254544 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
methane		34.3	34.1	ug/L	30400	0.400	30	
ethene		59.9	58.2	ug/L	52000	2.80	30	
ethane		64.2	63.3	ug/L	56300	1.40	30	

* Exceeds %D Limit

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 988955
Report generated 01/07/2008 16:19

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114954

Login Number:L0712635 Run Date:12/26/2007 Sample ID:WG259357-04
Instrument ID:HP16 Run Time:20:03 Method:RSK175
File ID:16G11033 Analyst:FJB QC Key:STD
Workgroup (AAB#):WG259359 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	66.6	ug/L	23700	22.3	25	
ethene		150	114	ug/L	40800	23.7	25	
ethane		160	125	ug/L	44400	22.3	25	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988956
Report generated 01/07/2008 16:19

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114955

Login Number:L0712635 Run Date:12/26/2007 Sample ID:WG259357-05
Instrument ID:HP16 Run Time:23:21 Method:RSK175
File ID:16G11044 Analyst:FJB QC Key:STD
Workgroup (AAB#):WG259359 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	76.6	ug/L	27300	10.5	25	
ethene		150	130	ug/L	46300	13.5	25	
ethane		160	139	ug/L	49400	13.6	25	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988956
Report generated 01/07/2008 16:19

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114956

Login Number: L0712635 Run Date: 12/27/2007 Sample ID: WG259357-06

Instrument ID: HP16 Run Time: 02:39 Method: RSK175

File ID: 16G11055 Analyst: FJB QC Key: STD

Workgroup (AAB#): WG259359 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	75.5	ug/L	26900	11.8	25	
ethene		150	129	ug/L	46000	14.0	25	
ethane		160	138	ug/L	49100	14.1	25	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988956
Report generated 01/07/2008 16:19

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114957

Login Number:L0712635 Run Date:12/27/2007 Sample ID:WG259357-07
Instrument ID:HP16 Run Time:03:51 Method:RSK175
File ID:16G11059 Analyst:FJB QC Key:STD
Workgroup (AAB#):WG259359 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	79.4	ug/L	28300	7.28	25	
ethene		150	132	ug/L	47300	11.5	25	
ethane		160	142	ug/L	50400	11.8	25	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988956
Report generated 01/07/2008 16:19

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114958

Login Number:L0712635 Run Date:12/27/2007 Sample ID:WG259488-04
Instrument ID:HP16 Run Time:20:43 Method:RSK175
File ID:16G11104 Analyst:FJB QC Key:STD
Workgroup (AAB#):WG259490 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	70.5	ug/L	25100	17.6	25	
ethene		150	123	ug/L	43800	18.2	25	
ethane		160	130	ug/L	46300	19.0	25	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988956
Report generated 01/07/2008 16:19

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114959

Login Number: L0712635 Run Date: 12/27/2007 Sample ID: WG259488-05
Instrument ID: HP16 Run Time: 23:31 Method: RSK175
File ID: 16G11112 Analyst: FJB QC Key: STD
Workgroup (AAB#): WG259490 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	72.4	ug/L	25800	15.4	25	
ethene		150	123	ug/L	43900	17.9	25	
ethane		160	132	ug/L	46900	17.9	25	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988956
Report generated 01/07/2008 16:19

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114960

Login Number: L0712635 Run Date: 12/28/2007 Sample ID: WG259488-06

Instrument ID: HP16 Run Time: 02:48 Method: RSK175

File ID: 16G11123 Analyst: FJB QC Key: STD

Workgroup (AAB#): WG259490 Cal ID: HP16 - 02-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	74.6	ug/L	26600	12.9	25	
ethene		150	125	ug/L	44600	16.6	25	
ethane		160	133	ug/L	47200	17.3	25	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 988956
Report generated 01/07/2008 16:19

2.2 General Chemistry Data

2.2.1 Method 9056

2.2.1.1 Summary Data

LABORATORY REPORT

00114964

L0712635

01/08/08 08:10

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW23-121907	L0712635-01	300.0	10	21-DEC-07
12WW24-121907	L0712635-02	300.0	10	21-DEC-07
12WW24-121907	L0712635-02	300.0	50	21-DEC-07

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114965

Sample Number: **L0712635-01**
Client ID: **12WW23-121907**
Matrix: **Water**
Workgroup Number: **WG259602**
Collect Date: **12/19/2007 09:25**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **10**
Units: **mg/L**

Instrument: **IC1**
Prep Date: **12/21/2007 12:02**
Cal Date: **12/18/2007 10:25**
Run Date: **12/21/2007 12:02**
File ID: **I111221071202.07**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	70.5		2.00	1.00
Nitrate	14797-55-8		U	6.00	1.00
Nitrite	14797-65-0		U	4.00	1.00
Sulfate	14808-79-8	8.35	J	10.0	5.00

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114966

Sample Number: **L0712635-02**
Client ID: **12WW24-121907**
Matrix: **Water**
Workgroup Number: **WG259602**
Collect Date: **12/19/2007 11:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **10**
Units: **mg/L**

Instrument: **IC1**
Prep Date: **12/21/2007 12:37**
Cal Date: **12/18/2007 10:25**
Run Date: **12/21/2007 12:37**
File ID: **I111221071237.09**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	288	I	2.00	1.00
Nitrate	14797-55-8		U	6.00	1.00
Nitrite	14797-65-0		U	4.00	1.00
Sulfate	14808-79-8	176		10.0	5.00

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114967

Sample Number: **L0712635-02**
Client ID: **12WW24-121907**
Matrix: **Water**
Workgroup Number: **WG259602**
Collect Date: **12/19/2007 11:30**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **50**
Units: **mg/L**

Instrument: **IC1**
Prep Date: **12/21/2007 12:54**
Cal Date: **12/18/2007 10:25**
Run Date: **12/21/2007 12:54**
File ID: **I111221071254.10**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	328		10.0	5.00
Nitrate	14797-55-8		U	30.0	5.00
Nitrite	14797-65-0		U	20.0	5.00
Sulfate	14808-79-8	198		50.0	25.0

U Not detected at or above adjusted sample detection limit

2.2.1.2 QC Summary Data

The concentrations (ppm) of the calibration standards and the resulting area counts are used to determine the equation of a linear or quadratic plot.
The slope and y-intercept of that line are used to calculate the quantity of the analyzed unkown samples.
Amount(ppm) = [(slope)(area count of unknown) + y-intercept](dilution)
(The slope is the amt/area also identified as the CF or calibration factor)

KEMRON Environmental Services

Instrument Run Log

Instrument: IC1 Dataset: 121807 9056 CURVE IC1.S

Analyst1: DSF Analyst2: JWR

Method: 300/9056 SOP: IC1 Rev: 7

Maintenance Log ID: 21413

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG258870 and WG259143

Internal STD: NA Surrogate STD: NA Calibration STD STD22570

Comments: This includes a Calibration Curve.
The instrument had 'Low Pressure Alarm' several times and the samples were re-run. It was determined the sample matrix created bubbles to cause this alarm and not a mechanical malfunction.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I11218070858.01	WG258870-01 STD \#1	1	1		12/18/07 08:58
2	I11218070915.02	WG258870-02 STD \#2	1	1		12/18/07 09:15
3	I11218070933.03	WG258870-03 STD \#3	1	1		12/18/07 09:33
4	I11218070950.04	WG258870-04 STD \#4	1	1		12/18/07 09:50
5	I11218071007.05	WG258870-05 STD \#5	1	1		12/18/07 10:07
6	I11218071025.06	WG258870-06 STD \#6	1	1		12/18/07 10:25
7	I11218071042.07	WG258870-07 ALT STD	1	1		12/18/07 10:42
8	I11218071100.08	ELUENT	1	1		12/18/07 11:00
9	I11218071117.09	DI WATER	1	1		12/18/07 11:17
10	I11218071157.11	ELUENT	1	1		12/18/07 11:57
11	I11218071215.12	DI WATER	1	1		12/18/07 12:15
12	I11218071232.13	WG259144-01 ANION CCV	1	1		12/18/07 12:32
13	I11218071250.14	WG259144-02 ANION CCB	1	1		12/18/07 12:50
14	I11218071338.15	WG259143-01 ANION BLANK	1	1		12/18/07 13:38
15	I11218071355.16	WG259143-02 ANION LCS	1	1		12/18/07 13:55
16	I11218071525.17	L0712097-02 (Cl, SO4) 1/200	1	200		12/18/07 15:25
17	I11218071542.18	L0712497-01 (Cl, NO2,Br,NO3,SO4)	1	1		12/18/07 15:42
18	I11218071600.19	L0712497-02 (Cl, NO2,Br,NO3,SO4)	1	1		12/18/07 16:00
19	I11218071617.20	L0712497-03 (Cl, NO2,Br,NO3,SO4) (NR)	1	1		12/18/07 16:17
20	I11218071648.21	L0712497-03 (Cl, NO2,Br,NO3,SO4) RR	1	1		12/18/07 16:48
21	I11218071706.22	L0712497-04 (Cl, NO2,Br,NO3,SO4) (NR)	1	1		12/18/07 17:06
22	I11218071733.23	L0712497-04 (Cl, NO2,Br,NO3,SO4) RR	1	1		12/18/07 17:33
23	I11218071750.24	L0712497-05 (Cl, NO2,Br,NO3,SO4) REF	1	1		12/18/07 17:50
24	I11218071808.25	WG259143-04 DUP 497-05	1	1		12/18/07 18:08
25	I11218071825.26	DI WATER (Column Rinse)	1	1		12/18/07 18:25
26	I11218071843.27	WG259144-03 ANION CCV	1	1		12/18/07 18:43
27	I11218071900.28	WG259144-04 ANION CCB	1	1		12/18/07 19:00
28	I11218071917.29	L0712497-06 MS (NR)	1	1		12/18/07 19:17
29	I11219070832.30	L0712497-06 MS RR	1	1		12/19/07 08:32
30	I11219070900.31	L0712500-01 (Cl, NO2,Br,NO3,SO4) (NR)	1	1		12/19/07 09:00
31	I11219070918.32	DI WATER (Column Rinse)	1	1		12/19/07 09:18
32	I11219070935.33	L0712497-07 MSD	1	1		12/19/07 09:35
33	I11219070952.34	L0712497-08 (Cl, NO2,Br,NO3,SO4)	1	1		12/19/07 09:52
34	I11219071010.35	L0712497-09 (Cl, NO2,Br,NO3,SO4)	1	1		12/19/07 10:10
35	I11219071027.36	L0712497-10 (Cl, NO2,Br,NO3,SO4)	1	1		12/19/07 10:27

Approved: 21-DEC-07

KEMRON Environmental Services

Instrument Run Log

Instrument: IC1 Dataset: 121807 9056 CURVE IC1.S

Analyst1: DSF Analyst2: JWR

Method: 300/9056 SOP: IC1 Rev: 7

Maintenance Log ID: 21413

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG258870 and WG259143

Internal STD: NA Surrogate STD: NA STD22570

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
36	I11219071045.37	L0712497-11 (Cl, NO2,Br,NO3,SO4)	1	1		12/19/07 10:45
37	I11219071102.38	L0712497-13 (Cl, NO2,Br,NO3,SO4)	1	1		12/19/07 11:02
38	I11219071120.39	L0712497-14 (Cl, NO2,Br,NO3,SO4)	1	1		12/19/07 11:20
39	I11219071138.40	DI WATER (Column Rinse)	1	1		12/19/07 11:38
40	I11219071155.41	WG259144-05 ANION CCV	1	1		12/19/07 11:55
41	I11219071213.42	WG259144-06 ANION CCB	1	1		12/19/07 12:13
42	I11219071230.43	L0712497-15 (Cl, NO2,Br,NO3,SO4)	1	1		12/19/07 12:30
43	I11219071247.44	L0712497-16 (Cl, NO2,Br,NO3,SO4)	1	1		12/19/07 12:47
44	I11219071305.45	L0712497-17 (Cl, NO2,Br,NO3,SO4) REF	1	1		12/19/07 13:05
45	I11219071322.46	WG259143-08 DUP 497-17	1	1		12/19/07 13:22
46	I11219071340.47	DI WATER (Column Rinse)	1	1		12/19/07 13:40
47	I11219071357.48	L0712500-01 RR Cl 1/5	1	5		12/19/07 13:57
48	I11219071414.49	L0712497-01 RR Cl 1/6	1	6		12/19/07 14:14
49	I11219071432.50	L0712497-02 RR Cl 1/4	1	4		12/19/07 14:32
50	I11219071449.51	L0712497-05 RR Cl 1/3	1	3		12/19/07 14:49
51	I11219071507.52	L0712497-09 RR Cl 1/2	1	2		12/19/07 15:07
52	I11219071524.53	WG259144-07 ANION CCV	1	1		12/19/07 15:24
53	I11219071542.54	WG259144-08 ANION CCB	1	1		12/19/07 15:42
54	I11219071559.55	L0712497-13 RR Cl 1/3	1	3		12/19/07 15:59
55	I11219071616.56	L0712497-14 RR Cl 1/3	1	3		12/19/07 16:16
56	I11219071634.57	L0712497-15 RR Cl 1/4	1	4		12/19/07 16:34
57	I11219071651.58	L0712497-16 RR Cl 1/5	1	5		12/19/07 16:51
58	I11219071709.59	WG259144-09 ANION CCV	1	1		12/19/07 17:09
59	I11219071726.60	WG259144-10 ANION CCB	1	1		12/19/07 17:26

Comments

Seq.	Rerun	Dil.	Reason	Analytes
16		200	Elevated Analyte	Chloride, Sulfate
	Sample analyzed at a dilution only due to high pre-run screen results for chloride and sulfate.			
17	X	6	Over Calibration Range	Chloride
	Also re-analyzed at a dilution to verify the presence of bromide at a similar retention time. It was determined the peak was not bromide.			
18	X	4	Over Calibration Range	Chloride
	Also re-analyzed at a dilution to verify the presence of bromide at a similar retention time. It was determined the peak was not bromide.			
23	X	3	Over Calibration Range	Chloride
29				
	The %Recovery for chloride was below their advisory limit. The %RPD for all target analytes was well within their advisory limit.			

Page: 2 Approved: 21-DEC-07

KEMRON Environmental Services

Instrument Run Log

Instrument: IC1 Dataset: 121807 9056 CURVE IC1.S

Analyst1: DSF Analyst2: JWR

Method: 300/9056 SOP: IC1 Rev: 7

Maintenance Log ID: 21413

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG258870 and WG259143

Internal STD: NA Surrogate STD: NA STD22570

Comments

Seq.	Rerun	Dil.	Reason	Analytes
34	X	2	Over Calibration Range	Chloride
37	X	3	Over Calibration Range	Chloride
38	X	3	Over Calibration Range	Chloride
42	X	4	Over Calibration Range	Chloride
43	X	5	Over Calibration Range	Chloride

Approved: 21-DEC-07

KEMRON Environmental Services

Instrument Run Log

Instrument: IC1 Dataset: 122107 9056 IC1.SEQ

Analyst1: DSF Analyst2: NA

Method: 300/9056 SOP: IC1 Rev: 7

Maintenance Log ID: 22337

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG259602

Internal STD: NA Surrogate STD: NA Calibration STD STD22570

Comments: There is no MS/MSD due to the instrument stopping later in this run (associated with another sample delivery group.). All samples bracketed by passing CCV and CCB. A sample duplicate was also analyzed.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I11221071017.01	ELUENT	1	1		12/21/07 10:17
2	I11221071035.02	DI WATER	1	1		12/21/07 10:35
3	I11221071052.03	WG259603-01 ANION CCV	1	1		12/21/07 10:52
4	I11221071110.04	WG259603-02 ANION CCB	1	1		12/21/07 11:10
5	I11221071127.05	WG259602-01 ANION BLANK	1	1		12/21/07 11:27
6	I11221071145.06	WG259602-02 ANION LCS	1	1		12/21/07 11:45
7	I11221071202.07	L0712635-01 (Cl, NO2, NO3, SO4) 1/10 REF	1	10		12/21/07 12:02
8	I11221071219.08	WG259602-04 DUP 635-01 1/10	1	10		12/21/07 12:19
9	I11221071237.09	L0712635-02 (Cl, NO2, NO3, SO4) 1/10	1	10		12/21/07 12:37
10	I11221071254.10	L0712635-02 RR Cl 1/50	1	50		12/21/07 12:54
11	I11221071312.11	L0712638-01 (PO4 Only) 1/3	1	3		12/21/07 13:12
12	I11221071329.12	L0712638-02 (PO4 Only) 1/3	1	3		12/21/07 13:29
13	I11221071405.13	L0712442-01 (SO4 Only) 1/10 (NR)	1	10		12/21/07 14:05
14	I11221071422.14	L0712442-02 (SO4 Only) 1/2 (NR)	1	2		12/21/07 14:22
15	I11221071440.15	WG259603-03 ANION CCV	1	1		12/21/07 14:40
16	I11221071457.16	WG259603-04 ANION CCB	1	1		12/21/07 14:57

Comments

Seq.	Rerun	Dil.	Reason	Analytes
7		10		
	Sample analyzed at a dilution only due to high pre-run screen results for chloride and sulfate.			
9	X	50	Over Calibration Range	Chloride
	Sample analyzed at a dilution only due to high pre-run screen results for chloride and sulfate.			
11		3	Elevated Analyte	Chloride
	Sample analyzed at a dilution only due to high pre-run screen results for chloride. Although chloride was not a target analyte, this was done to prevent damage to the analytical columns of the instrument.			
12		3	Elevated Analyte	Chloride
	Sample analyzed at a dilution only due to high pre-run screen results for chloride. Although chloride was not a target analyte, this was done to prevent damage to the analytical columns of the instrument.			

Page: 1 Approved: 02-JAN-08

KEMRON Environmental Services
Data Checklist

Date: 18-DEC-2007
Analyst: DSF
Analyst: JWR
Method: 300/9056
Instrument: IC1
Curve Workgroup: NA
Runlog ID: 19959
Analytical Workgroups: CALIBRATION CURVE AND L0712097-02, L0712497

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	X
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	X
Special standards	NA
Blanks	X
TCL hits	NA
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	X
Check for completeness	X
Primary Reviewer	DSF
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
21-DEC-2007
Debra S. Frederick

Secondary Reviewer:
21-DEC-2007
Michael Cochran

Generated: DEC-21-2007 14:17:05

KEMRON Environmental Services
Data Checklist

Date: 21-DEC-2007
Analyst: DSF
Analyst: NA
Method: 300/9056
Instrument: IC1
Curve Workgroup: NA
Runlog ID: 20034
Analytical Workgroups: L0712635, L0712638

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	X
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	X
Special standards	NA
Blanks	X
TCL hits	NA
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	X
Check for completeness	X
Primary Reviewer	DSF
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
28-DEC-2007
Debra S. Frederick

Secondary Reviewer:
02-JAN-2008
Michael Cochran

Generated: JAN-02-2008 10:57:55

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00114976

Analytical Method: 300.0 AAB#: WG259602

Login Number: L0712635

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW24-121907	12/19/07	12/21/07	12/21/07	2	2.05	12/21/07	2	2.05	*EXT
12WW23-121907	12/19/07	12/21/07	12/21/07	2	2.11	12/21/07	2	2.11	*EXT
12WW24-121907	12/19/07	12/21/07	12/21/07	2	2.06	12/21/07	2	2.06	*EXT

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 982262
Report generated 01/02/2008 11:06

SURROGATE STANDARDS

00114977

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

METHOD BLANK SUMMARY

Login Number: L0712635
Work Group: WG259602
Blank File ID: I11221071127.05
Blank Sample ID: WG259602-01
Prep Date: 12/21/07 11:27
Instrument ID: IC1
Analyzed Date: 12/21/07 11:27
Method: 300.0
Analyst: DSF

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG259602-02	I11221071145.06	12/21/07 11:45	01
12WW23-121907	L0712635-01	I11221071202.07	12/21/07 12:02	DL01
DUP	WG259602-04	I11221071219.08	12/21/07 12:19	DL01
12WW24-121907	L0712635-02	I11221071237.09	12/21/07 12:37	DL01
12WW24-121907	L0712635-02	I11221071254.10	12/21/07 12:54	DL02

KEMRON FORMS - Modified 01/31/2007
Version 1.5 PDF File ID: 982263
Report generated 01/02/2008 11:06

KEMRON Environmental Services

METHOD BLANK REPORT

00114979

Login Number:L0712635 Prep Date:12/21/07 11:27 Sample ID:WG259602-01
Instrument ID:IC1 Run Date:12/21/07 11:27 Prep Method:300.0
File ID:I11221071127.05 Analyst:DSF Method:300.0
Workgroup (AAB#):WG259602 Matrix:Water Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID:IC1-18-DEC-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0.100	1	U
Nitrate	0.100	0.600	0.100	1	U
Nitrite	0.100	0.400	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 982264
Report generated 01/02/2008 11:06

KEMRON Environmental Services

00114980

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0712635 Run Date:12/21/2007 Sample ID:WG259602-02
Instrument ID:IC1 Run Time:11:45 Prep Method:300.0
File ID:I11221071145.06 Analyst:DSF Method:300.0
Workgroup (AAB#):WG259602 Matrix:Water Units:mg/L
QC Key:STD Lot#:STD22570 Cal ID:IC1-18-DEC-07

Analytes	Expected	Found	% Rec	LCS Limits	Q
Chloride	6.00	6.16	103	90 - 110	
Nitrate	4.07	4.15	102	90 - 110	
Nitrite	3.65	3.76	103	90 - 110	
Sulfate	30.0	30.5	102	90 - 110	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 982265
Report generated 01/02/2008 11:06

00114981

DUPLICATE (DUP)

Sample Ref:L0712635-01 Cal ID: IC1- Worknum:WG259602
Instrument ID:IC1 Method:9056
Sample ID:WG259602-03 File ID:I11221071202.07 Dil:10 Matrix:WATER
Duplicate ID:WG259602-04 File ID:I11221071219.08 Dil:10 Units:mg/L

Analyte	Sample	Duplicate	RPD	RPD Limit	Q
Chloride	70.5	70.6	0.113	20	
Nitrate	ND	ND	0	20	
Nitrite	ND	ND	0	20	
Sulfate	8.35	8.86	5.92	20	

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 03/06/2006
Version 1.5 PDF File ID: 982266
Report generated 12/28/2007 11:04

INITIAL CALIBRATION SUMMARY

Login Number: L0712635 **Instrument ID:** IC1

Analytical Method: 300.0 **Initial Calibration Date:** 18-DEC-07 10:25

ICAL Workgroup: WG258870 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Chloride		4.737	5.62		
Nitrate		1.964	8.08		
Nitrite		2.260	7.22		
Sulfate		6.025	8.74		

R = Correlation coefficient; 0.995 minimum

R^2 = Coefficient of determination; 0.99 minimum

This method always uses quadratic calibration model (R^2)

KEMRON Environmental Services

INITIAL CALIBRATION DATA

00114983

Login Number: L0712635

Analytical Method: 300.0

Instrument ID: IC1

Initial Calibration Date: 18-DEC-07 10:25

Column ID: F

Analyte	WG258870-01			WG258870-02			WG258870-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloride	0.200	0.0400000000	5.000	2.00	0.397000000	5.038	4.00	0.863000000	4.635
Nitrate	0.136	0.0640000000	2.117	1.36	0.649000000	2.088	2.71	1.35100000	2.007
Nitrite	0.122	0.0470000000	2.591	1.22	0.529000000	2.302	2.44	1.08900000	2.237
Sulfate	1.00	0.149000000	6.711	10.0	1.56500000	6.390	20.0	3.24100000	6.171

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 984023
Report generated 01/02/2008 11:06

KEMRON Environmental Services

INITIAL CALIBRATION DATA

00114984

Login Number:L0712635

Analytical Method:300.0

Instrument ID:IC1

Initial Calibration Date:18-DEC-07 10:25

Column ID:F

Analyte	WG258870-04			WG258870-05			WG258870-06		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloride	6.00	1.25500000	4.781	8.00	1.72700000	4.632	12.0	2.76700000	4.337
Nitrate	4.07	2.05800000	1.976	5.42	2.87400000	1.886	8.13	4.75700000	1.710
Nitrite	3.65	1.67200000	2.185	4.87	2.30300000	2.115	7.31	3.43100000	2.130
Sulfate	30.0	5.04700000	5.944	40.0	7.06900000	5.659	60.0	11.3750000	5.275

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 984023
Report generated 01/02/2008 11:06

KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00114985

Login Number:L0712635 Run Date:12/18/2007 Sample ID:WG258870-07

Instrument ID:IC1 Run Time:10:42 Method:300.0

File ID:I11218071042.07 Analyst:DSF QC Key:STD

ICal Workgroup:WG258870 Cal ID: IC1 - 18-DEC-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloride		6.00	6.44	mg/L	4.37	7.40	10	
Nitrate		4.07	4.45	mg/L	1.77	9.40	10	
Nitrite		3.65	3.61	mg/L	2.20	1.20	10	
Sulfate		30.0	32.2	mg/L	5.47	7.20	10	

* Exceeds %D Limit

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 984024
Report generated 01/02/2008 11:06

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00114986

Login Number:L0712635 Run Date:12/21/2007 Sample ID:WG259603-02
Instrument ID:IC1 Run Time:11:10 Method:300.0
File ID:I11221071110.04 Analyst:DSF Units:mg/L
Workgroup (AAB#):WG259602 Cal ID: IC1 -
Matrix:WATER

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 982268
Report generated 12/28/2007 11:04

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00114987

Login Number:L0712635 Run Date:12/21/2007 Sample ID:WG259603-04
Instrument ID:IC1 Run Time:14:57 Method:300.0
File ID:I11221071457.16 Analyst:DSF Units:mg/L
Workgroup (AAB#):WG259602 Cal ID: IC1 -
Matrix:WATER

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

KEMRON FORMS - Modified 09/27/2006
Version 2.0 PDF File ID: 982268
Report generated 12/28/2007 11:04

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114988

Login Number:L0712635 Run Date:12/21/2007 Sample ID:WG259603-01
Instrument ID:IC1 Run Time:10:52 Method:300.0
File ID:I11221071052.03 Analyst:DSF QC Key:STD
Workgroup (AAB#):WG259602 Cal ID: IC1 - 18-DEC-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	6.16	mg/L	4.59	2.67	10	
Nitrate		4.07	4.16	mg/L	1.91	2.28	10	
Nitrite		3.65	3.73	mg/L	2.13	1.96	10	
Sulfate		30.0	30.5	mg/L	5.81	1.53	10	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 982267
Report generated 01/02/2008 11:06

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00114989

Login Number:L0712635 Run Date:12/21/2007 Sample ID:WG259603-03
Instrument ID:IC1 Run Time:14:40 Method:300.0
File ID:I11221071440.15 Analyst:DSF QC Key:STD
Workgroup (AAB#):WG259602 Cal ID: IC1 - 18-DEC-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	6.15	mg/L	4.60	2.42	10	
Nitrate		4.07	4.12	mg/L	1.93	1.32	10	
Nitrite		3.65	3.72	mg/L	2.13	1.69	10	
Sulfate		30.0	30.4	mg/L	5.84	1.17	10	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 982267
Report generated 01/02/2008 11:06

2.2.2 Total Organic Carbon Data

2.2.2.1 Summary Data

LABORATORY REPORT

L0712635

01/08/08 08:11

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Account Number: 2773
Work ID: LHAAP

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW23-121907	L0712635-01	415.1	1	21-DEC-07
12WW23-121907	L0712635-01	415.1	1	21-DEC-07
12WW24-121907	L0712635-02	415.1	1	21-DEC-07
12WW24-121907	L0712635-02	415.1	1	21-DEC-07

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114993

Sample Number: **L0712635-01**
Client ID: **12WW23-121907**
Matrix: **Water**
Workgroup Number: **WG259648**
Collect Date: **12/19/2007 09:25**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **12/29/2007 19:41**
Cal Date: **09/28/2007 13:01**
Run Date: **12/29/2007 19:41**
File ID: **TC12-29-2007.58**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Organic Carbon		2.17		1.00	0.500

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114994

Sample Number: **L0712635-01**
Client ID: **12WW23-121907**
Matrix: **Water**
Workgroup Number: **WG259648**
Collect Date: **12/19/2007 09:25**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **12/29/2007 19:41**
Cal Date: **09/28/2007 13:01**
Run Date: **12/29/2007 19:41**
File ID: **TC12-29-2007.58**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Inorganic Carbon		13.3		1.00	0.500

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114995

Sample Number: **L0712635-02**
Client ID: **12WW24-121907**
Matrix: **Water**
Workgroup Number: **WG259648**
Collect Date: **12/19/2007 11:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **12/29/2007 19:54**
Cal Date: **09/28/2007 13:01**
Run Date: **12/29/2007 19:54**
File ID: **TC12-29-2007.59**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Inorganic Carbon		23.7		1.00	0.500

Report Number: **L0712635**
Report Date : **January 8, 2008**

00114996

Sample Number: **L0712635-02**
Client ID: **12WW24-121907**
Matrix: **Water**
Workgroup Number: **WG259648**
Collect Date: **12/19/2007 11:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **12/29/2007 19:54**
Cal Date: **09/28/2007 13:01**
Run Date: **12/29/2007 19:54**
File ID: **TC12-29-2007.59**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Organic Carbon		7.61		1.00	0.500

2.2.2.2 QC Summary Data

Total Organic Carbon Example Calculations
(Direct Readout Parameter)

(Readout)/(dilution) = mg/L

where:

Readout = direct readout from the instrument
dilution = dilution in decimal form (ex. 1/5 dilution = 0.2)

KEMRON Environmental Services
Data Checklist

Date: 29-DEC-2007
Analyst: DIH
Analyst: NA
Method: TOC
Instrument: TOC
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG259648 WG259646

Calibration/Linearity	9/28/2007
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DIH
Secondary Reviewer	
Comments	

Primary Reviewer:
02-JAN-2008

Secondary Reviewer:

Generated: JAN-02-2008 13:59:16

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00115000

Analytical Method: 415.1 AAB#: WG259648

Login Number: L0712635

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW23-121907	12/19/07	12/21/07	12/29/07	28	10.4	12/29/07	28	10.4	
12WW24-121907	12/19/07	12/21/07	12/29/07	28	10.4	12/29/07	28	10.4	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 984765
Report generated 01/02/2008 14:30

METHOD BLANK SUMMARY

Login Number: L0712635
Work Group: WG259648
Blank File ID: TC12-29-2007.33
Blank Sample ID: WG259648-01
Prep Date: 12/29/07 15:05
Instrument ID: TOC-VWP
Analyzed Date: 12/29/07 15:05
Method: 415.1
Analyst: DIH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG259648-02	TC12-29-2007.34	12/29/07 15:16	01
LCS2	WG259648-03	TC12-29-2007.35	12/29/07 15:28	01
12WW23-121907	L0712635-01	TC12-29-2007.58	12/29/07 19:41	01
12WW23-121907	L0712635-01	TC12-29-2007.58	12/29/07 19:41	01
12WW24-121907	L0712635-02	TC12-29-2007.59	12/29/07 19:54	01
12WW24-121907	L0712635-02	TC12-29-2007.59	12/29/07 19:54	01
DUP	WG259648-05	TC12-29-2007.60	12/29/07 20:07	01

KEMRON Environmental Services

METHOD BLANK REPORT

00115002

Login Number:L0712635 Prep Date:12/29/07 15:05 Sample ID:WG259648-01
Instrument ID:TOC-VWP Run Date:12/29/07 15:05 Prep Method:415.1
File ID:TC12-29-2007.33 Analyst:DIH Method:415.1
Workgroup (AAB#):WG259648 Matrix:Water Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID:TOC-VW-

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 984767
Report generated 01/02/2008 14:30

KEMRON Environmental Services

00115003

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L0712635 Analyst:DIH Prep Method:415.1
Instrument ID:TOC-VWP Matrix:Water Method:415.1
Workgroup (AAB#):WG259648 Units:mg/L
QC Key:STD Lot #:STD23654

Sample ID:WG259648-02 LCS File ID:TC12-29-2007.34 Run Date:12/29/2007 15:16
Sample ID:WG259648-03 LCS2 File ID:TC12-29-2007.35 Run Date:12/29/2007 15:28

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	25.7	103	25.0	23.3	93.3	9.82	85 - 115	15	

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 984768
Report generated 01/02/2008 14:30

2.2.2.3 Raw Data

TC/TIC curves

KEMRON ENVIRONMENTAL SERVICES

WG#: _____

Total Organic Carbon

MAKE DAILY

CCV (TOC): Dee Leslie ($^{10}/_{200}$ (1000) = 50 mg/L) ($^{5}/_{200}$ (1000) = 10 mg/L)

LCS (TOC): _____ ($^{5}/_{200}$ (1000) = 25 mg/L)

CCV (TIC): _____ ($^{5}/_{200}$ (1000) = 25 mg/L)

MS (TOC): _____

Calibration Curve Date: 9/28/07

☑ EPA 415.1 / SM5310-C TOC / TOC-4 / TOC-D / TOCLOW
☐ SW846 9060 TOC-14 / TOC-44

SOP: K 4151 Rev. 11

Instrument: Shimadza TOC-VWP/ASI

DAILY CHECK

☑ drain reservoir filled
☑ ASI water bottle full
☑ dilution water bottle full

☑ 3rd bottle full
☑ sufficient gas
☑ sufficient persulfate

☑ sufficient acid
☑ waste container

Position	Sample ID	Dilution
1	IHETC curve	
2	TC ICV	
3	TIC curve	
4	TIC ICV	
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

Position	Sample ID	Dilution
26	curve std	
27	TC std 20564	
28	TIC std 21975	
29		
30		
31		
32		
33	ICV	
34		
35	TC std 22009	
36		
37	TIC std 21999	
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		

Position	Sample ID	Dilution
51		
52	) see SOP	
53	) for curves	
54		
55		
56		
57		
58		
59		
60	5/200(1000)=25	
61		
62	5/200(1000)=25	
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		

Analyst: Deanna Roberts Date: 9/28/07 Time: _____

DCN#71205

Deanna Roberts

Approved: September 30, 2007

	Analysi	Sample Name	Result	Status	Date / Time
1	TC	TCCURVE		Compl	09/28/2007 12:28:50 PM
2	TC	TC ICV	TC:24.61mg/L	Compl	09/28/2007 12:35:37 PM
3	IC	TICCURVE		Compl	09/28/2007 01:18:04 PM
4	IC	TIC	IC:25.94mg/L	Compl	09/28/2007 01:26:28 PM

Approved: September 30, 2007

Instr.Information

System TOCVW ASI
Detector Wet Chemical

Cal. Curve

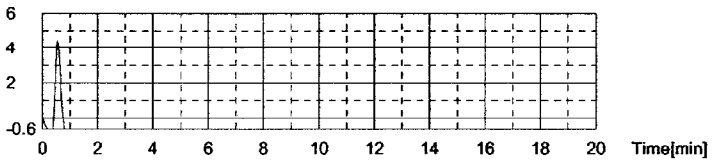
Sample Name: TCCURVE
Sample ID: Untitled
Cal. Curve: TCCURVE-09-28-2007.2007_09_28_11_55_13.cal
Status Completed

Type	Anal.
Standard	TC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	7.415	500uL	1	********		09/28/2007 11:58:33 AM

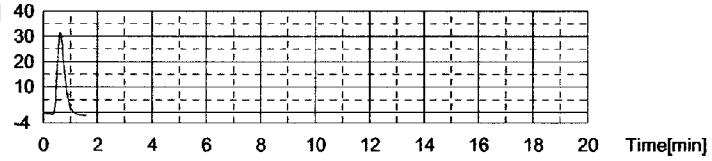
Acid Add. 0.000%
Mean Area 7.415



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	60.44	500uL	1	********		09/28/2007 12:03:55 PM

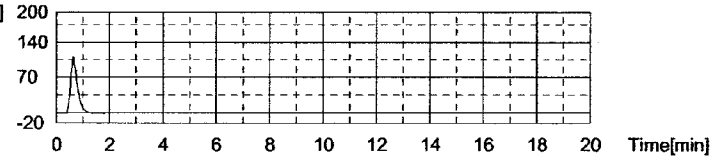
Acid Add. 0.000%
Mean Area 60.44



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	196.6	500uL	1	********		09/28/2007 12:09:42 PM

Acid Add. 0.000%
Mean Area 196.6

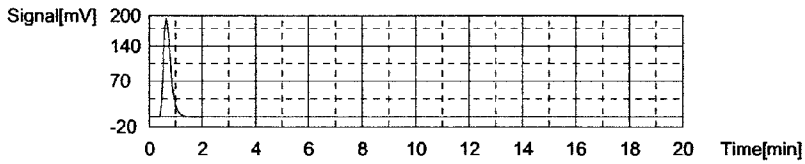


Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	386.2	500uL	1	********		09/28/2007 12:15:46 PM

Approved: September 30, 2007

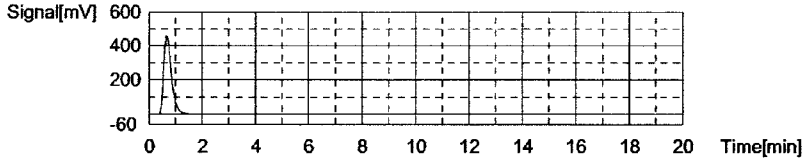
Acid Add. 0.000%
Mean Area 386.2



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	945.1	500uL	1	********		09/28/2007 12:22:10 PM

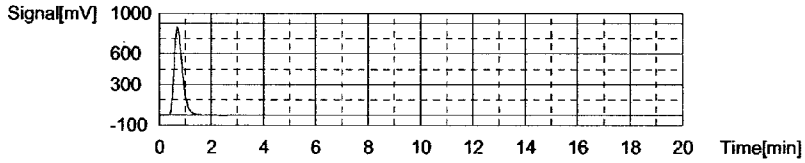
Acid Add. 0.000%
Mean Area 945.1



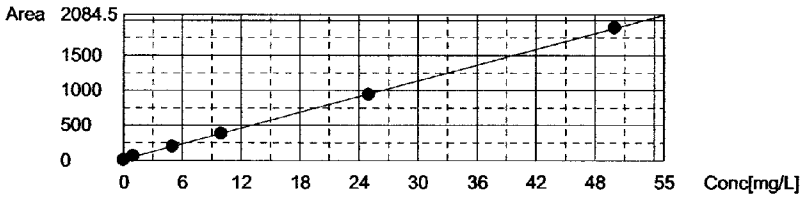
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1895	500uL	1	********		09/28/2007 12:28:50 PM

Acid Add. 0.000%
Mean Area 1895



Slope: 37.60
Intercept 11.55
r^2 0.999921
Zero Shift No



Sample

Sample Name: TC ICV
Sample ID: Untitled
Origin: TCCURVE-09-28-2007.cal
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TC	1.000	TC:24.61mg/L

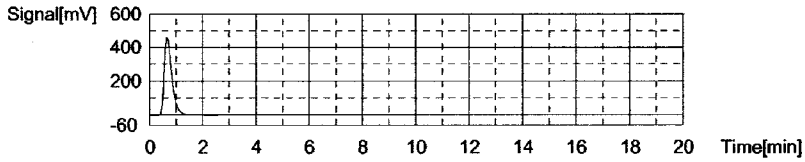
1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	937.0	24.61mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	09/28/2007 12:35:37 PM

Approved: September 30, 2007

Mean Area 937.0
Mean Conc. 24.61mg/L



Cal. Curve

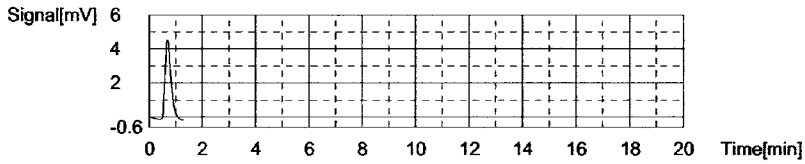
Sample Name: TICCURVE
Sample ID: Untitled
Cal. Curve: TICCURVE-09-29-2007.2007_09_28_12_35_37.cal
Status Completed

Type	Anal.
Standard	IC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	7.260	500uL	1	*******		09/28/2007 12:39:07 PM

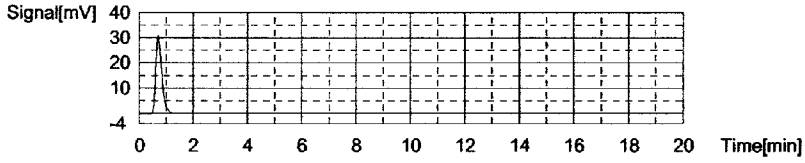
Acid Add. 10.00%
Mean Area 7.260



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	47.64	500uL	1	*******		09/28/2007 12:46:16 PM

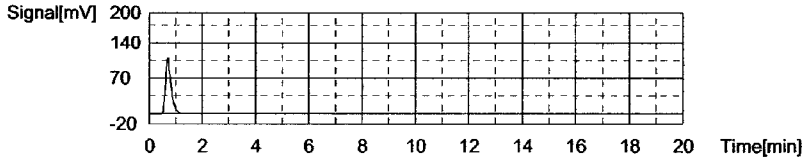
Acid Add. 10.00%
Mean Area 47.64



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	159.9	500uL	1	*******		09/28/2007 12:53:33 PM

Acid Add. 10.00%
Mean Area 159.9

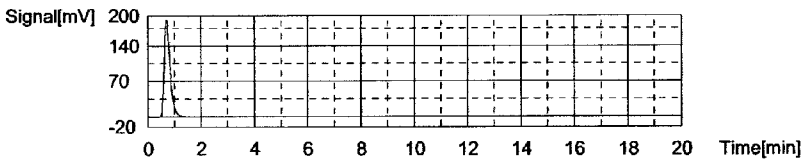


Conc: 10.00mg/L

Approved: September 30, 2007

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	300.8	500uL	1	*******		09/28/2007 01:01:01 PM

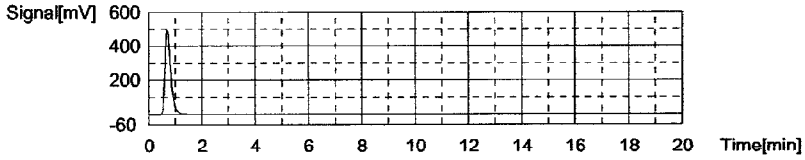
Acid Add. 10.00%
Mean Area 300.8



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	766.5	500uL	1	*******		09/28/2007 01:09:32 PM

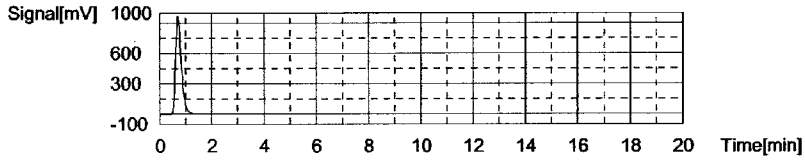
Acid Add. 10.00%
Mean Area 766.5



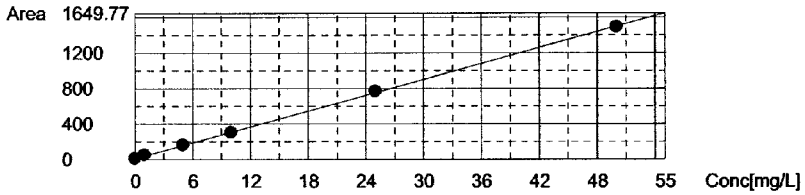
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1496	500uL	1	*******		09/28/2007 01:18:04 PM

Acid Add. 10.00%
Mean Area 1496



Slope: 29.76
Intercept 11.60
r^2 0.999843
Zero Shift No



Sample

Sample Name: TIC
Sample ID: Untitled
Origin: TICCURVE-09-29-2007.cal
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	IC	1.000	IC:25.94mg/L

1. Det

Anal.: IC

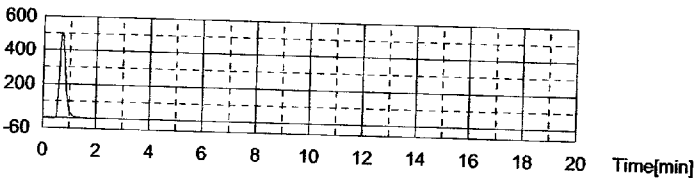
Jeanna Roberts

Approved: September 30, 2007

09/28/2007 01:40:32 PM 09-28-2007-DIH-TOC.t32

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	783.7	25.94mg/L	500ul	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	09/28/2007 01:26:28 PM

Mean Area 783.7
Mean Conc. 25.94mg/L



5/5

Approved: September 30, 2007

WORKGROUP: WG259646

259648

KEMRON ENVIRONMENTAL SERVICES

WG#: _____

Total Organic Carbon

MAKE DAILY

CCV (TOC): STD22587 ($^{10}/_{200}$(1000) = 50 mg/L) ($^{3}/_{200}$(1000) = 10 mg/L)

LCS (TOC): STD23654 ($^{5}/_{200}$(1000) = 25 mg/L)

CCV (TIC): STD23787 ($^{5}/_{200}$(1000) = 25 mg/L)

MS (TOC): 0.4/40(1000)=10

Calibration Curve Date: 9/28/07

☑ EPA 415.1 / SM5310-C TOC / TOC-4 / TOC-D / TOCLOW
☐ SW846 9060 TOC-14 / TOC-44

SOP: K 4151 Rev. 11

Instrument: Shimadza TOC-VWP/ASI

DAILY CHECK

☑ drain reservoir filled
☑ ASI water bottle full
☑ dilution water bottle full

☑ 3rd bottle full
☑ sufficient gas
☑ sufficient persulfate

☑ sufficient acid
☑ waste container

Position	Sample ID	Dilution
1	CCV 50	
2	CCV 10	
3	TIC 25	
4	BIK	
5	LCS 25	
6	LCSDUP	
7	12-444-09	1/40
8	12-497-10	1/10
9	11	
10	12-455-01	
11	02	
12	04	
13	12-562-01	
14	02	1/50
15	CCV	
16	CCB	
17	12-562-03	
18	04	1/3
19	05	
20	07	1/200
21	08	1/40
22	09	1/5
23	10	
24	11	
25	12	

Position	Sample ID	Dilution
26	12-562-13	
27	CCV	
28	CCB	
29	12-562-14	
30	15	
31	DUP ~~1/40~~	
32	MS ↓	
33	BIK	
34	LCS	
35	LCSDUP	
36	12-562-16	1/5
37	12-496-01	1/10 *
38	02	↓
39	CCV	
40	CCB	
41	12-496-03	1/10 *
42	04	|
43	05	|
44	06	|
45	07	|
46	08	↓
47	12-498-01	1/10 *
48	02	|
49	03	↓
50	12-511-01	

Position	Sample ID	Dilution
51	CCV	
52	CCB	
53	12-511-0203	
54	~~02~~ 0305	
55	12-588-01	1/4 matrix
56	02	1/4 ↓
57	03	
58	12-635-01	
59	02	
60	DUP ~~4900~~ 635-02	
61	MS ↓	↓
62		
63	CCV	
64	CCB	
65 67	~~CCV~~ run 12-497-11	1/2
66 68	~~CCB~~ 12-455-04	1/2
67 4	12-562-08	1/100
68	CCV	
69	CCB	
70		
71		
72		
73		
74		
75		

Analyst: Deanna Olson Date: 12/29/07 Time: _____

* HCl preservative

DCN#72578

	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TOC	CCV 50	!!Error!! TOC:50.27mg/L TC:50.04mg/L IC:-0.2335mg	Comple	12/29/2007 08:40:29 AM	1
2	TOC	CCV 10	!!Error!! TOC:9.996mg/L TC:9.898mg/L IC:-0.09797m	Comple	12/29/2007 08:51:44 AM	2
3	TOC	TIC 25	!!Error!! TOC:-1.294mg/L TC:24.60mg/L IC:25.90mg/	Comple	12/29/2007 09:04:37 AM	3
4	TOC	WG259646-01 BLANK	!!Error!! TOC:0.05164mg/L TC:-0.04512mg/L IC:-0.09	Comple	12/29/2007 09:12:52 AM	0
5	TOC	WG259646-02 LCS X	!!Error!! TOC:19.71mg/L TC:19.52mg/L IC:-0.1990mg	Comple	12/29/2007 09:24:15 AM	5
6	TOC	WG259646-03 LCSDUP	!!Error!! TOC:24.64mg/L TC:24.43mg/L IC:-0.2060mg	Comple	12/29/2007 09:35:36 AM	6
7	TOC	L0712444-09 (40)	TOC:25.17mg/L TC:30.52mg/L IC:5.352mg/L	Comple	12/29/2007 09:48:02 AM	7
8	TOC	L0712497-10 (10)	TOC:15.71mg/L TC:20.65mg/L IC:4.942mg/L	Comple	12/29/2007 09:59:49 AM	8
9	TOC	L0712497-11 X	!!Error!! TOC:-5.294mg/L TC:53.82mg/L IC:59.11mg/	Comple	12/29/2007 10:13:27 AM	9
10	TOC	L0712455-01	TOC:5.549mg/L TC:20.82mg/L IC:15.27mg/L	Comple	12/29/2007 10:25:54 AM	10
11	TOC	L0712455-02	TOC:0.8712mg/L TC:46.48mg/L IC:45.61mg/L	Comple	12/29/2007 10:39:29 AM	11
12	TOC	L0712455-04 X	!!Error!! TOC:-5.462mg/L TC:54.46mg/L IC:59.92mg/	Comple	12/29/2007 10:53:58 AM	12
13	TOC	L0712562-01	!!Error!! TOC:-0.5541mg/L TC:22.14mg/L IC:22.69mg	Comple	12/29/2007 11:06:35 AM	13
14	TOC	L0712562-02 (50)	TOC:15.35mg/L TC:17.15mg/L IC:1.799mg/L	Comple	12/29/2007 11:18:16 AM	14
15	TOC	CCV	!!Error!! TOC:49.19mg/L TC:49.00mg/L IC:-0.1878mg	Comple	12/29/2007 11:30:12 AM	15
16	TOC	CCB	!!Error!! TOC:0.03733mg/L TC:-0.08775mg/L IC:-0.12	Comple	12/29/2007 11:38:22 AM	0
17	TOC	L0712562-03	TOC:0.4165mg/L TC:40.55mg/L IC:40.13mg/L	Comple	12/29/2007 11:51:38 AM	17
18	TOC	L0712562-04 (3)	TOC:14.25mg/L TC:24.21mg/L IC:9.962mg/L	Comple	12/29/2007 12:03:50 PM	18
19	TOC	L0712562-05	TOC:0.5982mg/L TC:18.14mg/L IC:17.54mg/L	Comple	12/29/2007 12:16:20 PM	19
20	TOC	L0712562-07 (200)	TOC:26.22mg/L TC:26.66mg/L IC:0.4402mg/L	Comple	12/29/2007 12:27:59 PM	20
21	TOC	L0712562-08 (40) X	TOC:53.68mg/L TC:55.84mg/L IC:2.154mg/L	Comple	12/29/2007 12:40:15 PM	21
22	TOC	L0712562-09 (5)	TOC:33.21mg/L TC:37.86mg/L IC:4.650mg/L	Comple	12/29/2007 12:54:28 PM	22
23	TOC	L0712562-10	!!Error!! TOC:-0.7041mg/L TC:20.50mg/L IC:21.20mg	Comple	12/29/2007 01:07:17 PM	23
24	TOC	L0712562-11	!!Error!! TOC:-0.7443mg/L TC:27.99mg/L IC:28.74mg	Comple	12/29/2007 01:20:22 PM	24
25	TOC	L0712562-12	TOC:0.7008mg/L TC:25.22mg/L IC:24.52mg/L	Comple	12/29/2007 01:33:06 PM	25
26	TOC	L0712562-13	TOC:0.3563mg/L TC:19.99mg/L IC:19.64mg/L	Comple	12/29/2007 01:45:41 PM	26
27	TOC	CCV	!!Error!! TOC:45.93mg/L TC:45.81mg/L IC:-0.1215mg	Comple	12/29/2007 01:57:33 PM	27
28	TOC	CCB	!!Error!! TOC:0.03428mg/L TC:-0.08496mg/L IC:-0.11	Comple	12/29/2007 02:05:44 PM	0
29	TOC	L0712562-14	TOC:0.4426mg/L TC:33.31mg/L IC:32.87mg/L	Comple	12/29/2007 02:19:10 PM	29
30	TOC	L0712562-15	!!Error!! TOC:-0.7645mg/L TC:21.95mg/L IC:22.72mg	Comple	12/29/2007 02:31:47 PM	30
31	TOC	WG259646-05 DUP	!!Error!! TOC:-1.172mg/L TC:21.70mg/L IC:22.87mg/	Comple	12/29/2007 02:44:08 PM	31
32	TOC	WG259646-06 MS	TOC:9.148mg/L TC:36.16mg/L IC:27.01mg/L	Comple	12/29/2007 02:57:00 PM	32
33	TOC	WG259648-01 BLANK	!!Error!! TOC:0.03091mg/L TC:-0.01474mg/L IC:-0.04	Comple	12/29/2007 03:05:16 PM	0
34	TOC	WG259648-02 LCS	!!Error!! TOC:25.74mg/L TC:25.61mg/L IC:-0.1321mg	Comple	12/29/2007 03:16:45 PM	34
35	TOC	WG259648-03 LCSDUP	!!Error!! TOC:23.33mg/L TC:23.18mg/L IC:-0.1597mg	Comple	12/29/2007 03:28:21 PM	35
36	TOC	L0712562-16 (5)	TOC:0.04429mg/L TC:3.169mg/L IC:3.125mg/L	Comple	12/29/2007 03:39:31 PM	36
37	TOC	L0712496-01 (10)	TOC:0.09821mg/L TC:0.5478mg/L IC:0.4496mg/L	Comple	12/29/2007 03:50:18 PM	37
38	TOC	L0712496-02 (10)	TOC:0.1157mg/L TC:0.3409mg/L IC:0.2251mg/L	Comple	12/29/2007 04:01:02 PM	38
39	TOC	CCV	!!Error!! TOC:44.00mg/L TC:43.82mg/L IC:-0.1854mg	Comple	12/29/2007 04:12:37 PM	39
40	TOC	CCB	!!Error!! TOC:0.03646mg/L TC:-0.09810mg/L IC:-0.13	Comple	12/29/2007 04:20:48 PM	0
41	TOC	L0712496-03 (10)	TOC:0.8859mg/L TC:1.633mg/L IC:0.7476mg/L	Comple	12/29/2007 04:31:54 PM	41
42	TOC	L0712496-04 (10)	TOC:0.2563mg/L TC:0.6850mg/L IC:0.4287mg/L	Comple	12/29/2007 04:42:47 PM	42
43	TOC	L0712496-05 (10)	TOC:0.1190mg/L TC:0.4127mg/L IC:0.2937mg/L	Comple	12/29/2007 04:53:33 PM	43
44	TOC	L0712496-06 (10)	TOC:0.1356mg/L TC:0.2999mg/L IC:0.1643mg/L	Comple	12/29/2007 05:04:17 PM	44
45	TOC	L0712496-07 (10)	TOC:0.09308mg/L TC:0.3401mg/L IC:0.2470mg/L	Comple	12/29/2007 05:15:00 PM	45
46	TOC	L0712496-08 (10)	TOC:0.1591mg/L TC:0.6252mg/L IC:0.4660mg/L	Comple	12/29/2007 05:25:49 PM	46
47	TOC	L0712498-01 (10)	TOC:0.1318mg/L TC:0.7047mg/L IC:0.5729mg/L	Comple	12/29/2007 05:36:40 PM	47
48	TOC	L0712498-02 (10)	TOC:0.08684mg/L TC:0.5169mg/L IC:0.4301mg/L	Comple	12/29/2007 05:47:27 PM	48
49	TOC	L0712498-03 (10)	TOC:0.1493mg/L TC:0.5922mg/L IC:0.4429mg/L	Comple	12/29/2007 05:58:20 PM	49
50	TOC	L0712511-01	TOC:2.858mg/L TC:26.34mg/L IC:23.48mg/L	Comple	12/29/2007 06:11:03 PM	50
51	TOC	CCV	!!Error!! TOC:46.18mg/L TC:46.08mg/L IC:-0.1045mg	Comple	12/29/2007 06:22:46 PM	51
52	TOC	CCB	!!Error!! TOC:0.03028mg/L TC:-0.09275mg/L IC:-0.12	Comple	12/29/2007 06:30:59 PM	0
53	TOC	L0712511-03	TOC:0.6706mg/L TC:6.661mg/L IC:5.991mg/L	Comple	12/29/2007 06:42:25 PM	53
54	TOC	L0712511-05	TOC:3.091mg/L TC:17.30mg/L IC:14.21mg/L	Comple	12/29/2007 06:54:53 PM	54
55	TOC	L0712588-01 (4)	TOC:0.6211mg/L TC:2.408mg/L IC:1.787mg/L	Comple	12/29/2007 07:05:59 PM	55
56	TOC	L0712588-02 (4)	TOC:0.5691mg/L TC:2.051mg/L IC:1.482mg/L	Comple	12/29/2007 07:17:04 PM	56
57	TOC	L0712588-03	TOC:1.411mg/L TC:11.93mg/L IC:10.52mg/L	Comple	12/29/2007 07:29:10 PM	57
58	TOC	L0712635-01	TOC:2.169mg/L TC:15.42mg/L IC:13.25mg/L	Comple	12/29/2007 07:41:17 PM	58
59	TOC	L0712635-02	TOC:7.607mg/L TC:31.29mg/L IC:23.68mg/L	Comple	12/29/2007 07:54:10 PM	59
60	TOC	WG259648-05 DUP	TOC:8.583mg/L TC:37.17mg/L IC:28.59mg/L	Comple	12/29/2007 08:07:11 PM	60
61	TOC	WG259648-06 MS	TOC:14.71mg/L TC:56.96mg/L IC:42.25mg/L	Comple	12/29/2007 08:21:21 PM	61
62	TOC	WG259646-02 LCS	!!Error!! TOC:22.52mg/L TC:22.51mg/L IC:-0.01407m	Comple	12/29/2007 08:32:57 PM	62
63	TOC	CCV	!!Error!! TOC:44.92mg/L TC:44.77mg/L IC:-0.1407mg	Comple	12/29/2007 08:44:47 PM	63
64	TOC	CCB	!!Error!! TOC:0.03379mg/L TC:-0.08887mg/L IC:-0.12	Comple	12/29/2007 08:53:02 PM	0
65	TOC	L0712497-11 (2)	TOC:3.578mg/L TC:10.28mg/L IC:6.703mg/L	Comple	12/29/2007 09:04:52 PM	67
66	TOC	L0712455-04 (2)	TOC:2.253mg/L TC:11.64mg/L IC:9.387mg/L	Comple	12/29/2007 09:16:52 PM	68
67	TOC	L0712562-08 (100)	TOC:22.75mg/L TC:22.92mg/L IC:0.1704mg/L	Comple	12/29/2007 09:28:32 PM	4

	Analysis	Sample Name	Result	Status	Date / Time	Vial
68	TOC	CCV	!!Error!! TOC:50.47mg/L TC:50.31mg/L IC:-0.1645mg	Comple	12/29/2007 09:40:46 PM	1
69	TOC	CCB	!!Error!! TOC:0.03551mg/L TC:-0.09118mg/L IC:-0.12	Comple	12/29/2007 09:48:58 PM	0

Instr.Information

System TOCVW ASI
Detector Wet Chemical

Sample

Sample Name: CCV 50
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

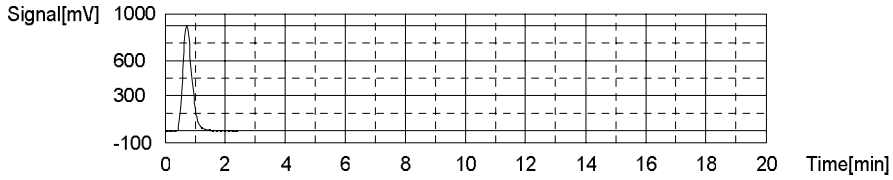
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:50.27mg/L TC:50.04mg/L IC:-0.2335mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1893	50.04mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 08:36:40 AM

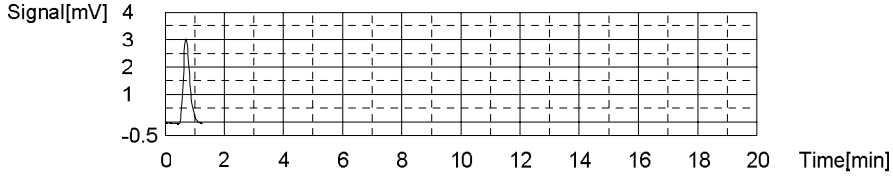
Mean Area 1893
Mean Conc. 50.04mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.648	-0.2335mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 08:40:29 AM

Mean Area 4.648
Mean Conc. -0.2335mg/L



Sample

Sample Name: CCV 10
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

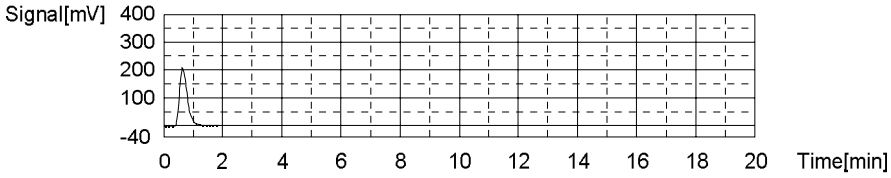
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:9.996mg/L TC:9.898mg/L IC:-0.09797mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	383.7	9.898mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 08:47:48 AM

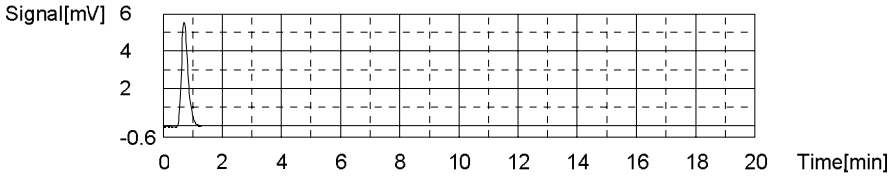
Mean Area 383.7
Mean Conc. 9.898mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.683	-0.09797mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 08:51:44 AM

Mean Area 8.683
Mean Conc. -0.09797mg/L



Sample

Sample Name: TIC 25
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

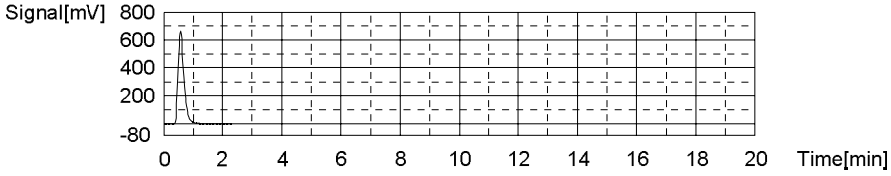
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-1.294mg/L TC:24.60mg/L IC:25.90mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	936.6	24.60mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 08:59:28 AM

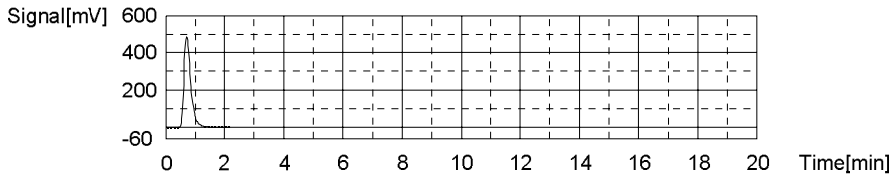
Mean Area 936.6
Mean Conc. 24.60mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	782.4	25.90mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 09:04:37 AM

Mean Area 782.4
Mean Conc. 25.90mg/L



Sample

Sample Name: WG259646-01 BLANK
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

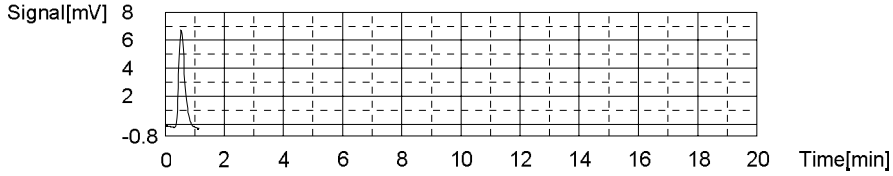
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.05164mg/L TC:-0.04512mg/L IC:-0.09676mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.858	-0.04512mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 09:09:24 AM

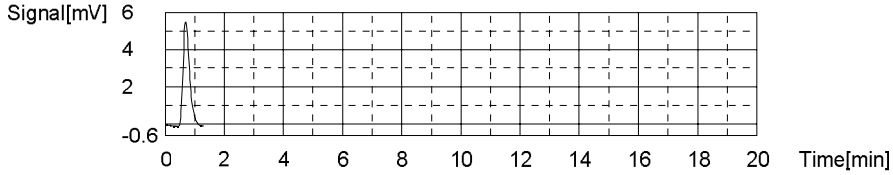
Mean Area 9.858
Mean Conc. -0.04512mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.719	-0.09676mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 09:12:52 AM

Mean Area 8.719
Mean Conc. -0.09676mg/L



Sample

Sample Name: WG259646-02 LCS
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

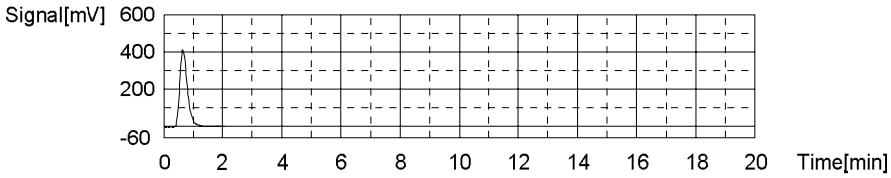
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:19.71mg/L TC:19.52mg/L IC:-0.1990mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	745.3	19.52mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 09:20:22 AM

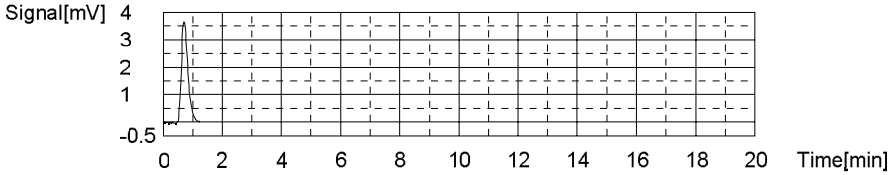
Mean Area 745.3
Mean Conc. 19.52mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.675	-0.1990mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 09:24:15 AM

Mean Area 5.675
Mean Conc. -0.1990mg/L



Sample

Sample Name: WG259646-03 LCSDUP
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

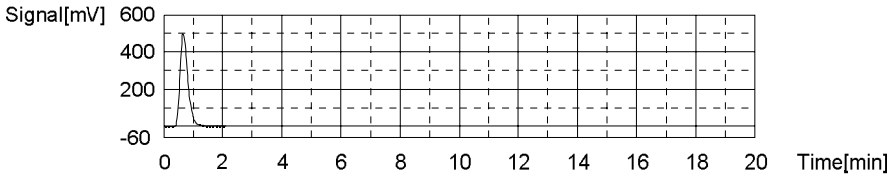
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.64mg/L TC:24.43mg/L IC:-0.2060mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	930.1	24.43mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 09:31:47 AM

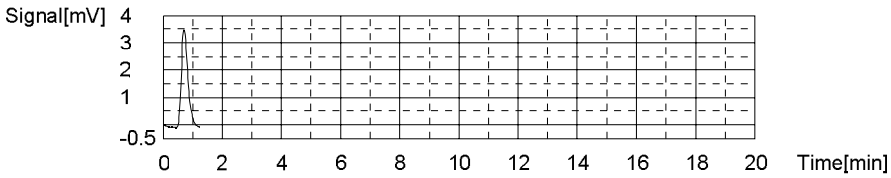
Mean Area 930.1
Mean Conc. 24.43mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.469	-0.2060mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 09:35:36 AM

Mean Area 5.469
Mean Conc. -0.2060mg/L



Sample

Sample Name: L0712444-09 (40)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

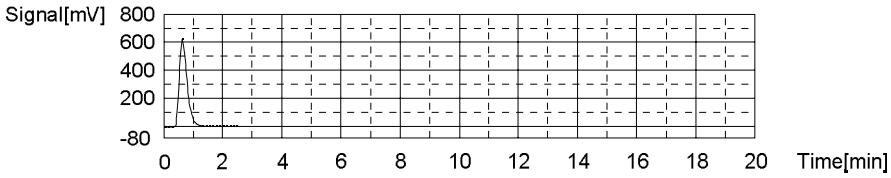
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:25.17mg/L TC:30.52mg/L IC:5.352mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1159	30.52mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 09:43:35 AM

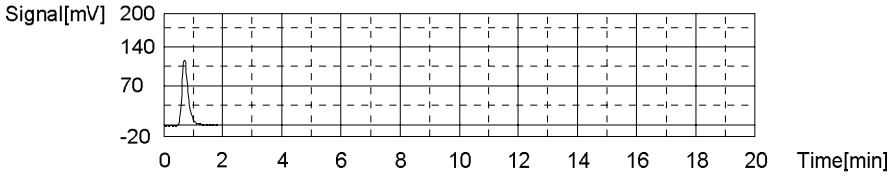
Mean Area 1159
Mean Conc. 30.52mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	170.9	5.352mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 09:48:02 AM

Mean Area 170.9
Mean Conc. 5.352mg/L



Sample

Sample Name: L0712497-10 (10)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

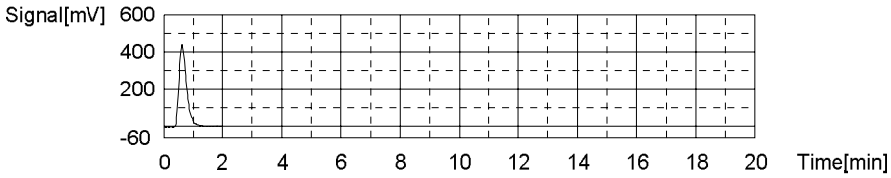
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:15.71mg/L TC:20.65mg/L IC:4.942mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	787.9	20.65mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 09:55:28 AM

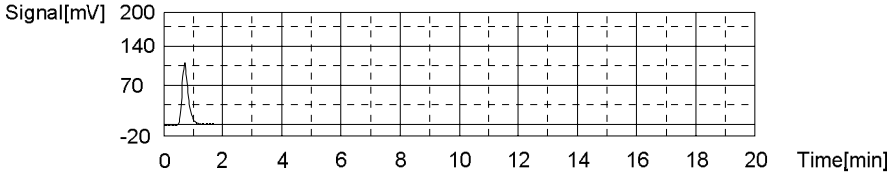
Mean Area 787.9
Mean Conc. 20.65mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	158.7	4.942mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 09:59:49 AM

Mean Area 158.7
Mean Conc. 4.942mg/L



Sample

Sample Name: L0712497-11
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

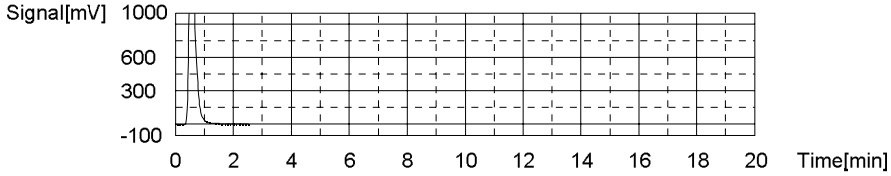
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-5.294mg/L TC:53.82mg/L IC:59.11mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2035	53.82mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 10:07:47 AM

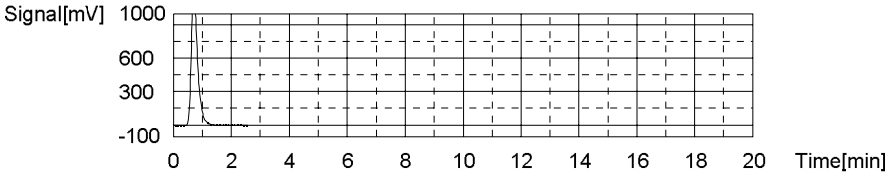
Mean Area 2035
Mean Conc. 53.82mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1771	59.11mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 10:13:27 AM

Mean Area 1771
Mean Conc. 59.11mg/L



Sample

Sample Name: L0712455-01
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

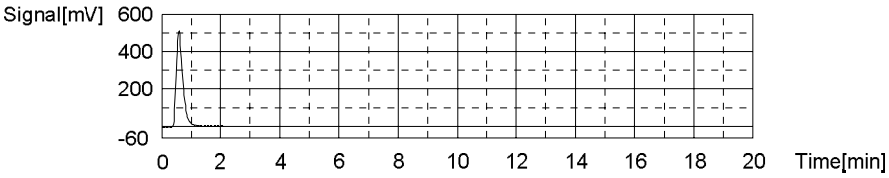
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.549mg/L TC:20.82mg/L IC:15.27mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	794.2	20.82mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 10:20:59 AM

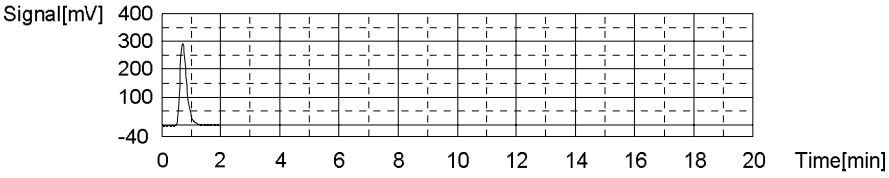
Mean Area 794.2
Mean Conc. 20.82mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	466.0	15.27mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 10:25:54 AM

Mean Area 466.0
Mean Conc. 15.27mg/L



Sample

Sample Name: L0712455-02
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

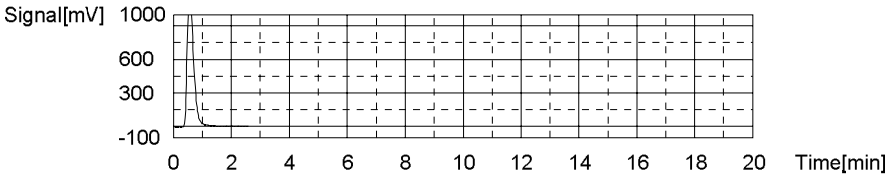
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.8712mg/L TC:46.48mg/L IC:45.61mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1759	46.48mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 10:33:56 AM

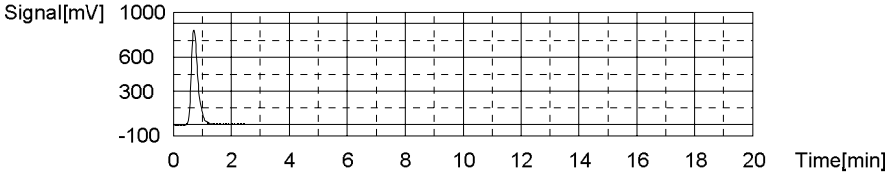
Mean Area 1759
Mean Conc. 46.48mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1369	45.61mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 10:39:29 AM

Mean Area 1369
Mean Conc. 45.61mg/L



Sample

Sample Name: L0712455-04
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

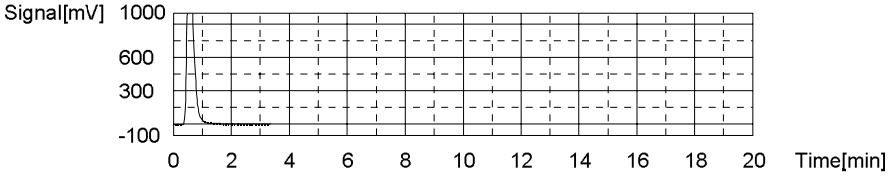
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-5.462mg/L TC:54.46mg/L IC:59.92mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2059	54.46mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 10:48:16 AM

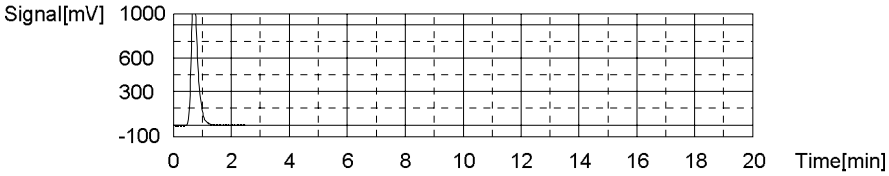
Mean Area 2059
Mean Conc. 54.46mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1795	59.92mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 10:53:58 AM

Mean Area 1795
Mean Conc. 59.92mg/L



Sample

Sample Name: L0712562-01
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

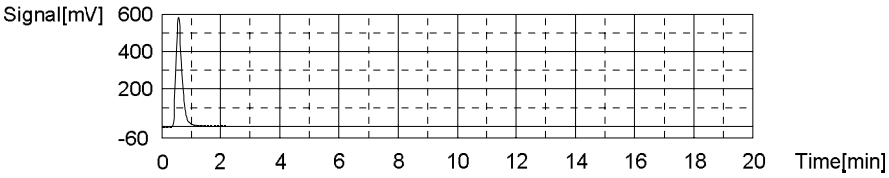
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.5541mg/L TC:22.14mg/L IC:22.69mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	843.9	22.14mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 11:01:32 AM

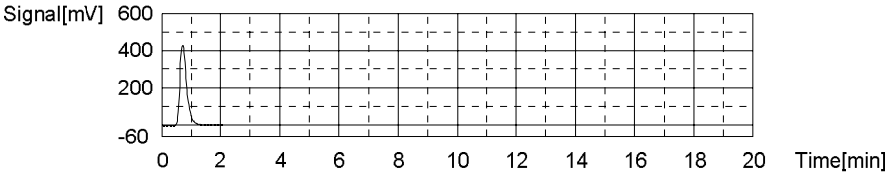
Mean Area 843.9
Mean Conc. 22.14mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	687.0	22.69mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 11:06:35 AM

Mean Area 687.0
Mean Conc. 22.69mg/L



Sample

Sample Name: L0712562-02 (50)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

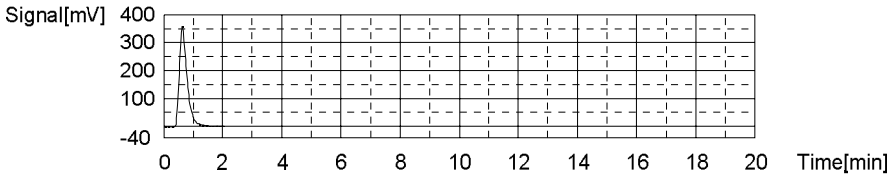
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:15.35mg/L TC:17.15mg/L IC:1.799mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	656.4	17.15mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 11:14:04 AM

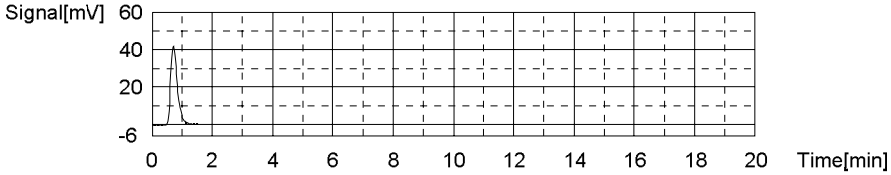
Mean Area 656.4
Mean Conc. 17.15mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	65.14	1.799mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 11:18:16 AM

Mean Area 65.14
Mean Conc. 1.799mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

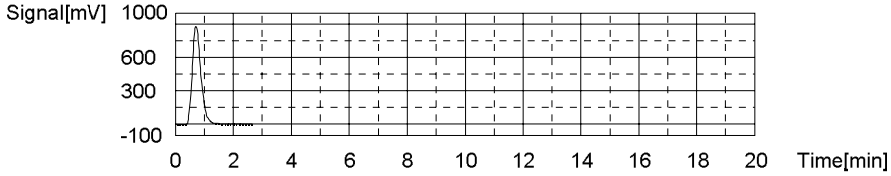
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:49.19mg/L TC:49.00mg/L IC:-0.1878mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1854	49.00mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 11:26:22 AM

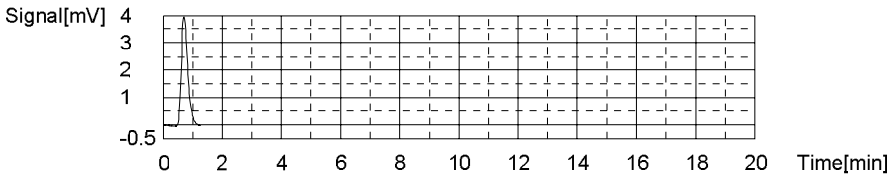
Mean Area 1854
Mean Conc. 49.00mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.010	-0.1878mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 11:30:12 AM

Mean Area 6.010
Mean Conc. -0.1878mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

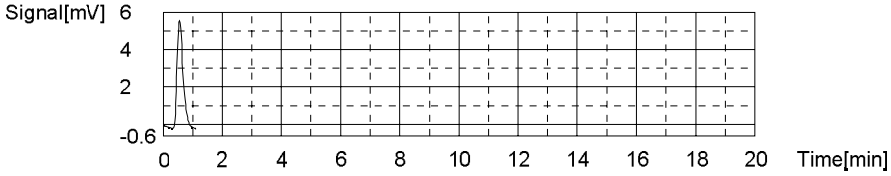
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.03733mg/L TC:-0.08775mg/L IC:-0.1251mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.255	-0.08775mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 11:34:57 AM

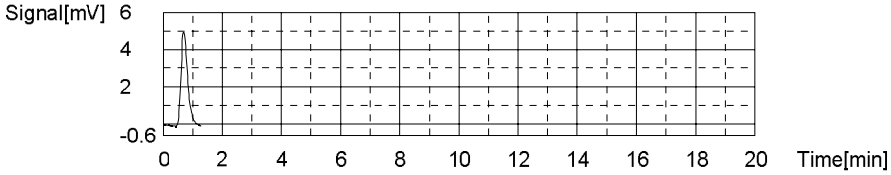
Mean Area 8.255
Mean Conc. -0.08775mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.876	-0.1251mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 11:38:22 AM

Mean Area 7.876
Mean Conc. -0.1251mg/L



Sample

Sample Name: L0712562-03
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

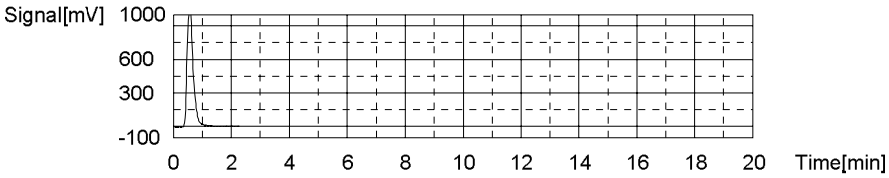
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.4165mg/L TC:40.55mg/L IC:40.13mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1536	40.55mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 11:46:05 AM

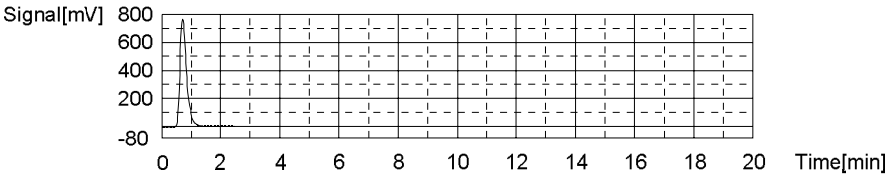
Mean Area 1536
Mean Conc. 40.55mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1206	40.13mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 11:51:38 AM

Mean Area 1206
Mean Conc. 40.13mg/L



Sample

Sample Name: L0712562-04 (3)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

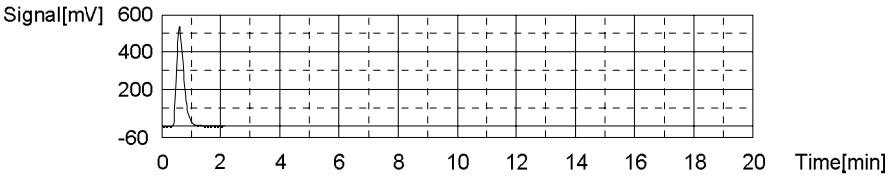
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:14.25mg/L TC:24.21mg/L IC:9.962mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	921.8	24.21mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 11:59:11 AM

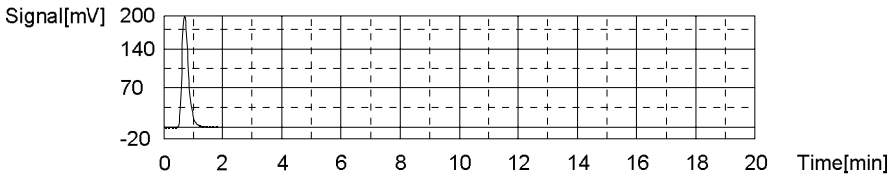
Mean Area 921.8
Mean Conc. 24.21mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	308.1	9.962mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 12:03:50 PM

Mean Area 308.1
Mean Conc. 9.962mg/L



Sample

Sample Name: L0712562-05
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

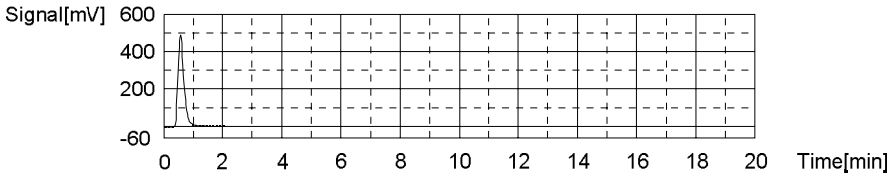
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.5982mg/L TC:18.14mg/L IC:17.54mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	693.7	18.14mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 12:11:21 PM

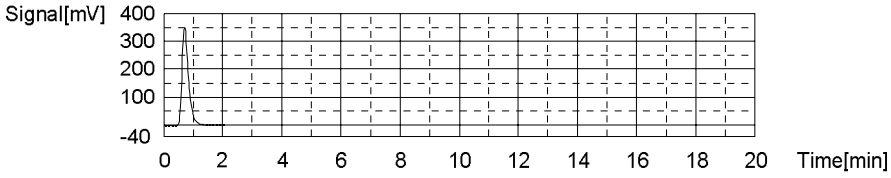
Mean Area 693.7
Mean Conc. 18.14mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	533.8	17.54mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 12:16:20 PM

Mean Area 533.8
Mean Conc. 17.54mg/L



Sample

Sample Name: L0712562-07 (200)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

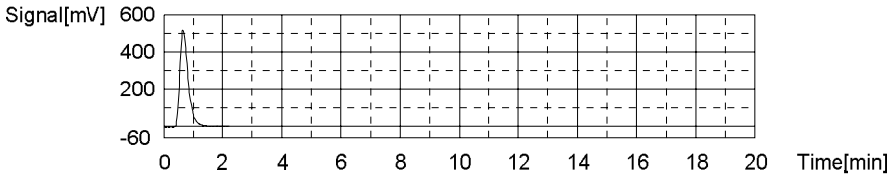
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:26.22mg/L TC:26.66mg/L IC:0.4402mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1014	26.66mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 12:24:00 PM

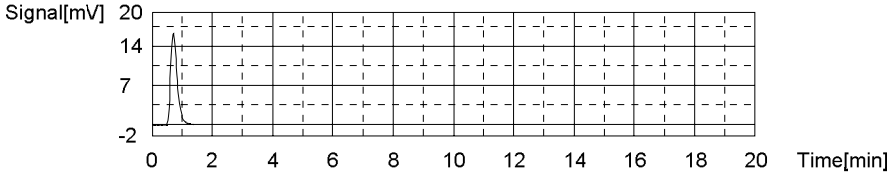
Mean Area 1014
Mean Conc. 26.66mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	24.70	0.4402mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 12:27:59 PM

Mean Area 24.70
Mean Conc. 0.4402mg/L



Sample

Sample Name: L0712562-08 (40)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

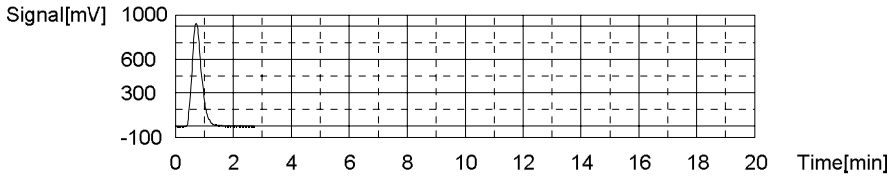
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:53.68mg/L TC:55.84mg/L IC:2.154mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2111	55.84mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 12:36:09 PM

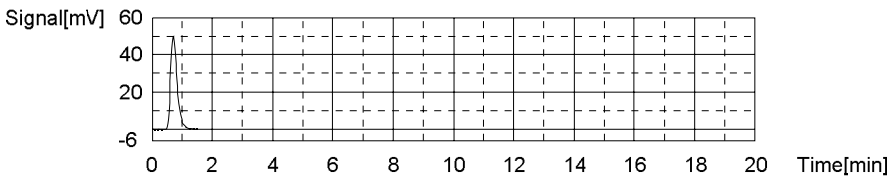
Mean Area 2111
Mean Conc. 55.84mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	75.72	2.154mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 12:40:15 PM

Mean Area 75.72
Mean Conc. 2.154mg/L



Sample

Sample Name: L0712562-09 (5)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

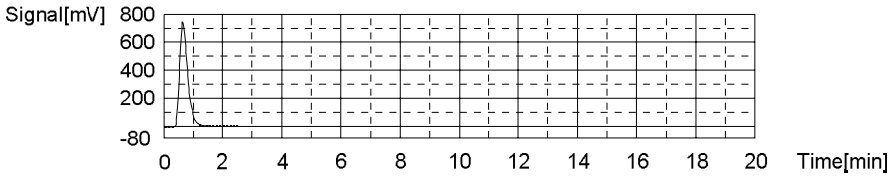
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:33.21mg/L TC:37.86mg/L IC:4.650mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1435	37.86mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 12:50:09 PM

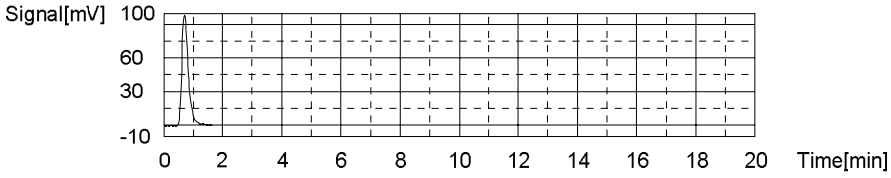
Mean Area 1435
Mean Conc. 37.86mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	150.0	4.650mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 12:54:28 PM

Mean Area 150.0
Mean Conc. 4.650mg/L



Sample

Sample Name: L0712562-10
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

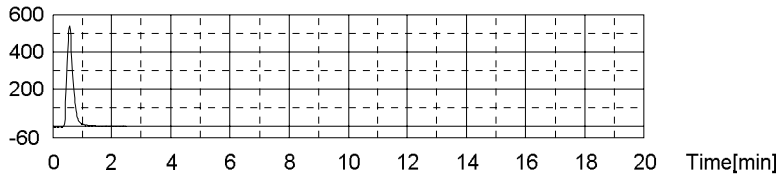
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.7041mg/L TC:20.50mg/L IC:21.20mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	782.3	20.50mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 01:02:24 PM

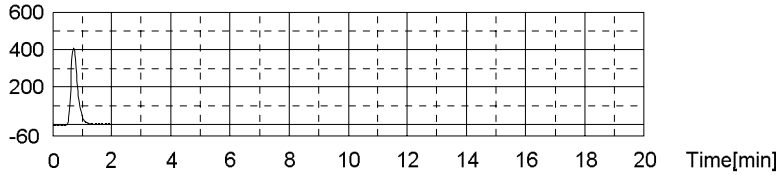
Mean Area 782.3
Mean Conc. 20.50mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	642.7	21.20mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 01:07:17 PM

Mean Area 642.7
Mean Conc. 21.20mg/L



Sample

Sample Name: L0712562-11
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

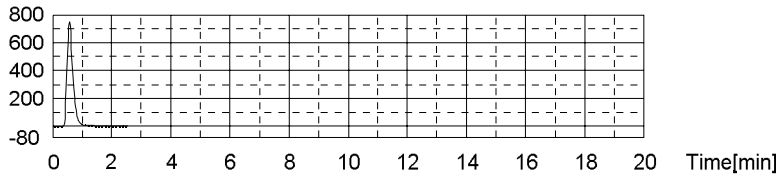
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.7443mg/L TC:27.99mg/L IC:28.74mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1064	27.99mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 01:15:15 PM

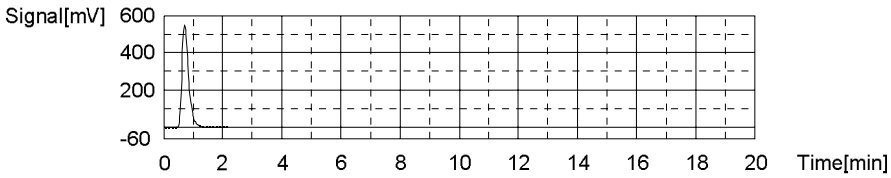
Mean Area 1064
Mean Conc. 27.99mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	866.9	28.74mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 01:20:22 PM

Mean Area 866.9
Mean Conc. 28.74mg/L



Sample

Sample Name: L0712562-12
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

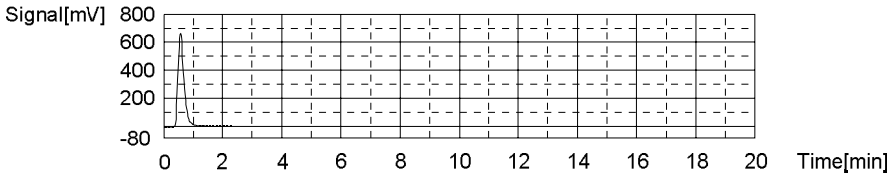
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.7008mg/L TC:25.22mg/L IC:24.52mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	959.8	25.22mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 01:28:03 PM

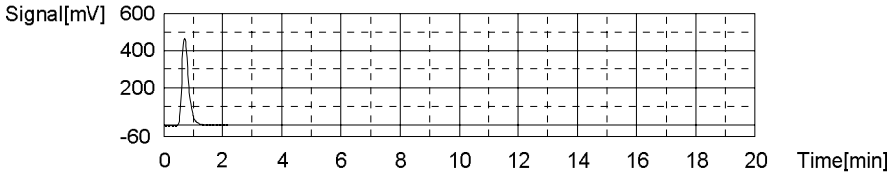
Mean Area 959.8
Mean Conc. 25.22mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	741.4	24.52mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 01:33:06 PM

Mean Area 741.4
Mean Conc. 24.52mg/L



Sample

Sample Name: L0712562-13
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

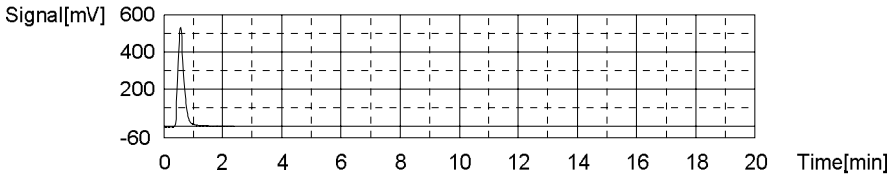
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.3563mg/L TC:19.99mg/L IC:19.64mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	763.3	19.99mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 01:40:53 PM

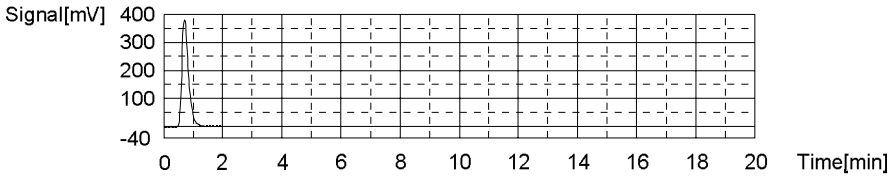
Mean Area 763.3
Mean Conc. 19.99mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	596.1	19.64mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 01:45:41 PM

Mean Area 596.1
Mean Conc. 19.64mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

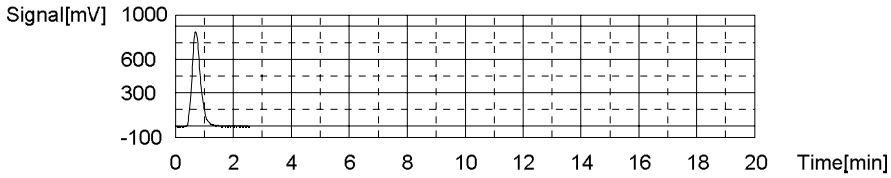
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:45.93mg/L TC:45.81mg/L IC:-0.1215mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1734	45.81mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 01:53:39 PM

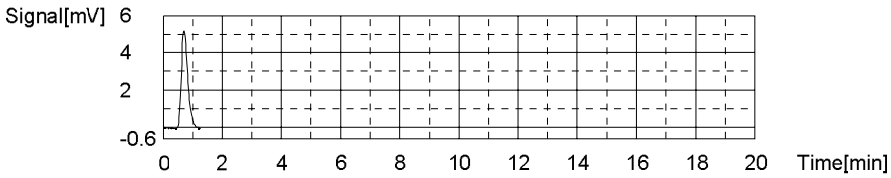
Mean Area 1734
Mean Conc. 45.81mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.983	-0.1215mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 01:57:33 PM

Mean Area 7.983
Mean Conc. -0.1215mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

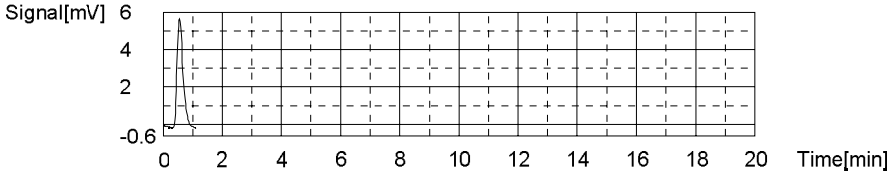
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.03428mg/L TC:-0.08496mg/L IC:-0.1192mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.360	-0.08496mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 02:02:19 PM

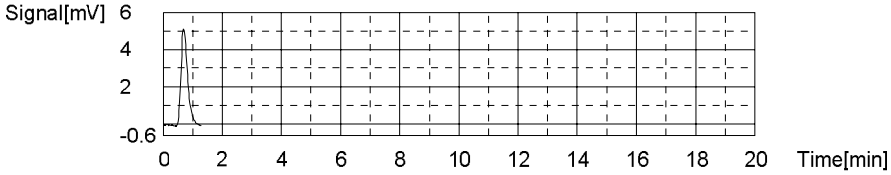
Mean Area 8.360
Mean Conc. -0.08496mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.050	-0.1192mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 02:05:44 PM

Mean Area 8.050
Mean Conc. -0.1192mg/L



Sample

Sample Name: L0712562-14
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

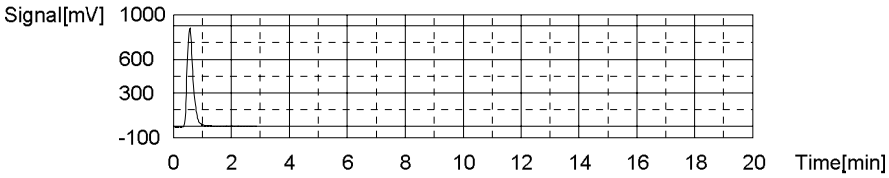
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.4426mg/L TC:33.31mg/L IC:32.87mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1264	33.31mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 02:14:04 PM

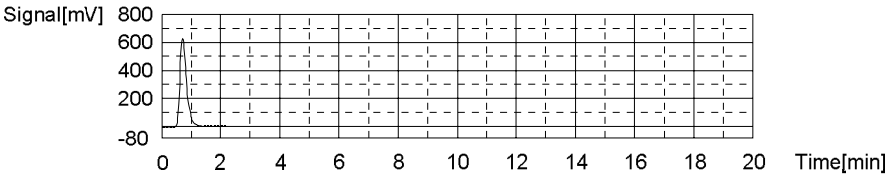
Mean Area 1264
Mean Conc. 33.31mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	989.9	32.87mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 02:19:10 PM

Mean Area 989.9
Mean Conc. 32.87mg/L



Sample

Sample Name: L0712562-15
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

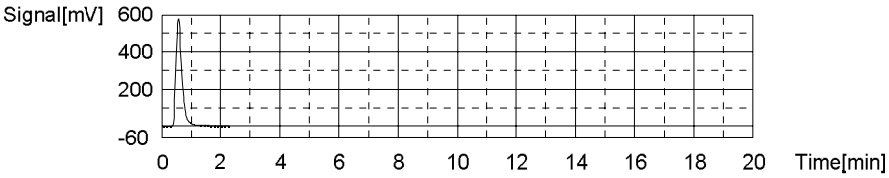
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.7645mg/L TC:21.95mg/L IC:22.72mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	837.0	21.95mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 02:26:54 PM

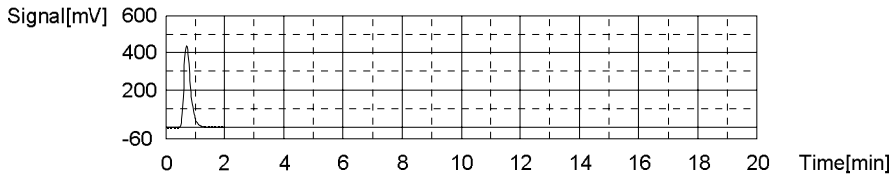
Mean Area 837.0
Mean Conc. 21.95mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	687.8	22.72mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 02:31:47 PM

Mean Area 687.8
Mean Conc. 22.72mg/L



Sample

Sample Name: WG259646-05 DUP
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

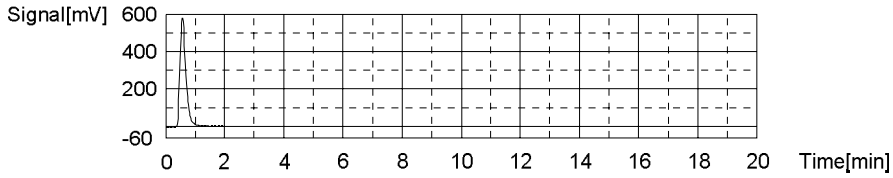
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-1.172mg/L TC:21.70mg/L IC:22.87mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	827.5	21.70mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 02:39:12 PM

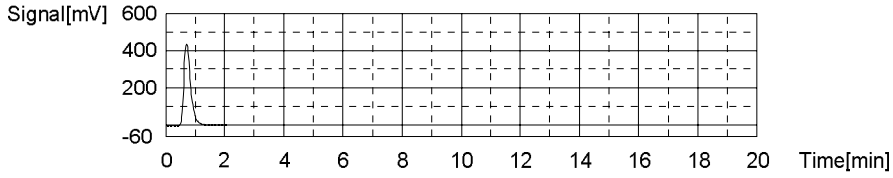
Mean Area 827.5
Mean Conc. 21.70mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	692.4	22.87mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 02:44:08 PM

Mean Area 692.4
Mean Conc. 22.87mg/L



Sample

Sample Name: WG259646-06 MS
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

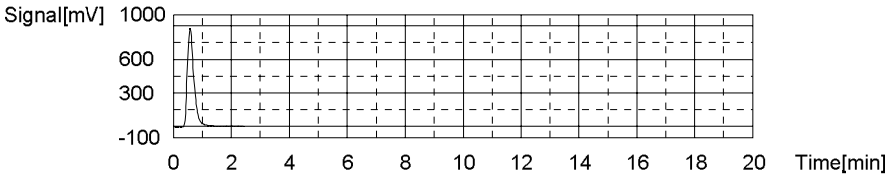
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:9.148mg/L TC:36.16mg/L IC:27.01mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1371	36.16mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 02:52:00 PM

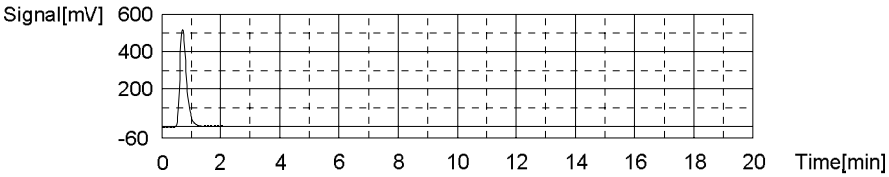
Mean Area 1371
Mean Conc. 36.16mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	815.5	27.01mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 02:57:00 PM

Mean Area 815.5
Mean Conc. 27.01mg/L



Sample

Sample Name: WG256648-01 BLANK
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

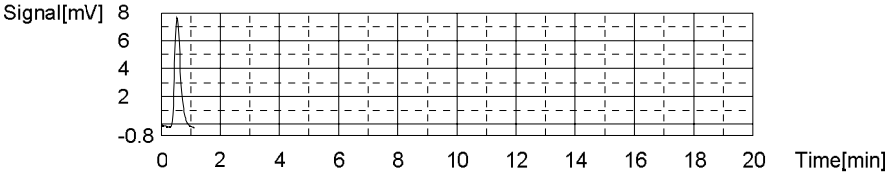
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.03091mg/L TC:-0.01474mg/L IC:-0.04566mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	11.00	-0.01474mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 03:01:47 PM

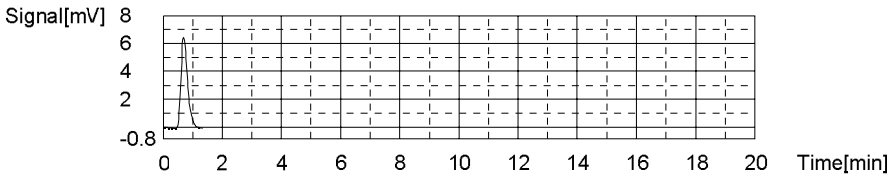
Mean Area 11.00
Mean Conc. -0.01474mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.24	-0.04566mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 03:05:16 PM

Mean Area 10.24
Mean Conc. -0.04566mg/L



Sample

Sample Name: WG259648-02 LCS
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

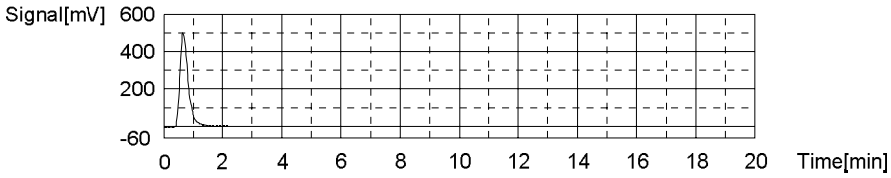
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:25.74mg/L TC:25.61mg/L IC:-0.1321mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	974.5	25.61mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 03:12:51 PM

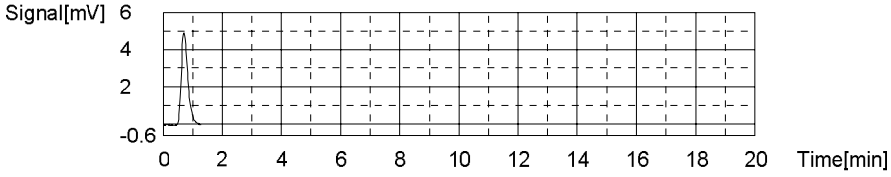
Mean Area 974.5
Mean Conc. 25.61mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.666	-0.1321mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 03:16:45 PM

Mean Area 7.666
Mean Conc. -0.1321mg/L



Sample

Sample Name: WG259648-03 LCSDUP
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

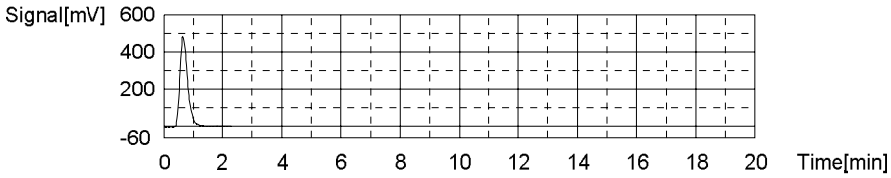
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:23.33mg/L TC:23.18mg/L IC:-0.1597mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	882.9	23.18mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 03:24:28 PM

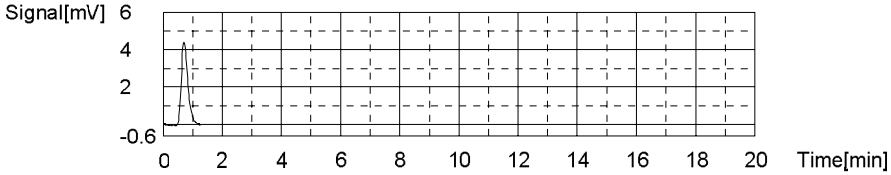
Mean Area 882.9
Mean Conc. 23.18mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.846	-0.1597mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 03:28:21 PM

Mean Area 6.846
Mean Conc. -0.1597mg/L



Sample

Sample Name: L0712562-16 (5)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

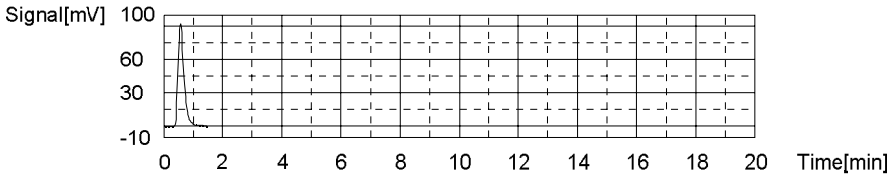
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.04429mg/L TC:3.169mg/L IC:3.125mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	130.7	3.169mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 03:35:16 PM

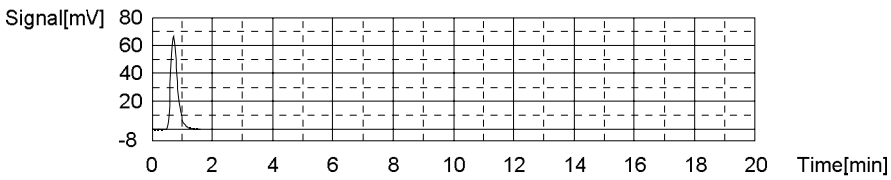
Mean Area 130.7
Mean Conc. 3.169mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	104.6	3.125mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 03:39:31 PM

Mean Area 104.6
Mean Conc. 3.125mg/L



Sample

Sample Name: L0712496-01 (10)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

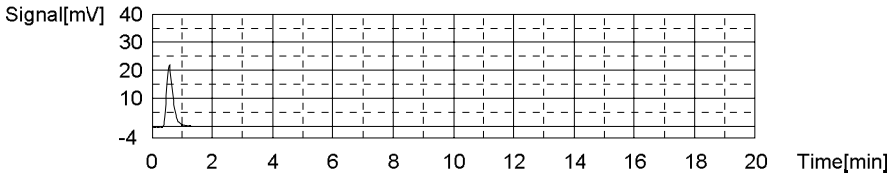
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.09821mg/L TC:0.5478mg/L IC:0.4496mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	32.15	0.5478mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 03:46:17 PM

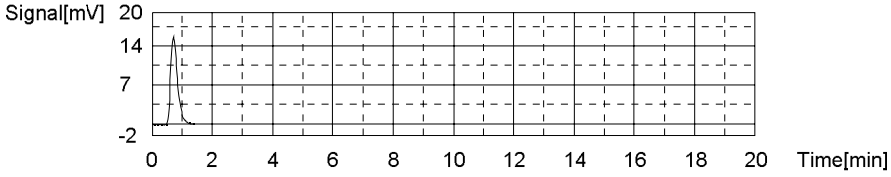
Mean Area 32.15
Mean Conc. 0.5478mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	24.98	0.4496mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 03:50:18 PM

Mean Area 24.98
Mean Conc. 0.4496mg/L



Sample

Sample Name: L0712496-02 (10)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

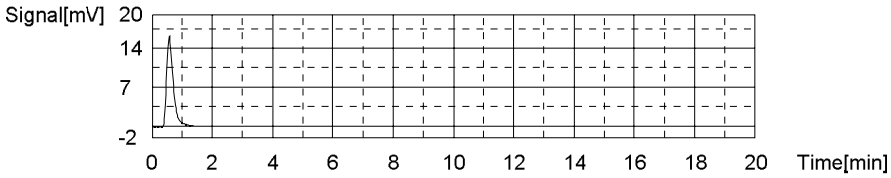
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.1157mg/L TC:0.3409mg/L IC:0.2251mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	24.37	0.3409mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 03:57:05 PM

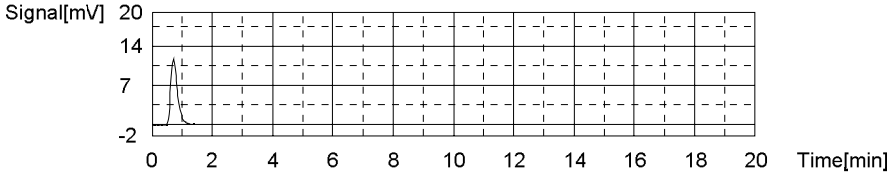
Mean Area 24.37
Mean Conc. 0.3409mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	18.30	0.2251mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 04:01:02 PM

Mean Area 18.30
Mean Conc. 0.2251mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

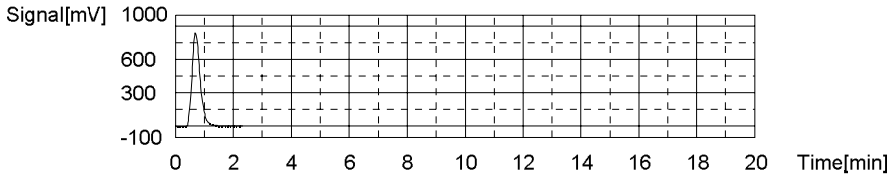
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:44.00mg/L TC:43.82mg/L IC:-0.1854mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1659	43.82mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 04:08:48 PM

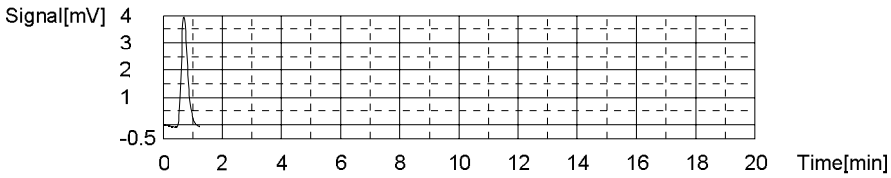
Mean Area 1659
Mean Conc. 43.82mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.081	-0.1854mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 04:12:37 PM

Mean Area 6.081
Mean Conc. -0.1854mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

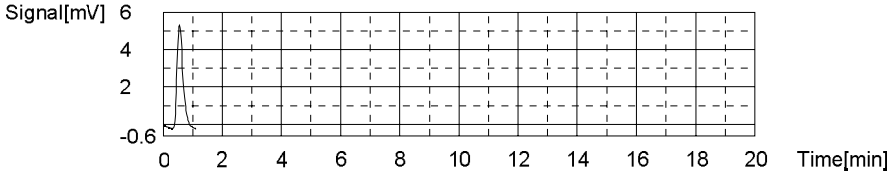
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.03646mg/L TC:-0.09810mg/L IC:-0.1346mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.866	-0.09810mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 04:17:23 PM

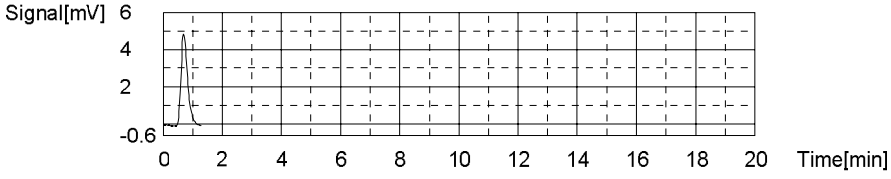
Mean Area 7.866
Mean Conc. -0.09810mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.594	-0.1346mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 04:20:48 PM

Mean Area 7.594
Mean Conc. -0.1346mg/L



Sample

Sample Name: L0712496-03 (10)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

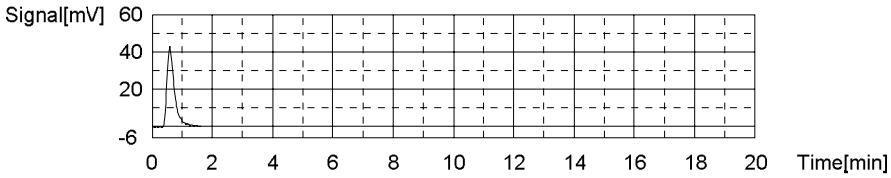
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.8859mg/L TC:1.633mg/L IC:0.7476mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	72.97	1.633mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 04:27:52 PM

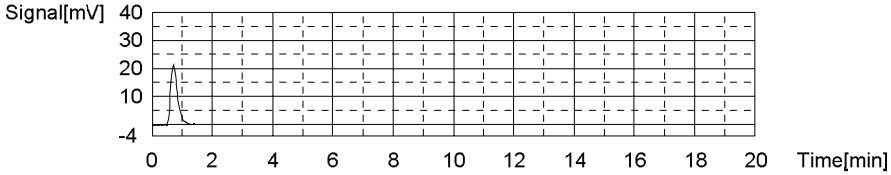
Mean Area 72.97
Mean Conc. 1.633mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.85	0.7476mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 04:31:54 PM

Mean Area 33.85
Mean Conc. 0.7476mg/L



Sample

Sample Name: L0712496-04 (10)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

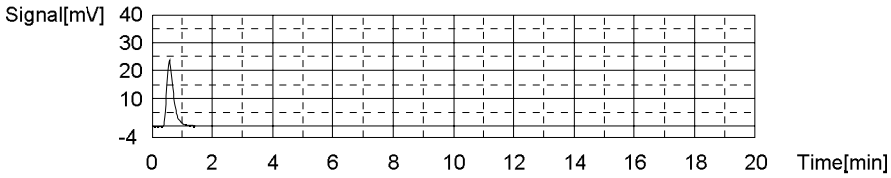
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.2563mg/L TC:0.6850mg/L IC:0.4287mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	37.31	0.6850mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 04:38:47 PM

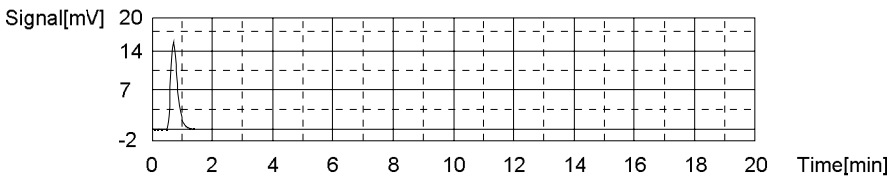
Mean Area 37.31
Mean Conc. 0.6850mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	24.36	0.4287mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 04:42:47 PM

Mean Area 24.36
Mean Conc. 0.4287mg/L



Sample

Sample Name: L0712496-05 (10)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

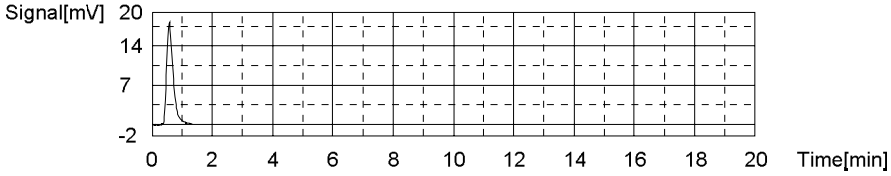
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.1190mg/L TC:0.4127mg/L IC:0.2937mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	27.07	0.4127mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 04:49:33 PM

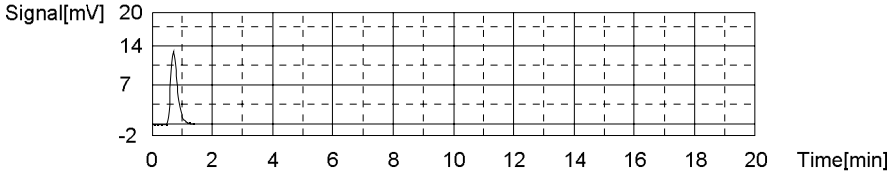
Mean Area 27.07
Mean Conc. 0.4127mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	20.34	0.2937mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 04:53:33 PM

Mean Area 20.34
Mean Conc. 0.2937mg/L



Sample

Sample Name: L0712496-06 (10)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

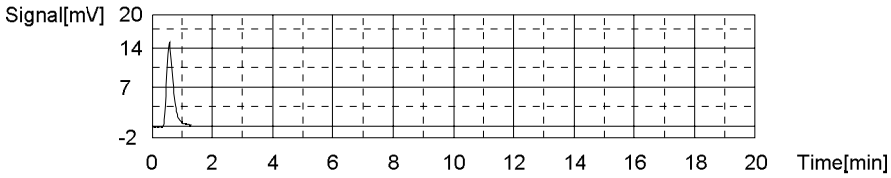
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.1356mg/L TC:0.2999mg/L IC:0.1643mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	22.83	0.2999mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 05:00:18 PM

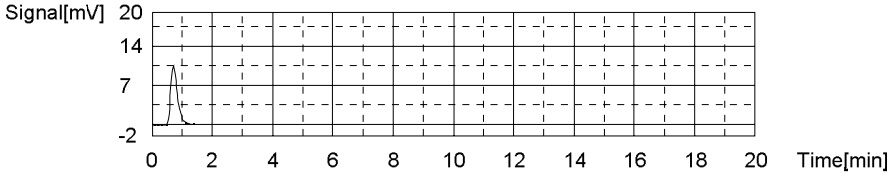
Mean Area 22.83
Mean Conc. 0.2999mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	16.49	0.1643mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 05:04:17 PM

Mean Area 16.49
Mean Conc. 0.1643mg/L



Sample

Sample Name: L0712496-07 (10)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

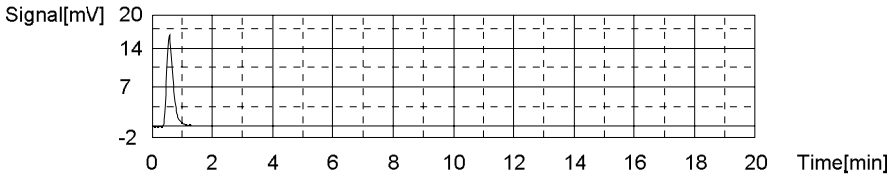
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.09308mg/L TC:0.3401mg/L IC:0.2470mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	24.34	0.3401mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 05:11:01 PM

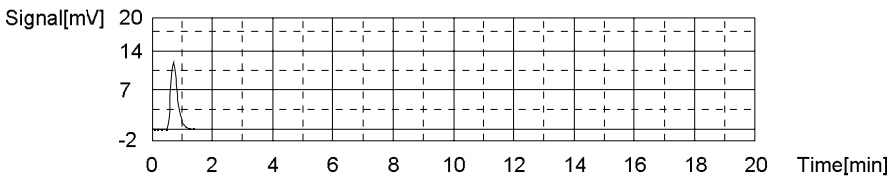
Mean Area 24.34
Mean Conc. 0.3401mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	18.95	0.2470mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 05:15:00 PM

Mean Area 18.95
Mean Conc. 0.2470mg/L



Sample

Sample Name: L0712496-08 (10)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

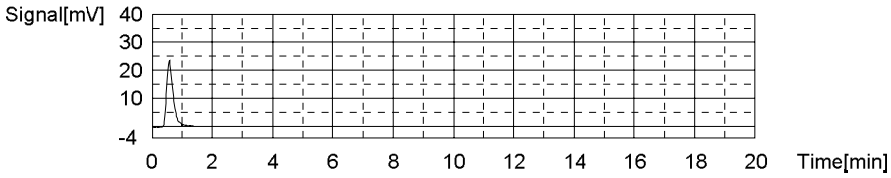
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.1591mg/L TC:0.6252mg/L IC:0.4660mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	35.06	0.6252mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 05:21:48 PM

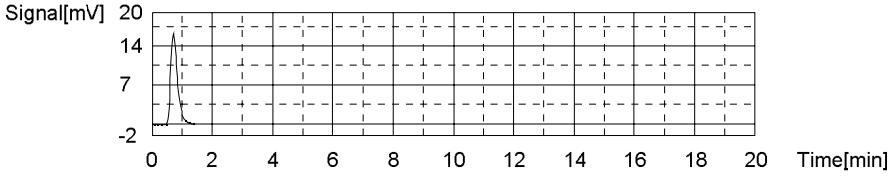
Mean Area 35.06
Mean Conc. 0.6252mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	25.47	0.4660mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 05:25:49 PM

Mean Area 25.47
Mean Conc. 0.4660mg/L



Sample

Sample Name: L0712498-01 (10)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

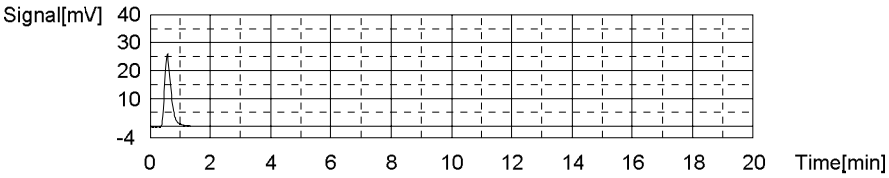
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.1318mg/L TC:0.7047mg/L IC:0.5729mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	38.05	0.7047mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 05:32:37 PM

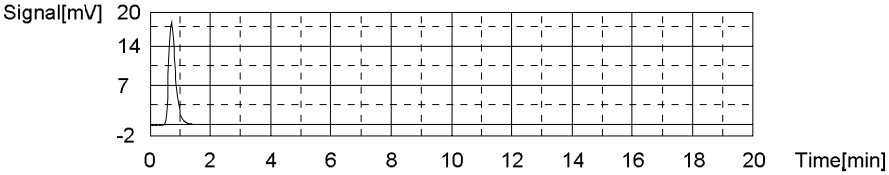
Mean Area 38.05
Mean Conc. 0.7047mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	28.65	0.5729mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 05:36:40 PM

Mean Area 28.65
Mean Conc. 0.5729mg/L



Sample

Sample Name: L0712498-02 (10)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

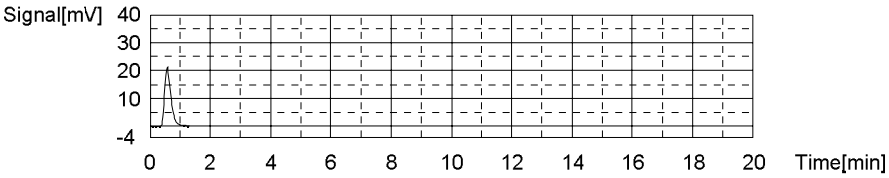
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.08684mg/L TC:0.5169mg/L IC:0.4301mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	30.99	0.5169mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 05:43:26 PM

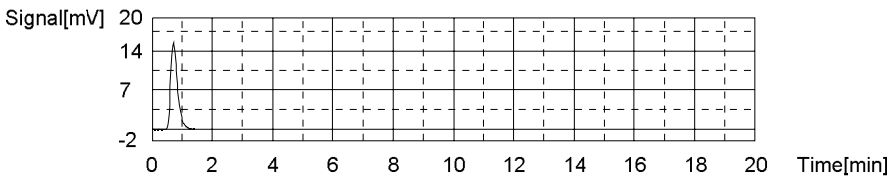
Mean Area 30.99
Mean Conc. 0.5169mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	24.40	0.4301mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 05:47:27 PM

Mean Area 24.40
Mean Conc. 0.4301mg/L



Sample

Sample Name: L0712498-03 (10)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

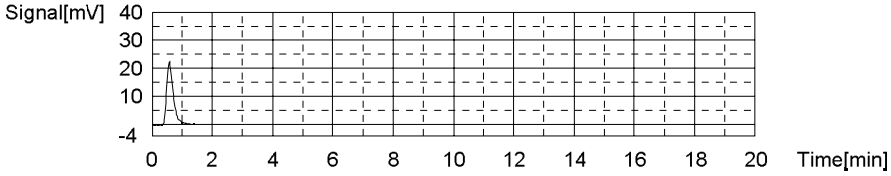
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.1493mg/L TC:0.5922mg/L IC:0.4429mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.82	0.5922mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 05:54:18 PM

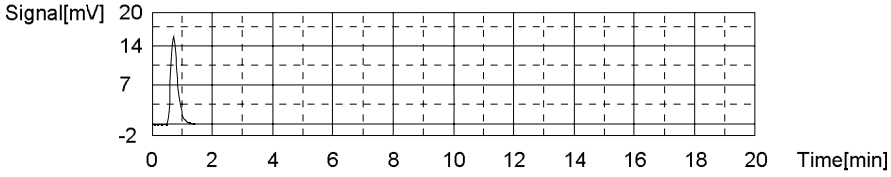
Mean Area 33.82
Mean Conc. 0.5922mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	24.78	0.4429mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 05:58:20 PM

Mean Area 24.78
Mean Conc. 0.4429mg/L



Sample

Sample Name: L0712511-01
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

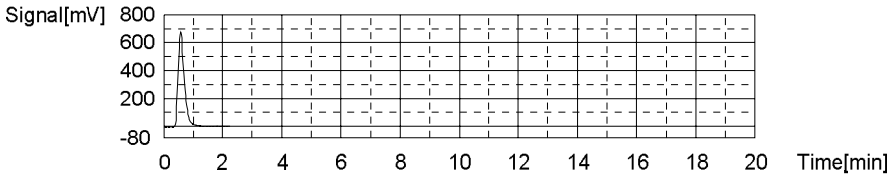
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.858mg/L TC:26.34mg/L IC:23.48mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1002	26.34mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 06:06:02 PM

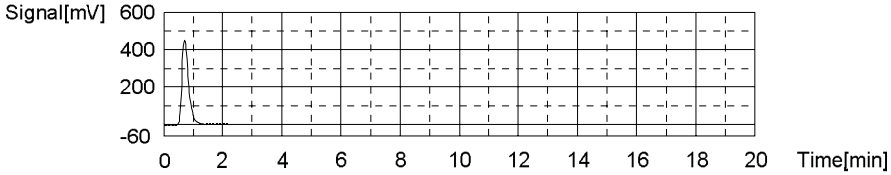
Mean Area 1002
Mean Conc. 26.34mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	710.6	23.48mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 06:11:03 PM

Mean Area 710.6
Mean Conc. 23.48mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

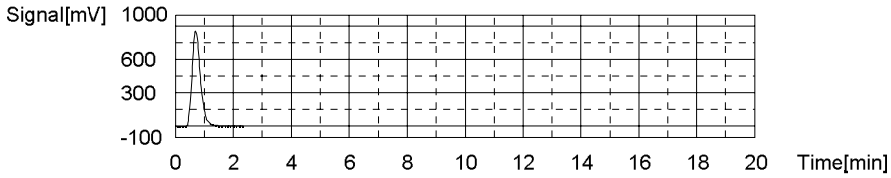
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:46.18mg/L TC:46.08mg/L IC:-0.1045mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1744	46.08mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 06:18:52 PM

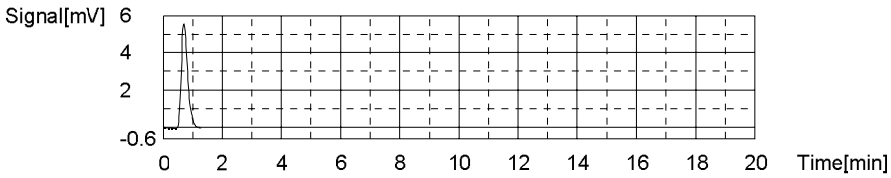
Mean Area 1744
Mean Conc. 46.08mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.489	-0.1045mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 06:22:46 PM

Mean Area 8.489
Mean Conc. -0.1045mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

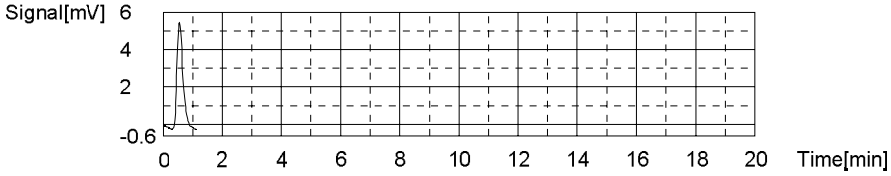
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.03028mg/L TC:-0.09275mg/L IC:-0.1230mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.067	-0.09275mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 06:27:31 PM

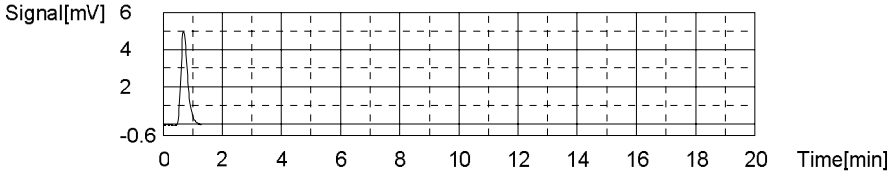
Mean Area 8.067
Mean Conc. -0.09275mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.937	-0.1230mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 06:30:59 PM

Mean Area 7.937
Mean Conc. -0.1230mg/L



Sample

Sample Name: L0712511-03
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

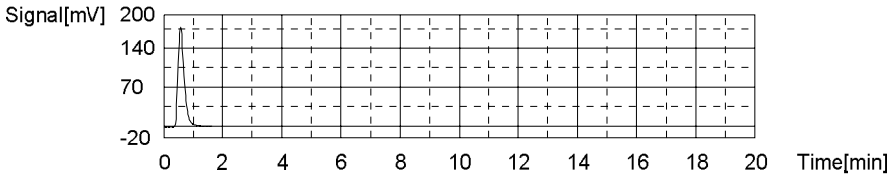
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.6706mg/L TC:6.661mg/L IC:5.991mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	262.0	6.661mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 06:38:05 PM

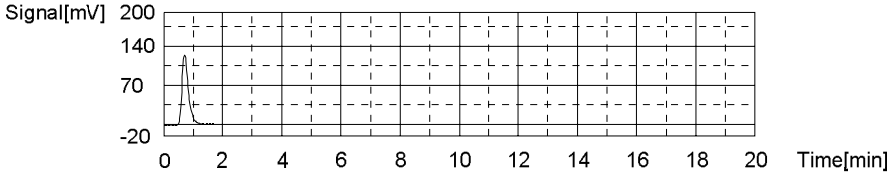
Mean Area 262.0
Mean Conc. 6.661mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	189.9	5.991mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 06:42:25 PM

Mean Area 189.9
Mean Conc. 5.991mg/L



Sample

Sample Name: L0712511-05
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

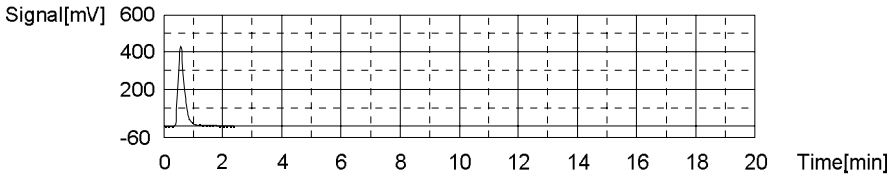
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.091mg/L TC:17.30mg/L IC:14.21mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	662.1	17.30mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 06:50:15 PM

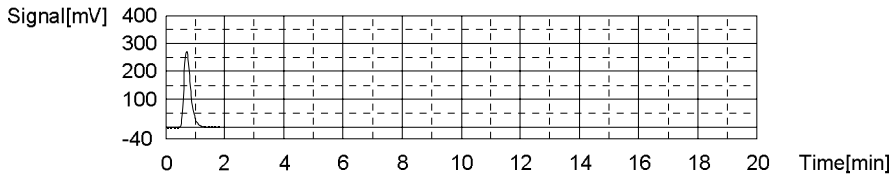
Mean Area 662.1
Mean Conc. 17.30mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	434.6	14.21mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 06:54:53 PM

Mean Area 434.6
Mean Conc. 14.21mg/L



Sample

Sample Name: L0712588-01 (4)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

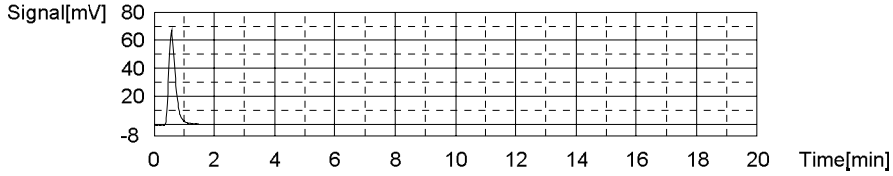
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.6211mg/L TC:2.408mg/L IC:1.787mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	102.1	2.408mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 07:01:49 PM

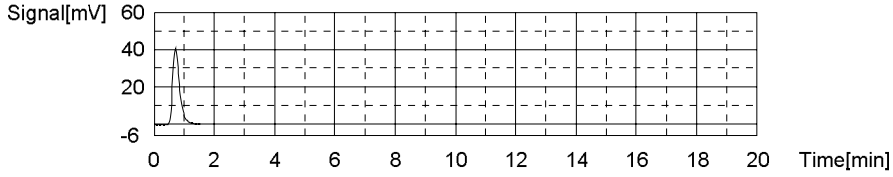
Mean Area 102.1
Mean Conc. 2.408mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	64.79	1.787mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 07:05:59 PM

Mean Area 64.79
Mean Conc. 1.787mg/L



Sample

Sample Name: L0712588-02 (4)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

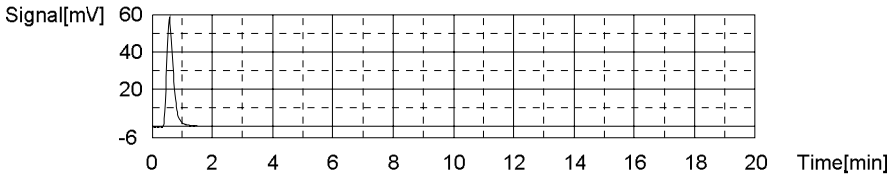
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.5691mg/L TC:2.051mg/L IC:1.482mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	88.66	2.051mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 07:12:56 PM

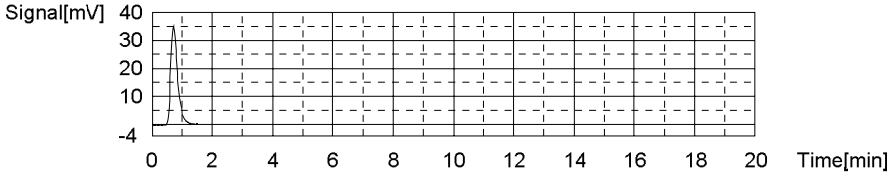
Mean Area 88.66
Mean Conc. 2.051mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	55.70	1.482mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 07:17:04 PM

Mean Area 55.70
Mean Conc. 1.482mg/L



Sample

Sample Name: L0712588-03
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

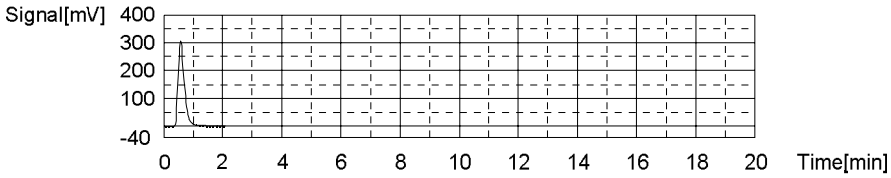
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.411mg/L TC:11.93mg/L IC:10.52mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	460.0	11.93mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 07:24:38 PM

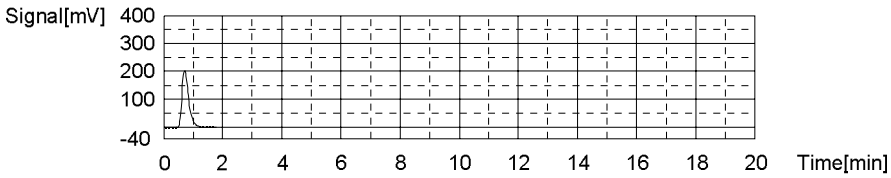
Mean Area 460.0
Mean Conc. 11.93mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	324.6	10.52mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 07:29:10 PM

Mean Area 324.6
Mean Conc. 10.52mg/L



Sample

Sample Name: L0712635-01
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

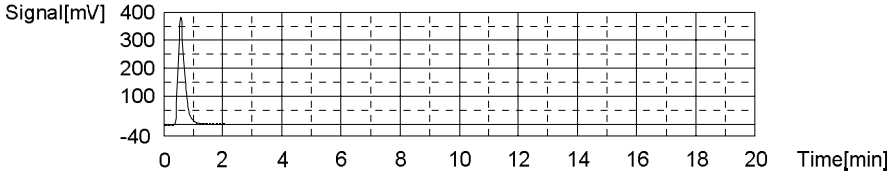
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.169mg/L TC:15.42mg/L IC:13.25mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	591.2	15.42mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 07:36:40 PM

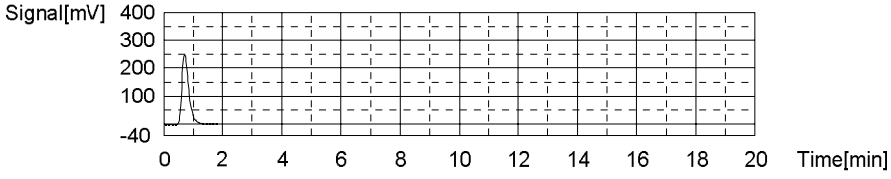
Mean Area 591.2
Mean Conc. 15.42mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	405.9	13.25mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 07:41:17 PM

Mean Area 405.9
Mean Conc. 13.25mg/L



Sample

Sample Name: L0712635-02
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

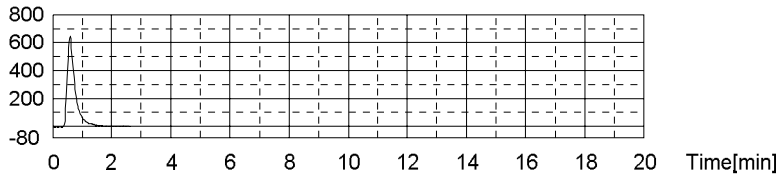
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:7.607mg/L TC:31.29mg/L IC:23.68mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1188	31.29mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 07:49:21 PM

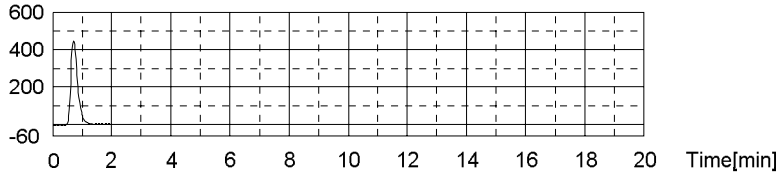
Mean Area 1188
Mean Conc. 31.29mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	716.5	23.68mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 07:54:10 PM

Mean Area 716.5
Mean Conc. 23.68mg/L



Sample

Sample Name: WG259648-05 DUP
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

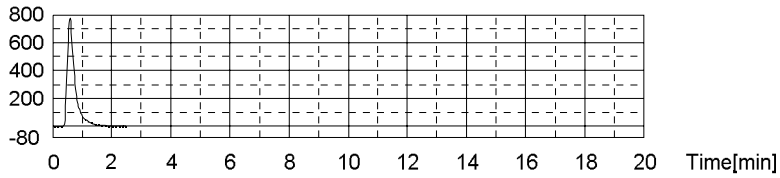
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.583mg/L TC:37.17mg/L IC:28.59mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1409	37.17mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 08:02:08 PM

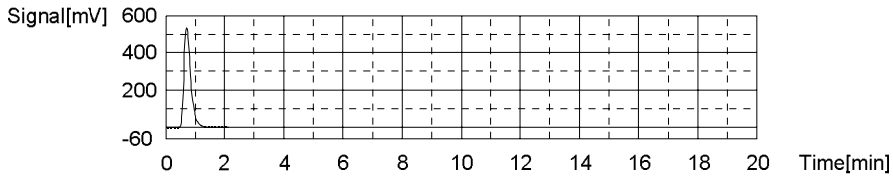
Mean Area 1409
Mean Conc. 37.17mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	862.4	28.59mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 08:07:11 PM

Mean Area 862.4
Mean Conc. 28.59mg/L



Sample

Sample Name: WG259648-06 MS
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

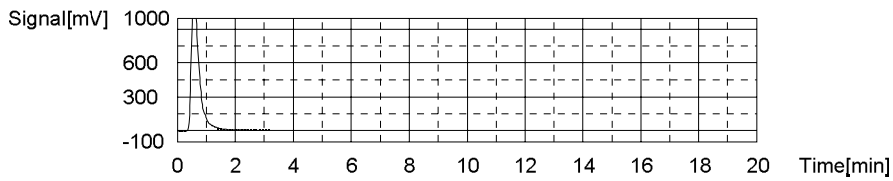
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:14.71mg/L TC:56.96mg/L IC:42.25mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2153	56.96mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 08:15:51 PM

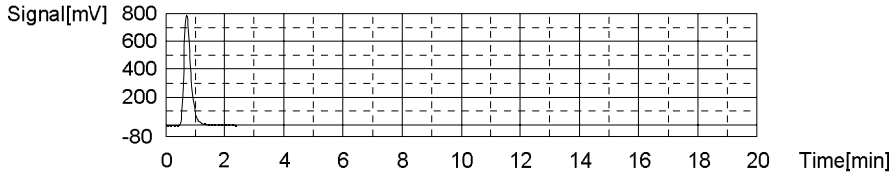
Mean Area 2153
Mean Conc. 56.96mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1269	42.25mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 08:21:21 PM

Mean Area 1269
Mean Conc. 42.25mg/L



Sample

Sample Name: WG259646-02 LCS
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

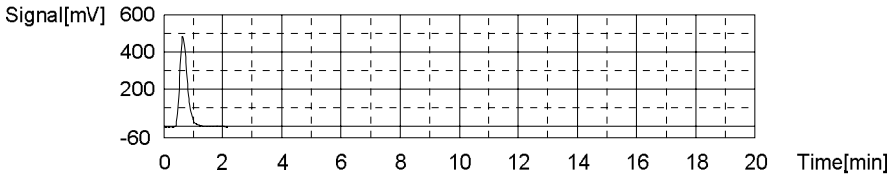
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:22.52mg/L TC:22.51mg/L IC:-0.01407mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	857.9	22.51mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 08:28:58 PM

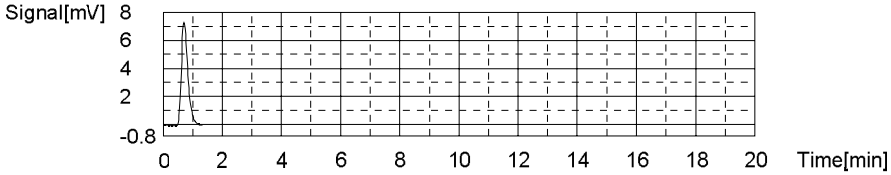
Mean Area 857.9
Mean Conc. 22.51mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	11.18	-0.01407mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 08:32:57 PM

Mean Area 11.18
Mean Conc. -0.01407mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

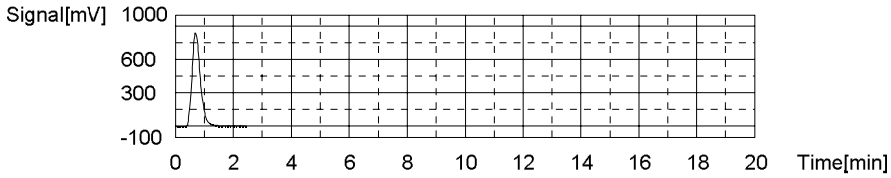
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:44.92mg/L TC:44.77mg/L IC:-0.1407mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1695	44.77mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 08:40:54 PM

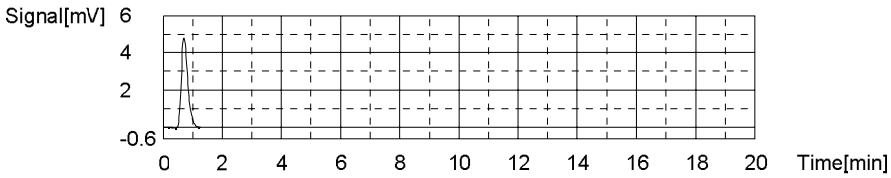
Mean Area 1695
Mean Conc. 44.77mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.410	-0.1407mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 08:44:47 PM

Mean Area 7.410
Mean Conc. -0.1407mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

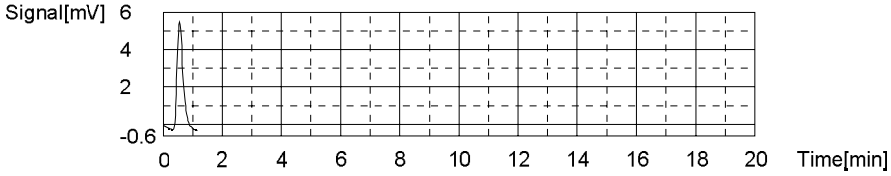
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.03379mg/L TC:-0.08887mg/L IC:-0.1227mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.213	-0.08887mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 08:49:34 PM

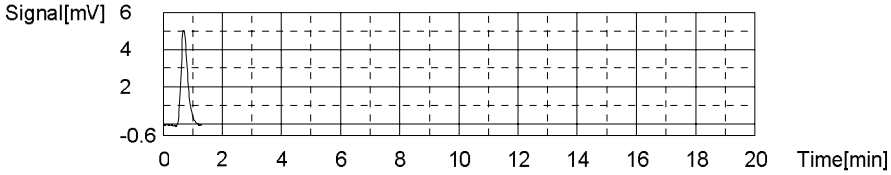
Mean Area 8.213
Mean Conc. -0.08887mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.948	-0.1227mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 08:53:02 PM

Mean Area 7.948
Mean Conc. -0.1227mg/L



Sample

Sample Name: L0712497-11 (2)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

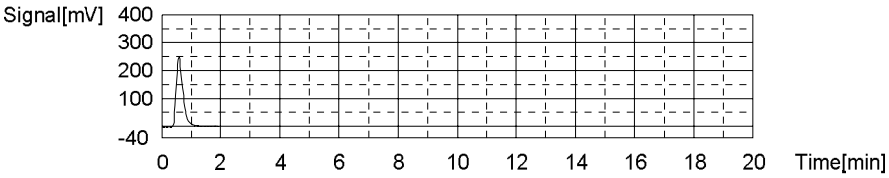
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.578mg/L TC:10.28mg/L IC:6.703mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	398.1	10.28mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 09:00:31 PM

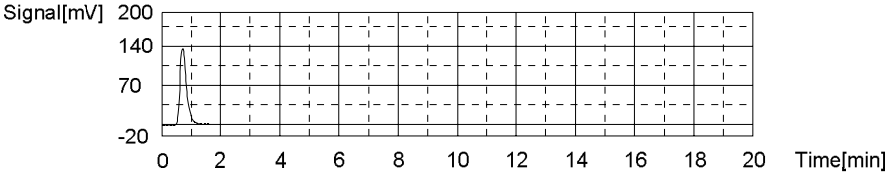
Mean Area 398.1
Mean Conc. 10.28mg/L



Anal.: IC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	211.1	6.703mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 09:04:52 PM

Mean Area 211.1
Mean Conc. 6.703mg/L



Sample

Sample Name: L0712455-04 (2)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

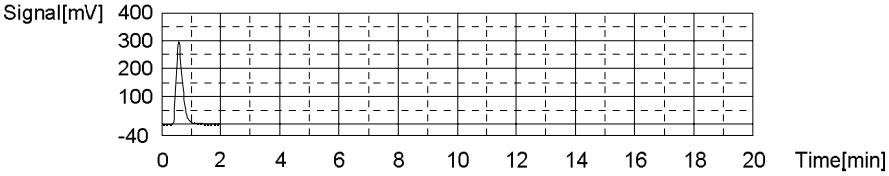
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.253mg/L TC:11.64mg/L IC:9.387mg/L

1. Det

Anal.: TC .

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	449.2	11.64mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 09:12:20 PM

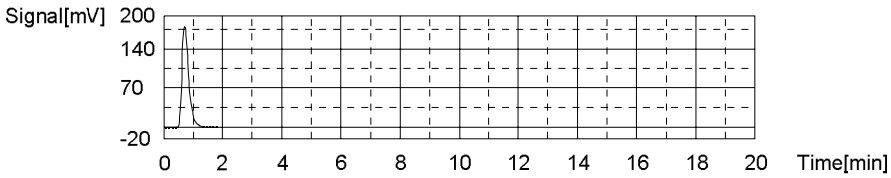
Mean Area 449.2
Mean Conc. 11.64mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	291.0	9.387mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 09:16:52 PM

Mean Area 291.0
Mean Conc. 9.387mg/L



Sample

Sample Name: L0712562-08 (100)
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

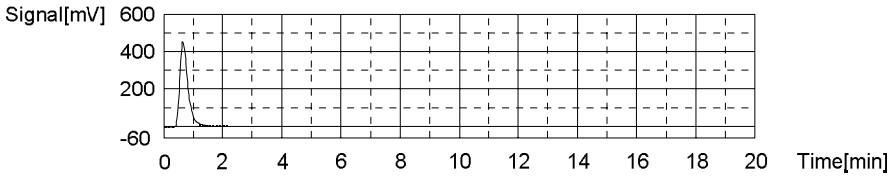
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:22.75mg/L TC:22.92mg/L IC:0.1704mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	873.3	22.92mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 09:24:31 PM

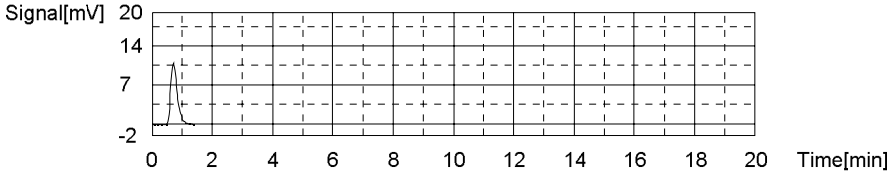
Mean Area 873.3
Mean Conc. 22.92mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	16.67	0.1704mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 09:28:32 PM

Mean Area 16.67
Mean Conc. 0.1704mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

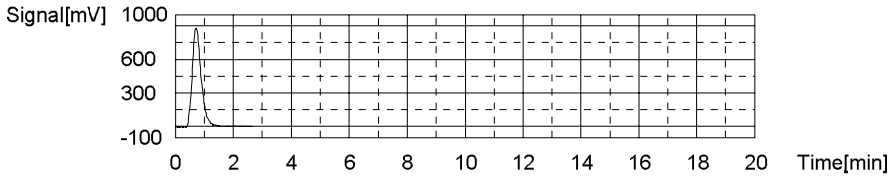
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:50.47mg/L TC:50.31mg/L IC:-0.1645mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1903	50.31mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 09:36:52 PM

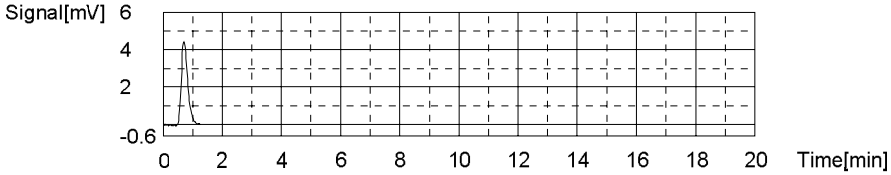
Mean Area 1903
Mean Conc. 50.31mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.702	-0.1645mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 09:40:46 PM

Mean Area 6.702
Mean Conc. -0.1645mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-09-28-2007.met
Status Completed
Chk. Result

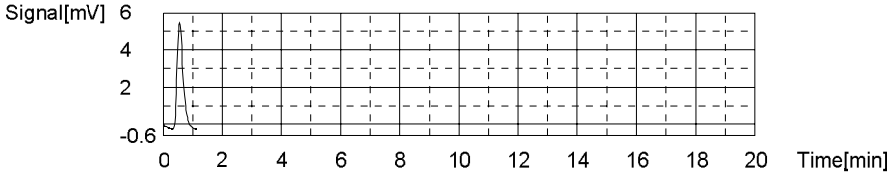
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.03551mg/L TC:-0.09118mg/L IC:-0.1267mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.126	-0.09118mg/L	500uL	1		TCCURVE-09-28-2007.2007_09_28_11_55_1	12/29/2007 09:45:32 PM

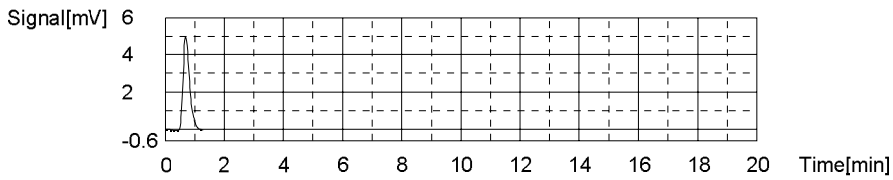
Mean Area 8.126
Mean Conc. -0.09118mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.828	-0.1267mg/L	500uL	1		TICCURVE-09-29-2007.2007_09_28_12_35_3	12/29/2007 09:48:58 PM

Mean Area	7.828
Mean Conc.	-0.1267mg/L



3.0 Attachments

Kemron Environmental Services
Analyst Listing
January 8, 2008

AJF – AMANDA J. FICKIESEN	ALB – ANNIE L. BROWN	AML – ANTHONY M. LONG
ARA – ADRIAN R. ACHTERMANN	ASP – AARON S. PETRIE	BRG – BRENDA R. GREGORY
CAA – CASSIE A. AUGENSTEIN	CAF – CHERYL A. FLOWERS	CEB – CHAD E. BARNES
CLC – CHRYS L. CRAWFORD	CLW – CHARISSA L. WINTERS	CM – CHARLIE MARTIN
CMS – CRYSTAL M. STEPHENS	CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL
DD – DIANE M. DENNIS	DDE – DEBRA D. ELLIOTT	DEL – DON E. LIGHTFRITZ
DEV – DAVID E. VANDENBERG	DGB – DOUGLAS G. BUTCHER	DIH – DEANNA I. HESSON
DLB – DAVID L. BUMGARNER	DLP – DOROTHY L. PAYNE	DLR – DIANNA L. RAUCH
DR – DEANNA ROBERTS	DRP – DAVE R. PITZER	DSF – DEBRA S. FREDERICK
DST – DENNIS S. TEPE	ECL – ERIC C. LAWSON	ED – EMILY E. DECKER
ERE – ERIN R. ELDER	FJB – FRANCES J. BOLDEN	HAV – HEMA VILASAGAR
HJR – HOLLY J. REED	JAB – JUANITA A. BECKER	JAL – JOHN A. LENT
JBK – JEREMY B. KINNEY	JDH – JUSTIN D. HESSON	JKP – JACQUELINE K. PARSONS
JKT – JANE K. THOMPSON	JWR – JOHN W. RICHARDS	JWS – JACK W. SHEAVES
JYH – JI Y. HU	KCZ – KEVIN C. ZUMBRO	KEB – KATHRYN E. BARNES
KHR – KIM H. RHODES	KJW – KATIE J. WIEFERICH	KRA – KATHY R. ALBERTSON
LKN – LINDA K. NEDEFF	LSB – LESLIE S. BUCINA	MDA – MIKE D. ALBERTSON
MDC – MICHAEL D. COCHRAN	MES – MARY E. SCHILLING	MKZ – MARILYN K. ZUMBRO
MLR – MARY L. ROCHOTTE	MMB – MAREN M. BEERY	MRT – MICHELLE R. TAYLOR
MSW – MATT S. WILSON	NJB – NATALIE J. BOOTH	NPM – NATHANIEL P. MILLER
PJM – PAUL J. MILLER	RAH – ROY A. HALSTEAD	RB – ROBERT BUCHANAN
REK – ROBERT E. KYER	RLF – RACHEL L. FRYE	RLK – ROBIN L. KLINGER
RNP – RICK N. PETTY	RWC – RODNEY W. CAMPBELL	SLM – STEPHANIE L. MOSSBURG
SLP – SHERI L. PFALZGRAF	SMH – SHAUNA M. HYDE	TDH – TRICIA D. HUCK
TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS	VC – VICKI COLLIER
WFM – WALTER F. MARTIN		

KEMRON Environmental Services

List of Valid Qualifiers

January 08, 2008

Qualkey: STD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
C	Confirmed by GC/MS
CG	Confluent growth
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
FL	Free Liquid
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit
ND,L	Not detected; sample reporting limit (RL) elevated due to interference
ND,S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria fail. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Undetected; the concentration is below the reported MDL.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

Chain of Custody

NO. 10234

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Kemron | Address: 156 Starlite Dr. Marietta, OH | Contact: Stephanie Mossburg

Project Name: LHAAP | Project Location: Karnack, TX.

Project No.: 117591.0008A105 | Project Contact: Kay Everett | Project Telephone No.: 713-996-4421

Point of Contact: Kay Everett | Telephone No.: 713-996-4421

Project Manager/Supervisor: Praveen Srivastav

Item No.	Sample Telephone Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOCs	Gases	TOC	Anions				Remarks
								Analysis and Method Desired (Indicate separate containers)								
1	12WW23-121907	12/19/07	9:25		✓	W	Groundwater, Site 12	8	3	3	1	1				
2	12WW24-121907	12/19/07	11:30		✓	W	Groundwater, Site 12	8	3	3	1	1				
3																
4																
5																
6																
7																
8																
9																
10																

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
Scott Beasley	12/19/07 2:00			
				FedEx Airbill No.:
		Laboratory	12/21/07 0930	Sampler's Signature: Scott Beasley

TAT: ____ Standard ✓ Rush Date ____ Seals Intact? ✓ Y ____ N Received Good Condition ✓ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_1
Rev. 03-19-07

KEMRON Environmental Services

SAMPLE RECEIPT FORM

00115066

156 Starlite Drive
Marietta, OH 45750
(740) 373-4071

Client:	Shaw - Houston, TX
Workorder Number: B	7667
Date Received:	12-21-07
Delivered by:	( ) Fedx (✓) UPS ( ) Client ( ) Courier **Time:** 0930
Opened by:	RLK
IR Temp Gun:	(✓) D ( ) G
Logged by:	BG L 12-635

Cooler Information

Cooler ID	Temp C	Airbill#	COC#	Other
1888	3	1Z 606V 720 0195555153	10234	Water

Inspection Checklist	Y	N	NA	Discrepancy ID
Were shipping coolers sealed?	✓			
Were custody seals intact?	✓			
Were cooler temperatures in range of 0 - 6?	✓			
Was ice present?	✓			
Were COC's received/ information complete/signed and dated?	✓			
Were sample containers and labels intact and match COC?	✓			
Were the correct containers and volumes received?	✓			
Were correct preservatives used? (water only)	✓			
Were pH ranges acceptable? (voa's excluded)	✓			
Were VOA samples free of headspace?	✓			
Were samples received within EPA hold times?	✓			

Discrepancy/Comments/Other Problems

Distribution

Name of KEMRON representative
Client/Company:
Person Contacted:
Date contacted:

Resolution/other comments:

KEMRON Environmental Services
Internal Chain of Custody Report

Login: L0712635
Account: 2773
Project: 2773.025
Samples: 2
Due Date: 03-JAN-2008

Samplenum	Container ID	Products
L0712635-02	413028	TIC TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	21-DEC-2007 11:19	BRG	
2	ANALYZ	W1	WET	29-DEC-2007 08:06	DIH	RLK
3	STORE	WET	A1	02-JAN-2008 08:00	RLK	DIH

Samplenum	Container ID	Products
L0712635-01	413022	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	21-DEC-2007 11:19	BRG	
2	ANALYZ	V1	ORG4	26-DEC-2007 14:20	FJB	ERE
3	STORE	ORG4	A1	02-JAN-2008 12:46	RLK	FJB

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	21-DEC-2007 11:19	BRG	
2	ANALYZ	V1	ORG4	26-DEC-2007 14:20	FJB	ERE
3	STORE	ORG4	A1	02-JAN-2008 12:47	RLK	FJB

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	21-DEC-2007 11:19	BRG	
2	ANALYZ	V1	ORG4	26-DEC-2007 14:20	FJB	ERE
3	STORE	ORG4	A1	02-JAN-2008 12:47	RLK	FJB

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report

Login: L0712635
Account: 2773
Project: 2773.025
Samples: 2
Due Date: 03-JAN-2008

Samplenum	Container ID	Products
L0712635-02	413026	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	21-DEC-2007 11:19	BRG	
2	ANALYZ	V1	ORG4	26-DEC-2007 14:20	FJB	ERE
3	STORE	ORG4	A1	02-JAN-2008 12:47	RLK	FJB

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	21-DEC-2007 11:19	BRG	
2	ANALYZ	V1	ORG4	26-DEC-2007 14:20	FJB	ERE
3	STORE	ORG4	A1	02-JAN-2008 12:47	RLK	FJB

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	21-DEC-2007 11:19	BRG	
2	ANALYZ	V1	ORG4	26-DEC-2007 14:20	FJB	ERE
3	STORE	ORG4	A1	02-JAN-2008 12:47	RLK	FJB

Samplenum	Container ID	Products
L0712635-01	413021	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	21-DEC-2007 11:19	BRG	
2	ANALYZ	V1	ORG4	28-DEC-2007 11:06	MES	RLK
3	STORE	ORG4	A1	04-JAN-2008 09:41	ERE	KJW

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	21-DEC-2007 11:19	BRG	
2	ANALYZ	V1	ORG4	28-DEC-2007 11:06	MES	RLK
3	STORE	ORG4	A1	04-JAN-2008 09:41	ERE	KJW

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	21-DEC-2007 11:19	BRG	
2	ANALYZ	V1	ORG4	28-DEC-2007 11:06	MES	RLK
3	STORE	ORG4	A1	04-JAN-2008 09:42	ERE	KJW

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services
Internal Chain of Custody Report
Login: L0712635
Account: 2773
Project: 2773.025
Samples: 2
Due Date: 03-JAN-2008

Samplenum	Container ID	Products
L0712635-01	413024	TIC TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	21-DEC-2007 11:19	BRG	
2	ANALYZ	W1	WET	29-DEC-2007 08:06	DIH	RLK
3	STORE	WET	A1	02-JAN-2008 08:00	RLK	DIH

Samplenum	Container ID	Products
L0712635-02	413025	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	21-DEC-2007 11:19	BRG	
2	ANALYZ	V1	ORG4	28-DEC-2007 11:06	MES	RLK
3	STORE	ORG4	A1	04-JAN-2008 09:42	ERE	KJW

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	21-DEC-2007 11:19	BRG	
2	ANALYZ	V1	ORG4	28-DEC-2007 11:06	MES	RLK
3	STORE	ORG4	A1	04-JAN-2008 09:42	ERE	KJW

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	21-DEC-2007 11:19	BRG	
2	ANALYZ	V1	ORG4	28-DEC-2007 11:06	MES	RLK
3	STORE	ORG4	A1	04-JAN-2008 09:42	ERE	KJW

Samplenum	Container ID	Products
L0712635-02	413027	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	L1	21-DEC-2007 11:19	BRG	
2	ANALYZ	L1	SEM	21-DEC-2007 11:24	DSF	RLK
3	STORE	SEM	A1	21-DEC-2007 15:51	RLK	DSF

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services

Internal Chain of Custody Report

Login: L0712635
Account: 2773
Project: 2773.025
Samples: 2
Due Date: 03-JAN-2008

Samplenum	Container ID	Products
L0712635-01	413023	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	L1	21-DEC-2007 11:19	BRG	
2	ANALYZ	L1	SEM	21-DEC-2007 11:24	DSF	RLK
3	STORE	SEM	A1	21-DEC-2007 15:51	RLK	DSF

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

156 Starlite Drive, Marietta, OH 45750 • TEL 740-373-4071 • FAX 740-373-4835 • http://www.kemron.com

Laboratory Report Number: L08030114

Please find enclosed the analytical results for the samples you submitted to KEMRON Environmental Services.

Review and compilation of your report was completed by KEMRON's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box bleow at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Debra Elliott - Team Leader
delliott@kemron-lab.com

Amanda Fickiesen - Client Services Specialist
afickiesen@kemron-lab.com

Kathy Albertson - Team Chemist/Data Specialist
kalbertson@kemron-lab.com

Annie Brown - Client Services Specialist
abrown@kemron-lab.com

Stephanie Mossburg - Team Chemist/Data Specialist
smossburg@kemron-lab.com

Katie Barnes - Team Assistant
kbarnes@kemron-lab.com

Brenda Gregory - Client Services Specialist
bgregory@kemron-lab.com

Jacqueline Parsons - Team Assistant
jparsons@kemron-lab.com

Tony Long - Team Chemist/Data Specialist
tlong@kemron-lab.com

This report was reviewed on March 18, 2008.

Stephanie Mossburg

STEPHANIE MOSSBURG - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the NELAP standards and other applicable contract terms and conditions. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of KEMRON Environmental Services.

This report was certified on March 18, 2008.

David E. Vandenberg

David Vandenberg - Vice President

FL DOH NELAP ID: E8755
This report contains a total of 269 pages.

Protecting Our Environmental Future

KEMRON REPORT L08030114
PREPARED FOR Shaw E I, Inc.
WORK ID: LONGHORN AAP KARNACK TX

1.0 Introduction 3
2.1 Volatiles Data 23
2.1.1 Volatiles GCMS Data (8260) 24
2.1.1.1 Summary Data 25
2.1.1.2 QC Summary Data 41
2.1.2 RSK 175 119
2.1.2.1 Summary Data 120
2.1.2.2 QC Summary Data 126
2.2 General Chemistry Data 159
2.2.1 Method 9056 160
2.2.1.1 Summary Data 161
2.2.1.2 QC Summary Data 169
2.2.2 Total Organic Carbon Data 190
2.2.2.1 Summary Data 191
2.2.2.2 QC Summary Data 199
2.2.2.3 Raw Data 206
3.0 Attachments 259

1.0 Introduction

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

KEMRON Login No.: L08030114

CHAIN OF CUSTODY: The chain of custody number was 10243.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 2 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 11-MAR-08
Stephanie Mossburg

Laboratory Data Package Cover Page

00115075

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	March 17, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L08030114
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	265320, 265190, 265343
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	March 17, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?		✓			1
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		✓			2
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?		✓			2
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?		✓			3
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT

ER# - Description

#1: Toluene-d8 exceeded the upper control limit in the analyses of samples 02, 03, and 06. Surrogate toluene-d8 exceeded the upper control limit in the water method blank and LCS/LCSD analyzed 03/11/08 on HPMS-6 and the water LCS/LCSD analyzed 03/12/08 on HPMS-6.

#2: The % recoveries for dichlorodifluoromethane and vinyl chloride and the RPDs for multiple analytes exceeded the upper limits advisory limits.

#3: Vinyl acetate exceeded the upper control limit in the CCVs analyzed 03/11/08 and 03/12/08 on HPMS-6.

Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00115079

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

MICHAEL D. COCHRAN		Semivolatiles Lab Supervisor	March 11, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L08030114
Project Name:	798-LONGHORN
Method:	300
Prep Batch Number(s):	WG265052
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	March 11, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?	✓				
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	✓				
Were MS/MSD analyzed at the appropriate frequency?	✓				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		1

Description	Yes	No	NA(1)	NR(2)	ER(5)
Were MS/MSD RPDs within laboratory QC limits?	✓				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				2
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	EI(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L08030114
Project Name:	798-LONGHORN
Method:	300
Prep Batch Number(s):	WG265052
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	March 11, 2008

EXCEPTIONS REPORT
ER# - Description
1. The MS/MSD results were not associated with this sample delivery group.
2. Samples -04, -05 and -06 were analyzed at a dilution only due to very high pre-run screen results for chloride. This was done to prevent damage to the analytical columns of the instrument.

(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00115084

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna I. Hesson	Conventional Lab Supervisor	March 12, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L08030114
Project Name:	798-LONGHORN
Method:	TOC
Prep Batch Number(s):	WG265132
Reviewer Name:	DEANNA I. HESSON
LRC Date:	March 12, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?	✓				
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	✓				
Were MS/MSD analyzed at the appropriate frequency?	✓				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?	✓				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NE(2)	EI(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L08030114
Project Name:	798-LONGHORN
Method:	TOC
Prep Batch Number(s):	WG265132
Reviewer Name:	DEANNA I. HESSON
LRC Date:	March 12, 2008

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00115089

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	March 14, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L08030114
Project Name:	798-LONGHORN
Method:	RSK175
Prep Batch Number(s):	265197, 265307
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	March 14, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT
ER# - Description
There were no exceptions.

Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

L08030114

03/18/08 15:17

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW22-030508	L08030114-01	8260B	1	07-MAR-08
12WW23-030508	L08030114-02	8260B	1	07-MAR-08
12WW24-030508	L08030114-03	8260B	2	07-MAR-08
12WW20-030608	L08030114-04	8260B	1	07-MAR-08
12WW20-030608-FD	L08030114-05	8260B	1	07-MAR-08
12WW21-030608	L08030114-06	8260B	1	07-MAR-08
TRIP BLANK	L08030114-07	8260B	1	07-MAR-08

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115097

Sample Number: **L08030114-01**
Client ID: **12WW22-030508**
Matrix: **Water**
Workgroup Number: **WG265343**
Collect Date: **03/05/2008 09:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/12/2008 17:33**
Cal Date: **02/25/2008 19:34**
Run Date: **03/12/2008 17:33**
File ID: **6M73418**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	6.57	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115098

Sample Number: **L08030114-01**
Client ID: **12WW22-030508**
Matrix: **Water**
Workgroup Number: **WG265343**
Collect Date: **03/05/2008 09:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/12/2008 17:33**
Cal Date: **02/25/2008 19:34**
Run Date: **03/12/2008 17:33**
File ID: **6M73418**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	97.9	86	118	
1,2-Dichloroethane-d4	94.9	80	120	
Toluene-d8	110	88	110	
4-Bromofluorobenzene	96.0	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115099

Sample Number: **L08030114-02**
Client ID: **12WW23-030508**
Matrix: **Water**
Workgroup Number: **WG265190**
Collect Date: **03/05/2008 11:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/11/2008 18:12**
Cal Date: **02/25/2008 19:34**
Run Date: **03/11/2008 18:12**
File ID: **6M73392**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	7.30	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115100

Sample Number: **L08030114-02**
Client ID: **12WW23-030508**
Matrix: **Water**
Workgroup Number: **WG265190**
Collect Date: **03/05/2008 11:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/11/2008 18:12**
Cal Date: **02/25/2008 19:34**
Run Date: **03/11/2008 18:12**
File ID: **6M73392**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	97.8	86	118	
1,2-Dichloroethane-d4	94.4	80	120	
Toluene-d8	111	88	110	*
4-Bromofluorobenzene	100	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL
* Surrogate or spike compound out of range

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115101

Sample Number: **L08030114-03**
Client ID: **12WW24-030508**
Matrix: **Water**
Workgroup Number: **WG265190**
Collect Date: **03/05/2008 14:40**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **2**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/11/2008 20:20**
Cal Date: **02/25/2008 19:34**
Run Date: **03/11/2008 20:20**
File ID: **6M73396**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	20.0	5.00
Benzene	71-43-2	0.878	J	2.00	0.250
Bromobenzene	108-86-1		U	2.00	0.250
Bromochloromethane	74-97-5		U	2.00	0.400
Bromodichloromethane	75-27-4		U	2.00	0.500
Bromoform	75-25-2		U	2.00	1.00
Bromomethane	74-83-9		U	2.00	1.00
2-Butanone	78-93-3		U	20.0	5.00
n-Butylbenzene	104-51-8		U	2.00	0.500
sec-Butylbenzene	135-98-8		U	2.00	0.500
tert-Butylbenzene	98-06-6		U	2.00	0.500
Carbon disulfide	75-15-0		U	2.00	1.00
Carbon tetrachloride	56-23-5		U	2.00	0.500
Chlorobenzene	108-90-7	11.2		2.00	0.250
Chlorodibromomethane	124-48-1		U	2.00	0.500
Chloroethane	75-00-3		U	2.00	1.00
2-Chloroethyl vinyl ether	110-75-8		U	20.0	4.00
Chloroform	67-66-3	0.529	J	2.00	0.250
Chloromethane	74-87-3		U	2.00	0.500
2-Chlorotoluene	95-49-8		U	2.00	0.250
4-Chlorotoluene	106-43-4		U	2.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	10.0	2.00
1,2-Dibromoethane	106-93-4		U	2.00	0.500
Dibromomethane	74-95-3		U	2.00	0.500
1,2-Dichlorobenzene	95-50-1		U	2.00	0.250
1,3-Dichlorobenzene	541-73-1		U	2.00	0.500
1,4-Dichlorobenzene	106-46-7	2.98		2.00	0.250
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
1,1-Dichloroethane	75-34-3	1.05	J	2.00	0.250
1,2-Dichloroethane	107-06-2		U	2.00	0.500
1,1-Dichloroethene	75-35-4		U	2.00	1.00
cis-1,2-Dichloroethene	156-59-2	89.3		2.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	2.00	0.500
1,2-Dichloropropane	78-87-5		U	2.00	0.400
1,3-Dichloropropane	142-28-9		U	2.00	0.400
2,2-Dichloropropane	594-20-7		U	2.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	2.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	2.00	1.00
1,1-Dichloropropene	563-58-6		U	2.00	0.500
Ethylbenzene	100-41-4		U	2.00	0.500
2-Hexanone	591-78-6		U	20.0	5.00
Hexachlorobutadiene	87-68-3		U	2.00	0.500
Isopropylbenzene	98-82-8		U	2.00	0.500
p-Isopropyltoluene	99-87-6		U	2.00	0.500
4-Methyl-2-pentanone	108-10-1		U	20.0	5.00
Methylene chloride	75-09-2		U	10.0	0.500
Naphthalene	91-20-3		U	2.00	0.400
n-Propylbenzene	103-65-1		U	2.00	0.250

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115102

Sample Number: **L08030114-03**
Client ID: **12WW24-030508**
Matrix: **Water**
Workgroup Number: **WG265190**
Collect Date: **03/05/2008 14:40**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **2**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/11/2008 20:20**
Cal Date: **02/25/2008 19:34**
Run Date: **03/11/2008 20:20**
File ID: **6M73396**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	2.00	0.250
1,1,1,2-Tetrachloroethane	630-20-6		U	2.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	2.00	0.250
Tetrachloroethene	127-18-4	0.639	J	2.00	0.500
Toluene	108-88-3		U	2.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	2.00	0.250
1,2,4-Trichlorobenzene	120-82-1		U	2.00	0.400
1,1,1-Trichloroethane	71-55-6		U	2.00	0.500
1,1,2-Trichloroethane	79-00-5		U	2.00	0.500
Trichloroethene	79-01-6	301		2.00	0.500
Trichlorofluoromethane	75-69-4		U	2.00	0.500
1,2,3-Trichloropropane	96-18-4		U	2.00	1.00
1,2,4-Trimethylbenzene	95-63-6		U	2.00	0.500
1,3,5-Trimethylbenzene	108-67-8		U	2.00	0.500
Vinyl acetate	108-05-4		U	20.0	5.00
Vinyl chloride	75-01-4	3.84		2.00	0.500
o-Xylene	95-47-6		U	2.00	0.500
m-,p-Xylene	136777-61-2		U	2.00	1.00

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	97.3	86	118	
1,2-Dichloroethane-d4	96.8	80	120	
Toluene-d8	113	88	110	*
4-Bromofluorobenzene	100	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL
* Surrogate or spike compound out of range

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115103

Sample Number: **L08030114-04**
Client ID: **12WW20-030608**
Matrix: **Water**
Workgroup Number: **WG265190**
Collect Date: **03/06/2008 09:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/11/2008 18:44**
Cal Date: **02/25/2008 19:34**
Run Date: **03/11/2008 18:44**
File ID: **6M73393**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	6.54	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.664	J	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115104

Sample Number: **L08030114-04**
Client ID: **12WW20-030608**
Matrix: **Water**
Workgroup Number: **WG265190**
Collect Date: **03/06/2008 09:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/11/2008 18:44**
Cal Date: **02/25/2008 19:34**
Run Date: **03/11/2008 18:44**
File ID: **6M73393**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	0.999	J	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	97.5	86	118	
1,2-Dichloroethane-d4	97.7	80	120	
Toluene-d8	110	88	110	
4-Bromofluorobenzene	97.6	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115105

Sample Number: **L08030114-05**
Client ID: **12WW20-030608-FD**
Matrix: **Water**
Workgroup Number: **WG265190**
Collect Date: **03/06/2008 09:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/11/2008 19:16**
Cal Date: **02/25/2008 19:34**
Run Date: **03/11/2008 19:16**
File ID: **6M73394**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	7.19	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.698	J	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115106

Sample Number: **L08030114-05**
Client ID: **12WW20-030608-FD**
Matrix: **Water**
Workgroup Number: **WG265190**
Collect Date: **03/06/2008 09:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/11/2008 19:16**
Cal Date: **02/25/2008 19:34**
Run Date: **03/11/2008 19:16**
File ID: **6M73394**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	0.996	J	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	97.8	86	118	
1,2-Dichloroethane-d4	98.4	80	120	
Toluene-d8	109	88	110	
4-Bromofluorobenzene	97.0	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115107

Sample Number: **L08030114-06**
Client ID: **12WW21-030608**
Matrix: **Water**
Workgroup Number: **WG265190**
Collect Date: **03/06/2008 10:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/11/2008 19:48**
Cal Date: **02/25/2008 19:34**
Run Date: **03/11/2008 19:48**
File ID: **6M73395**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	4.86	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115108

Sample Number: **L08030114-06**
Client ID: **12WW21-030608**
Matrix: **Water**
Workgroup Number: **WG265190**
Collect Date: **03/06/2008 10:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/11/2008 19:48**
Cal Date: **02/25/2008 19:34**
Run Date: **03/11/2008 19:48**
File ID: **6M73395**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	103	86	118	
1,2-Dichloroethane-d4	104	80	120	
Toluene-d8	114	88	110	*
4-Bromofluorobenzene	102	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL
* Surrogate or spike compound out of range

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115109

Sample Number: **L08030114-07**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG265320**
Collect Date: **03/06/2008 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **SMH**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS14**
Prep Date: **03/12/2008 15:49**
Cal Date: **02/11/2008 22:54**
Run Date: **03/12/2008 15:49**
File ID: **14M04128**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	9.09	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115110

Sample Number: **L08030114-07**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG265320**
Collect Date: **03/06/2008 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **SMH**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS14**
Prep Date: **03/12/2008 15:49**
Cal Date: **02/11/2008 22:54**
Run Date: **03/12/2008 15:49**
File ID: **14M04128**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.125
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	99.4	86	118	
1,2-Dichloroethane-d4	96.0	80	120	
Toluene-d8	105	88	110	
4-Bromofluorobenzene	103	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS14 Dataset: 021108
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 624 SOP: MSV10 Rev: 9
Method: 5030B SOP: PAT01 Rev: 10
Maintenance Log ID: 22912

Internal Standard: STD24496 Surrogate Standard: STD24497
CCV: STD24465 LCS: STD24411 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG262907

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	14M03425	WG262819-01 BFB 50ng STD 8260	NA	1	1	STD24474	02/11/08 08:58
2	14M03427	WG262819-02 50ug/L STD 8260	NA	1	1	STD24465	02/11/08 10:06
3	14M03428	BLANK-NEW TRAP+SPARGE	NA	1	1		02/11/08 11:38
4	14M03429	BLANK-NEW TRAP+SPARGE	NA	1	1		02/11/08 12:09
5	14M03431	WG262819-01 BFB 50ng STD 8260	NA	1	1	STD24474	02/11/08 12:56
6	14M03432	WG262819-01 BFB 50ng STD 8260	NA	1	1	STD24474	02/11/08 13:11
7	14M03433	WG262819-02 50ug/L STD 8260	NA	1	1	STD24465	02/11/08 13:34
8	14M03434	SYSTEM BLANK	NA	1	1		02/11/08 14:08
9	14M03435	SYSTEM BLANK NEW TRAP 2	NA	1	1		02/11/08 16:31
10	14M03436	STD CHK	NA	1	1		02/11/08 17:20
11	14M03437	WG262907-01 BFB 50ng STD 8260	NA	1	1	STD24474	02/11/08 17:49
12	14M03438	WG262907-02 0.30ug/L STD 8260	NA	1	1	STD24465	02/11/08 18:15
13	14M03439	WG262907-03 0.40ug/L STD 8260	NA	1	1	STD24465	02/11/08 18:46
14	14M03440	WG262907-04 1ug/L STD 8260	NA	1	1	STD24465	02/11/08 19:18
15	14M03441	WG262907-05 2ug/L STD 8260	NA	1	1	STD24465	02/11/08 19:49
16	14M03442	WG262907-06 5ug/L STD 8260	NA	1	1	STD24465	02/11/08 20:19
17	14M03443	WG262907-07 20ug/L STD 8260	NA	1	1	STD24465	02/11/08 20:51
18	14M03444	WG262907-08 50ug/L STD 8260	NA	1	1	STD24465	02/11/08 21:21
19	14M03445	WG262907-09 100ug/L STD 8260	NA	1	1	STD24465	02/11/08 21:52
20	14M03446	WG262907-10 200ug/L STD 8260	NA	1	1	STD24465	02/11/08 22:23
21	14M03447	WG262907-11 300ug/L STD 8260	NA	1	1	STD24465	02/11/08 22:54
22	14M03448	SYSTEM BLANK	NA	1	1		02/11/08 23:27
23	14M03449	SYSTEM BLANK	NA	1	1		02/11/08 23:57
24	14M03450	WG262907-12 20ug/L ALT SRC STD 8260	NA	1	1	STD24411	02/12/08 00:28
25	14M03451	SYSTEM BLANK	NA	1	1		02/12/08 00:59

Approved: February 18, 2008

Page: 1

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS6 Dataset: 022508
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 624 SOP: MSV10 Rev: 9
Method: 5030B SOP: PAT01 Rev: 10
Maintenance Log ID: 23108

Internal Standard: STD24407 Surrogate Standard: STD24620
CCV: STD24792 LCS: STD24791 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG263961

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M73094	SYSTEM BLANK	NA	1	1		02/25/08 11:57
2	6M73095	50ppb STD CHK	NA	1	1		02/25/08 12:29
3	6M73096	SYSTEM BLANK	NA	1	1		02/25/08 13:01
4	6M73097	WG263961-01 BFB 50ng STD 8260	NA	1	1	STD24474	02/25/08 13:46
5	6M73098	SYSTEM BLANK	NA	1	1		02/25/08 14:09
6	6M73099	WG263961-02 0.30ug/L STD 8260	NA	1	1	STD24792	02/25/08 14:41
7	6M73100	WG263961-03 0.40ug/L STD 8260	NA	1	1	STD24792	02/25/08 15:13
8	6M73101	WG263961-04 1ug/L STD 8260	NA	1	1	STD24792	02/25/08 15:45
9	6M73102	WG263961-05 2ug/L STD 8260	NA	1	1	STD24792	02/25/08 16:17
10	6M73103	WG263961-06 5ug/L STD 8260	NA	1	1	STD24792	02/25/08 16:54
11	6M73104	WG263961-07 20ug/L STD 8260	NA	1	1	STD24792	02/25/08 17:26
12	6M73105	WG263961-08 50ug/L STD 8260	NA	1	1	STD24792	02/25/08 17:58
13	6M73106	WG263961-09 100ug/L STD 8260	NA	1	1	STD24792	02/25/08 18:30
14	6M73107	WG263961-10 200ug/L STD 8260	NA	1	1	STD24792	02/25/08 19:03
15	6M73108	WG263961-11 300ug/L STD 8260	NA	1	1	STD24792	02/25/08 19:34
16	6M73109	SYSTEM BLANK	NA	1	1		02/25/08 20:06
17	6M73110	SYSTEM BLANK	NA	1	1		02/25/08 20:38
18	6M73111	WG263961-12 20ug/L ALT SRC STD 8260	NA	1	1	STD24791	02/25/08 21:11
19	6M73112	SYSTEM BLANK	NA	1	1		02/25/08 21:43

Approved: February 29, 2008

Page: 1

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 031108
Analyst1: ASP Analyst2: CMS
Method: 5030B SOP: MSV01 Rev: 10
Method: 8260B SOP: PAT01 Rev: 10
Method: 624 SOP: MSV01 Rev: 9
Maintenance Log ID: 23259

Internal Standard: STD24971 Surrogate Standard: STD24620
CCV: STD25008 LCS: STD25028 MS/MSD: NA

Column 1 ID: RTX5 Column 2 ID: NA
Workgroups: WG265190

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M73374	WG265189-01 BFB 50ng STD 8260	NA	1	1	STD25005	03/11/08 08:33
2	6M73375	WG265189-02 50ug/L STD 8260	NA	1	1	STD24969	03/11/08 09:04
3	6M73376	WG265190-01 VBLK0310 BLANK 8260	NA	1	1		03/11/08 09:40
4	6M73377	WG265190-01 VBLK0311 BLANK 8260	NA	1	1		03/11/08 10:11
5	6M73378	WG265190-02 20ug/L LCS STD 8260	NA	1	1	STD24967	03/11/08 10:43
6	6M73379	WG265190-03 20ug/L LCS STD 8260	NA	1	1	STD24967	03/11/08 11:18
7	6M73380	L08020677-06 B 10X 826-SPE	NA	1	10		03/11/08 11:49
8	6M73381	L08030019-01 A 10X 826-TC	NA	17	10		03/11/08 12:21
9	6M73382	L08030107-01 A 1000X 826-TC	NA	17	1000		03/11/08 12:53
10	6M73383	L08030107-02 B 1000X 826-TC	NA	17	1000		03/11/08 13:25
11	6M73384	L08030113-01 A 826-SPE1	NA	1	1		03/11/08 13:57
12	6M73385	L08030113-02 A 2X 826-SPE1	NA	1	2		03/11/08 14:29
13	6M73386	L08030113-03 A 2X 826-SPE1	NA	1	2		03/11/08 15:01
14	6M73387	L08030113-04 A 100X 826-SPE1	NA	1	100		03/11/08 15:33
15	6M73388	L08030113-05 A 826-SPE1	NA	1	1		03/11/08 16:05
16	6M73389	L08030113-06 A 826-SPE1	NA	1	1		03/11/08 16:37
17	6M73390	L08030113-07 A 826-SPE1	NA	1	1		03/11/08 17:09
18	6M73391	L08030114-01 A 826-LOW	NA	1	1		03/11/08 17:40
19	6M73392	L08030114-02 A 826-LOW	NA	1	1		03/11/08 18:12
20	6M73393	L08030114-04 A 826-LOW	NA	1	1		03/11/08 18:44
21	6M73394	L08030114-05 A 826-LOW	NA	1	1		03/11/08 19:16
22	6M73395	L08030114-06 A 826-LOW	NA	1	1		03/11/08 19:48
23	6M73396	L08030114-03 A 2X 826-LOW	NA	1	2		03/11/08 20:20
24	6M73397	system blank	NA	1	1		03/11/08 20:53
25	6M73398	system blank	NA	1	1		03/11/08 21:24
26	6M73399	system blank	NA	1	1		03/11/08 21:56

Comments

Seq.	Rerun	Dil.	Reason	Analytes
11	X	100	Over Calibration Range	Toluene, EB, X, Nap
File ID: 6M73384				
12	X	1	Analyzed too dilute	

Approved: March 12, 2008

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 031108
Analyst1: ASP Analyst2: CMS
Method: 5030B SOP: MSV01 Rev: 10
Method: 8260B SOP: PAT01 Rev: 10
Method: 624 SOP: MSV01 Rev: 9
Maintenance Log ID: 23259

Internal Standard: STD24971 Surrogate Standard: STD24620
CCV: STD25008 LCS: STD25028 MS/MSD: NA

Column 1 ID: RTX5 Column 2 ID: NA
Workgroups: WG265190

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 6M73385				
13	X	1	Analyzed too dilute	
File ID: 6M73386				
14	X	20	Analyzed too dilute	
File ID: 6M73387				
18	X		Carry-over contamination	
File ID: 6M73391				

Approved: March 12, 2008

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 031208
Analyst1: CMS Analyst2: ASP
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 23262

Internal Standard: STD24971 Surrogate Standard: STD24620
CCV: STD25008 LCS: STD25028 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG265299;WG265343

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M73401	WG265294-01 BFB 50ng STD 8260	NA	1	1	STD25005	03/12/08 08:23
2	6M73402	WG265294-02 50ug/L STD 8260	NA	1	1	STD24969	03/12/08 08:52
3	6M73403	WG265299-01 VBLK0310 BLANK 8260	NA	7	1		03/12/08 09:27
4	6M73404	WG265299-01 EXT BLK 100X 8260 5g/10m	NA	7	50		03/12/08 10:02
5	6M73405	WG265299-02 EXT LCS 100X 8260 5g/10m	NA	7	50		03/12/08 10:34
6	6M73406	WG265299-03 EXT LCSDUP 100X 8260 5g	NA	7	50		03/12/08 11:06
7	6M73407	L08030156-01 100X 826-SPE 5.08g/10ml	NA	7	50		03/12/08 11:39
8	6M73408	L08030156-02 200X 826-SPE 4.95g/10ml	NA	7	100		03/12/08 12:10
9	6M73409	L08030156-01 1000X M1 826-SPE 5.08g/10	NA	7	500		03/12/08 12:42
10	6M73410	L08030156-02 1000X M1 826-SPE 4.95g/10	NA	7	500		03/12/08 13:14
11	6M73411	WG265343-01 VBLK0312 BLANK 8260	NA	1	1		03/12/08 13:46
12	6M73412	WG265343-02 20ug/L LCS STD 8260	NA	1	1	STD25028	03/12/08 14:22
13	6M73413	WG265343-03 20ug/L LCSD STD 8260	NA	1	1	STD25028	03/12/08 14:54
14	6M73414	L08030113-02 B 826-SPE	<2	1	1		03/12/08 15:26
15	6M73415	L08030113-03 B 826-SPE	<2	1	1		03/12/08 15:58
16	6M73416	L08030113-04 B 20X 826-SPE	<2	1	20		03/12/08 16:30
17	6M73417	L08030113-01 B 100X 826-SPE D1	<2	1	100		03/12/08 17:02
18	6M73418	L08030114-01 B 826-LOW	<2	1	1		03/12/08 17:33
19	6M73419	L08030088-02 A 826-SPE	<2	1	1		03/12/08 18:05
20	6M73420	L08030088-03 A 826-SPE	<2	1	1		03/12/08 18:37
21	6M73421	L08030088-05 A 826-SPE	<2	1	1		03/12/08 19:09
22	6M73422	L08030088-07 A 826-SPE	<2	1	1		03/12/08 19:41
23	6M73423	L08030027-01 A 10X 826-SPE	NA	17	10		03/12/08 20:13
24	6M73424	SYSTEM BLANK	NA	1	1		03/12/08 20:45
25	6M73425	SYSTEM BLANK	NA	1	1		03/12/08 21:17
26	6M73426	SYSTEM BLANK	NA	1	1		03/12/08 21:48

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3				
File ID: 6M73403				
	DNR			
7	X	1000	Over Calibration Range	PCE

Approved: March 13, 2008

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 031208
Analyst1: CMS Analyst2: ASP
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 23262

Internal Standard: STD24971 Surrogate Standard: STD24620
CCV: STD25008 LCS: STD25028 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG265299;WG265343

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 6M73407				
8	X	1000	Over Calibration Range	PCE
File ID: 6M73408				

Approved: March 13, 2008

Page: 2

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS14 Dataset: 031208
Analyst1: SMH Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10

Maintenance Log ID: 23255

Internal Standard: STD24912 Surrogate Standard: STD24913
CCV: STD24969 LCS: STD25028 MS/MSD: STD25028

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG265320

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	14M04116	WG265319-01 50ng BFB STD 8260	NA	1	1	STD25005	03/12/08 09:45
2	14M04117	WG265319-02 50ug/L STD 8260	NA	1	1	STD24969	03/12/08 10:08
3	14M04118	WG265320-01 VBLK0312 BLANK 8260	NA	1	1		03/12/08 10:39
4	14M04119	WG265328-01 100ug/L A9FOO STD 8260	NA	1	1	STD24461	03/12/08 11:10
5	14M04120	WG265320-01 VBLK0312 BLANK 8260	NA	1	1		03/12/08 11:41
6	14M04121	WG265320-02 20ug/L LCS STD 8260	NA	1	1	STD25028	03/12/08 12:12
7	14M04122	WG265320-03 100ug/L A9FOO LCS STD 8	NA	1	1	STD24462	03/12/08 12:43
8	14M04123	L08030061-01 B 20X 826-SPE	<2	1	20		03/12/08 13:14
9	14M04124	L08030061-02 B 100X 826-SPE	<2	1	100		03/12/08 13:45
10	14M04125	L08030110-07 B 826-BETX	<2	1	1		03/12/08 14:16
11	14M04126	L08030110-06 B 10X 826-BETX	6	1	10		03/12/08 14:47
12	14M04127	WG265320-04 624 BLANK	<2	2	1		03/12/08 15:18
13	14M04128	L08030114-07 A 826-LOW	<2	1	1		03/12/08 15:49
14	14M04129	L08030062-03 A 826-A9	<2	1	1		03/12/08 16:20
15	14M04130	L08030126-02 A 624-SPE	7	2	1		03/12/08 16:51
16	14M04131	L08030062-01 A 826-A9	<2	1	1		03/12/08 17:22
17	14M04132	L08030062-02 A 826-A9	<2	1	1		03/12/08 17:53
18	14M04133	L08030058-01 A 826-SPE2	<2	1	1		03/12/08 18:24
19	14M04134	L08030058-02 MS A 826-SPE2	<2	1	1	STD25028	03/12/08 18:55
20	14M04135	L08030058-03 MSD A 826-SPE2	<2	1	1	STD25028	03/12/08 19:26
21	14M04136	L08030058-04 A 826-SPE2	<2	1	1		03/12/08 19:57
22	14M04137	L08030058-05 A 826-SPE2	<2	1	1		03/12/08 20:28
23	14M04138	L08030058-06 A 826-SPE2	5	1	1		03/12/08 20:58
24	14M04139	L08030058-07 A 826-SPE2	<2	1	1		03/12/08 21:30
25	14M04140	L08030186-01 A 624-SPE2	7	2	1		03/12/08 22:01
26	14M04141	L08030187-01 A 624-SPE	<2	2	1		03/12/08 22:31
27	14M04142	SYSTEM BLANK	NA	1	1		03/12/08 23:03
28	14M04143	SYSTEM CHECK	NA	1	1		03/12/08 23:33

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X			

File ID: 14M04118

Approved: March 14, 2008

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS14 Dataset: 031208
Analyst1: SMH Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10

Maintenance Log ID: 23255

Internal Standard: STD24912 Surrogate Standard: STD24913
CCV: STD24969 LCS: STD25028 MS/MSD: STD25028

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG265320

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
9	X	50	Analyzed too dilute	
File ID: 14M04124				

Approved: March 14, 2008

KEMRON Environmental Services
Data Checklist

Date: 11-FEB-2008
Analyst: CMS
Analyst: NA
Method: 8260B/624
Instrument: HPMS14
Curve Workgroup: NA
Runlog ID: 20708
Analytical Workgroups: WG262907

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	NA
Project/Client Specific Requirements	NA
Special Standards	NA
Blanks	NA
TCL's	NA
Surrogates	NA
LCS (Laboratory Control Sample)	NA
Recoveries	NA
Surrogates	NA
MS/MSD/Duplicates	NA
Samples	NA
TCL Hits	NA
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Library Searches	NA
Calculations & Correct Factors	NA
Dilutions Run	NA
Reruns	NA
Manual Integrations	X
Case Narrative	NA
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
14-FEB-2008

Secondary Reviewer:
18-FEB-2008

Generated: FEB-18-2008 09:08:00

KEMRON Environmental Services, Inc.

Data Checklist

Date: 25-FEB-2008
Analyst: CMS
Analyst: NA
Method: 8260B/624
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 20936
Analytical Workgroups: WG263961

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	NA
Project/Client Specific Requirements	NA
Special Standards	NA
Blanks	NA
TCL's	NA
Surrogates	NA
LCS (Laboratory Control Sample)	NA
Recoveries	NA
Surrogates	NA
MS/MSD/Duplicates	NA
Samples	NA
TCL Hits	NA
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Library Searches	NA
Calculations & Correct Factors	NA
Dilutions Run	NA
Reruns	NA
Manual Integrations	NA
Case Narrative	NA
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
29-FEB-2008

Secondary Reviewer:
29-FEB-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-12-2008 13:25:54

KEMRON Environmental Services, Inc.

Data Checklist

Date: 11-MAR-2008
Analyst: ASP
Analyst: CMS
Method: 8260B
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 21109
Analytical Workgroups: WG265190

System Performance Check	X
BFB	X
Initial Calibration	NA
Average RF	NA
Linear Reg or Higher Order Curve	NA
Second Source standard % Difference	NA
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	NA
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
12-MAR-2008

Secondary Reviewer:
12-MAR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-12-2008 16:15:30

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Data Checklist

Date: 12-MAR-2008
Analyst: CMS
Analyst: ASP
Method: 8260B
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 21114
Analytical Workgroups: WG265299;WG265343

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	NA
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
13-MAR-2008

Secondary Reviewer:
13-MAR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-13-2008 10:13:23

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Data Checklist

Date: 12-MAR-2008
Analyst: SMH
Analyst: NA
Method: 8260
Instrument: HPMS14
Curve Workgroup: NA
Runlog ID: 21107
Analytical Workgroups: WG265320

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	X
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	X
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	SMH
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the resonableness of the results	X

Primary Reviewer:
14-MAR-2008

Secondary Reviewer:
14-MAR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-14-2008 14:29:29

KEMRON Environmental Services, Inc.

HOLDING TIMES

EQUIVALENT TO AFCEE FORM 9

00115127

Analytical Method: 8260B AAB#: WG265190

Login Number: L08030114

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW20-030608-FD	03/06/08	03/07/08	03/11/08	14	5.41	03/11/08	14	5.41	
12WW20-030608	03/06/08	03/07/08	03/11/08	14	5.39	03/11/08	14	5.39	
12WW24-030508	03/05/08	03/07/08	03/11/08	14	6.24	03/11/08	14	6.24	
12WW23-030508	03/05/08	03/07/08	03/11/08	14	6.28	03/11/08	14	6.28	
12WW21-030608	03/06/08	03/07/08	03/11/08	14	5.37	03/11/08	14	5.37	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008

PDF File ID: 1040276

Report generated 03/14/2008 16:10

KEMRON Environmental Services, Inc.

HOLDING TIMES

EQUIVALENT TO AFCEE FORM 9

00115128

Analytical Method: 8260B AAB#: WG265343

Login Number: L08030114

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW22-030508	03/05/08	03/07/08	03/12/08	14	7.32	03/12/08	14	7.32	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008

PDF File ID: 1040276

Report generated 03/14/2008 16:10

KEMRON Environmental Services, Inc.

HOLDING TIMES

EQUIVALENT TO AFCEE FORM 9

00115129

Analytical Method: 8260B

AAB#: WG265320

Login Number: L08030114

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
TRIP BLANK	03/06/08	03/07/08	03/12/08	14	6.66	03/12/08	14	6.66	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008

PDF File ID: 1040276

Report generated 03/14/2008 16:10

Login Number:L08030114
Instrument Id:HPMS14
Workgroup (AAB#):WG265320

Method:8260
CAL ID: HPMS14-11-FEB-08
Matrix:Water

Sample Number	Dilution	Tag	1	2	3	4
L08030114-07	1.00	01	96.0	99.4	103	105
WG265320-01	1.00	01	95.4	98.8	103	104
WG265320-02	1.00	01	94.8	101	103	102
WG265320-03	1.00	01	95.2	101	105	104

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1040284
Report generated: 03/14/2008 16:10

Login Number:L08030114
Instrument Id:HPMS6
Workgroup (AAB#):WG265343

Method:8260
CAL ID: HPMS6-25-FEB-08
Matrix:Water

Sample Number	Dilution	Tag	1	2	3	4
L08030114-01	1.00	01	94.9	97.9	96.0	110
WG265343-01	1.00	01	98.0	102	98.8	112
WG265343-02	1.00	01	98.5	105	105	120
WG265343-03	1.00	01	94.0	97.4	96.8	112

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1040284
Report generated: 03/14/2008 16:10

Login Number:L08030114
Instrument Id:HPMS6
Workgroup (AAB#):WG265190

Method:8260
CAL ID: HPMS6-25-FEB-08
Matrix:Water

Sample Number	Dilution	Tag	1	2	3	4
L08030114-02	1.00	01	94.4	97.8	100	111
L08030114-03	2.00	DL01	96.8	97.3	100	113
L08030114-04	1.00	01	97.7	97.5	97.6	110
L08030114-05	1.00	01	98.4	97.8	97.0	109
L08030114-06	1.00	01	104	103	102	114
WG265190-01	1.00	01	94.9	98.1	99.7	111
WG265190-02	1.00	01	94.9	98.2	99.1	112
WG265190-03	1.00	01	94.4	99.1	99.6	111

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1040284
Report generated: 03/14/2008 16:10

METHOD BLANK SUMMARY

Login Number: L08030114
Work Group: WG265320
Blank File ID: 14M04120
Blank Sample ID: WG265320-01
Prep Date: 03/12/08 11:41
Instrument ID: HPMS14
Analyzed Date: 03/12/08 11:41
Method: 8260B
Analyst: SMH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG265320-02	14M04121	03/12/08 12:12	01
LCS	WG265320-03	14M04122	03/12/08 12:43	01
TRIP BLANK	L08030114-07	14M04128	03/12/08 15:49	01

Report Name: BLANK_SUMMARY
PDF File ID: 1040277
Report generated 03/14/2008 16:10

KEMRON ENVIRONMENTAL SERVICES

METHOD BLANK SUMMARY

Login Number: L08030114
Work Group: WG265190
Blank File ID: 6M73377
Blank Sample ID: WG265190-01
Prep Date: 03/11/08 10:11
Instrument ID: HPMS6
Analyzed Date: 03/11/08 10:11
Method: 8260B
Analyst: CMS/ASP

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG265190-02	6M73378	03/11/08 10:43	01
LCS2	WG265190-03	6M73379	03/11/08 11:18	01
12WW23-030508	L08030114-02	6M73392	03/11/08 18:12	01
12WW20-030608	L08030114-04	6M73393	03/11/08 18:44	01
12WW20-030608-FD	L08030114-05	6M73394	03/11/08 19:16	01
12WW21-030608	L08030114-06	6M73395	03/11/08 19:48	01
12WW24-030508	L08030114-03	6M73396	03/11/08 20:20	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1040277
Report generated 03/14/2008 16:10

KEMRON ENVIRONMENTAL SERVICES

METHOD BLANK SUMMARY

Login Number: L08030114
Work Group: WG265343
Blank File ID: 6M73411
Blank Sample ID: WG265343-01
Prep Date: 03/12/08 13:46
Instrument ID: HPMS6
Analyzed Date: 03/12/08 13:46
Method: 8260B
Analyst: CMS/ASP

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG265343-02	6M73412	03/12/08 14:22	01
LCS2	WG265343-03	6M73413	03/12/08 14:54	01
12WW22-030508	L08030114-01	6M73418	03/12/08 17:33	01

Report Name: BLANK_SUMMARY
PDF File ID: 1040277
Report generated 03/14/2008 16:10

METHOD BLANK REPORT

Login Number:L08030114 Prep Date:03/12/08 11:41 Sample ID:WG265320-01
Instrument ID:HPMS14 Run Date:03/12/08 11:41 Prep Method:5030B
File ID:14M04120 Analyst:SMH Method:8260B
Workgroup (AAB#):WG265320 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS14-11-FEB-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.696	1	J
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

Report Name:BLANK
PDF ID: 1040278
14-MAR-2008 16:10

KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030114 Prep Date:03/12/08 11:41 Sample ID:WG265320-01
Instrument ID:HPMS14 Run Date:03/12/08 11:41 Prep Method:5030B
File ID:14M04120 Analyst:SMH Method:8260B
Workgroup (AAB#):WG265320 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS14-11-FEB-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.125	1.00	0.125	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits			Qualifier
Dibromofluoromethane	98.8	86	-	118	PASS
1,2-Dichloroethane-d4	95.4	80	-	120	PASS
Toluene-d8	104	88	-	110	PASS
4-Bromofluorobenzene	103	86	-	115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

Report Name:BLANK
PDF ID: 1040278
14-MAR-2008 16:10

METHOD BLANK REPORT

Login Number:L08030114 Prep Date:03/11/08 10:11 Sample ID:WG265190-01
Instrument ID:HPMS6 Run Date:03/11/08 10:11 Prep Method:5030B
File ID:6M73377 Analyst:CMS/ASP Method:8260B
Workgroup (AAB#):WG265190 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-25-FEB-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

Report Name:BLANK
PDF ID: 1040278
14-MAR-2008 16:10

KEMRON ENVIRONMENTAL SERVICES

METHOD BLANK REPORT

Login Number:L08030114 Prep Date:03/11/08 10:11 Sample ID:WG265190-01
Instrument ID:HPMS6 Run Date:03/11/08 10:11 Prep Method:5030B
File ID:6M73377 Analyst:CMS/ASP Method:8260B
Workgroup (AAB#):WG265190 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-25-FEB-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.125	1.00	0.190	1	J
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	98.1	86 - 118	PASS
1,2-Dichloroethane-d4	94.9	80 - 120	PASS
Toluene-d8	111	88 - 110	FAIL
4-Bromofluorobenzene	99.7	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

Report Name:BLANK
PDF ID: 1040278
14-MAR-2008 16:10

KEMRON ENVIRONMENTAL SERVICES

METHOD BLANK REPORT

Login Number:L08030114 Prep Date:03/12/08 13:46 Sample ID:WG265343-01
Instrument ID:HPMS6 Run Date:03/12/08 13:46 Prep Method:5030B
File ID:6M73411 Analyst:CMS/ASP Method:8260B
Workgroup (AAB#):WG265343 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-25-FEB-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

Report Name:BLANK
PDF ID: 1040278
14-MAR-2008 16:10

KEMRON ENVIRONMENTAL SERVICES

METHOD BLANK REPORT

Login Number:L08030114 Prep Date:03/12/08 13:46 Sample ID:WG265343-01
Instrument ID:HPMS6 Run Date:03/12/08 13:46 Prep Method:5030B
File ID:6M73411 Analyst:CMS/ASP Method:8260B
Workgroup (AAB#):WG265343 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-25-FEB-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.125	1.00	0.125	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits			Qualifier
Dibromofluoromethane	102	86	-	118	PASS
1,2-Dichloroethane-d4	98.0	80	-	120	PASS
Toluene-d8	112	88	-	110	FAIL
4-Bromofluorobenzene	98.8	86	-	115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

Report Name:BLANK
PDF ID: 1040278
14-MAR-2008 16:10

Login Number:L08030114 Run Date:03/12/2008 Sample ID:WG265320-02
Instrument ID:HPMS14 Run Time:12:12 Prep Method:5030B
File ID:14M04121 Analyst:SMH Method:8260B
Workgroup (AAB#):WG265320 Matrix:Water Units:ug/L
QC Key:STD Lot#:STD25028 Cal ID:HPMS14-11-FEB-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Acetone	20.0	19.4	97.2	40 - 142	
Benzene	20.0	20.1	101	80 - 121	
Bromobenzene	20.0	21.2	106	80 - 120	
Bromochloromethane	20.0	20.0	99.8	65 - 130	
Bromodichloromethane	20.0	22.4	112	80 - 131	
Bromoform	20.0	19.2	95.9	70 - 130	
Bromomethane	20.0	20.3	102	30 - 145	
2-Butanone	20.0	20.1	101	30 - 150	
n-Butylbenzene	20.0	22.2	111	80 - 131	
sec-Butylbenzene	20.0	22.4	112	80 - 127	
tert-Butylbenzene	20.0	22.2	111	80 - 126	
Carbon disulfide	20.0	21.6	108	58 - 138	
Carbon tetrachloride	20.0	22.4	112	65 - 140	
Chlorobenzene	20.0	20.7	103	80 - 120	
Chlorodibromomethane	20.0	19.6	97.9	60 - 135	
Chloroethane	20.0	21.4	107	60 - 135	
2-Chloroethyl vinyl ether	20.0	17.4	87.1	58 - 151	
Chloroform	20.0	20.8	104	80 - 125	
Chloromethane	20.0	17.5	87.5	40 - 125	
2-Chlorotoluene	20.0	21.5	107	80 - 127	
4-Chlorotoluene	20.0	21.1	106	80 - 126	
1,2-Dibromo-3-chloropropane	20.0	18.9	94.6	50 - 130	
1,2-Dibromoethane	20.0	21.0	105	80 - 125	
Dibromomethane	20.0	21.2	106	75 - 125	
1,2-Dichlorobenzene	20.0	20.2	101	80 - 125	
1,3-Dichlorobenzene	20.0	20.2	101	80 - 120	
1,4-Dichlorobenzene	20.0	19.6	97.8	80 - 120	
Dichlorodifluoromethane	20.0	22.4	112	50 - 133	
1,1-Dichloroethane	20.0	20.7	103	80 - 125	
1,2-Dichloroethane	20.0	20.3	101	80 - 129	
1,1-Dichloroethene	20.0	21.6	108	80 - 132	
cis-1,2-Dichloroethene	20.0	21.2	106	70 - 125	
trans-1,2-Dichloroethene	20.0	20.9	104	80 - 127	
1,2-Dichloropropane	20.0	20.6	103	80 - 120	
1,3-Dichloropropane	20.0	20.6	103	80 - 120	
2,2-Dichloropropane	20.0	23.2	116	80 - 133	
cis-1,3-Dichloropropene	20.0	21.4	107	70 - 130	
trans-1,3-Dichloropropene	20.0	20.1	101	80 - 130	
1,1-Dichloropropene	20.0	21.2	106	75 - 130	
Ethylbenzene	20.0	22.1	110	80 - 122	
2-Hexanone	20.0	20.4	102	55 - 130	

LCS - Modified 03/06/2008
PDF File ID: 1039957
Report generated: 03/14/2008 16:52

Login Number:L08030114 Run Date:03/12/2008 Sample ID:WG265320-02
Instrument ID:HPMS14 Run Time:12:12 Prep Method:5030B
File ID:14M04121 Analyst:SMH Method:8260B
Workgroup (AAB#):WG265320 Matrix:Water Units:ug/L
QC Key:STD Lot#:STD25028 Cal ID:HPMS14-11-FEB-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Hexachlorobutadiene	20.0	19.3	96.6	72 - 132	
Isopropylbenzene	20.0	20.1	100	80 - 122	
p-Isopropyltoluene	20.0	21.9	109	80 - 122	
4-Methyl-2-pentanone	20.0	20.8	104	64 - 140	
Methylene chloride	20.0	20.2	101	80 - 123	
Naphthalene	20.0	17.8	89.2	59 - 149	
n-Propylbenzene	20.0	23.0	115	80 - 129	
Styrene	20.0	22.1	110	80 - 123	
1,1,1,2-Tetrachloroethane	20.0	22.1	110	80 - 130	
1,1,2,2-Tetrachloroethane	20.0	21.3	106	79 - 125	
Tetrachloroethene	20.0	21.8	109	80 - 124	
Toluene	20.0	20.9	105	80 - 124	
1,2,3-Trichlorobenzene	20.0	18.1	90.6	55 - 140	
1,2,4-Trichlorobenzene	20.0	18.3	91.5	65 - 135	
1,1,1-Trichloroethane	20.0	21.8	109	80 - 134	
1,1,2-Trichloroethane	20.0	20.6	103	80 - 125	
Trichloroethene	20.0	21.7	108	80 - 122	
Trichlorofluoromethane	20.0	18.8	94.1	62 - 151	
1,2,3-Trichloropropane	20.0	21.1	105	75 - 125	
1,2,4-Trimethylbenzene	20.0	21.6	108	80 - 125	
1,3,5-Trimethylbenzene	20.0	22.4	112	80 - 127	
Vinyl acetate	20.0	19.2	96.1	10 - 150	
Vinyl chloride	20.0	21.7	108	65 - 140	
o-Xylene	20.0	21.9	109	80 - 122	
m-,p-Xylene	40.0	43.9	110	80 - 122	

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	101	86 - 118	PASS
1,2-Dichloroethane-d4	94.8	80 - 120	PASS
Toluene-d8	102	88 - 110	PASS
4-Bromofluorobenzene	103	86 - 115	PASS

* FAILS %REC LIMIT

LCS - Modified 03/06/2008
PDF File ID: 1039957
Report generated: 03/14/2008 16:52

KEMRON Environmental Services, Inc.

LABORATORY CONTROL SAMPLE (LCS)

00115144

Login Number:L08030114 Analyst:CMS/ASP Prep Method:5030B

Instrument ID:HPMS6 Matrix:Water Method:8260B

Workgroup (AAB#):WG265190 Units:ug/L

QC Key:STD Lot #:STD24967

Sample ID:WG265190-02 LCS File ID:6M73378 Run Date:03/11/2008 10:43

Sample ID:WG265190-03 LCS2 File ID:6M73379 Run Date:03/11/2008 11:18

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	20.0	100	20.0	20.8	104	3.92	40 - 142	20	
Benzene	20.0	18.6	93.1	20.0	18.1	90.4	2.87	80 - 121	20	
Bromobenzene	20.0	20.1	100	20.0	19.8	99.2	1.24	80 - 120	20	
Bromochloromethane	20.0	18.1	90.5	20.0	18.3	91.7	1.40	65 - 130	20	
Bromodichloromethane	20.0	19.4	97.1	20.0	19.3	96.5	0.638	80 - 131	20	
Bromoform	20.0	19.4	97.0	20.0	18.6	93.2	4.00	70 - 130	20	
Bromomethane	20.0	17.5	87.5	20.0	18.3	91.5	4.55	30 - 145	20	
2-Butanone	20.0	19.4	97.1	20.0	19.3	96.3	0.879	30 - 150	20	
n-Butylbenzene	20.0	19.6	97.9	20.0	18.6	93.1	5.09	80 - 131	20	
sec-Butylbenzene	20.0	19.6	97.8	20.0	18.5	92.5	5.49	80 - 127	20	
tert-Butylbenzene	20.0	18.9	94.3	20.0	18.6	93.0	1.37	80 - 126	20	
Carbon disulfide	20.0	16.4	82.2	20.0	15.1	75.3	8.78	58 - 138	20	
Carbon tetrachloride	20.0	21.2	106	20.0	19.6	98.2	7.51	65 - 140	20	
Chlorobenzene	20.0	18.9	94.7	20.0	18.7	93.3	1.47	80 - 120	20	
Chlorodibromomethane	20.0	22.2	111	20.0	22.0	110	1.08	60 - 135	20	
Chloroethane	20.0	18.4	91.8	20.0	18.0	89.8	2.23	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	17.4	87.1	20.0	16.9	84.5	3.04	58 - 151	20	
Chloroform	20.0	19.6	98.1	20.0	18.9	94.5	3.72	80 - 125	20	
Chloromethane	20.0	18.0	90.1	20.0	17.3	86.6	3.98	40 - 125	20	
2-Chlorotoluene	20.0	19.1	95.6	20.0	18.7	93.4	2.28	80 - 127	20	
4-Chlorotoluene	20.0	18.2	91.1	20.0	18.1	90.6	0.597	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	18.5	92.3	20.0	17.8	88.8	3.85	50 - 130	20	
1,2-Dibromoethane	20.0	21.2	106	20.0	21.1	105	0.491	80 - 125	20	
Dibromomethane	20.0	19.2	96.0	20.0	19.1	95.3	0.705	75 - 125	20	
1,2-Dichlorobenzene	20.0	18.7	93.7	20.0	18.8	93.9	0.238	80 - 125	20	
1,3-Dichlorobenzene	20.0	19.1	95.5	20.0	19.0	95.0	0.616	80 - 120	20	
1,4-Dichlorobenzene	20.0	18.4	92.1	20.0	18.2	91.1	1.14	80 - 120	20	
Dichlorodifluoromethane	20.0	18.5	92.5	20.0	17.4	87.0	6.04	50 - 133	20	
1,1-Dichloroethane	20.0	19.4	96.8	20.0	19.1	95.5	1.27	80 - 125	20	
1,2-Dichloroethane	20.0	20.3	101	20.0	19.9	99.6	1.80	80 - 129	20	
1,1-Dichloroethene	20.0	19.2	96.1	20.0	18.0	90.0	6.57	80 - 132	20	
cis-1,2-Dichloroethene	20.0	19.9	99.7	20.0	19.9	99.4	0.268	70 - 125	20	
trans-1,2-Dichloroethene	20.0	18.8	93.9	20.0	17.8	89.1	5.23	80 - 127	20	
1,2-Dichloropropane	20.0	18.7	93.6	20.0	18.3	91.4	2.43	80 - 120	20	
1,3-Dichloropropane	20.0	21.5	108	20.0	21.0	105	2.39	80 - 120	20	
2,2-Dichloropropane	20.0	20.1	100	20.0	18.9	94.6	5.90	80 - 133	20	
cis-1,3-Dichloropropene	20.0	18.3	91.5	20.0	18.2	91.1	0.439	70 - 130	20	
trans-1,3-Dichloropropene	20.0	20.1	100	20.0	19.8	98.9	1.54	80 - 130	20	
1,1-Dichloropropene	20.0	19.7	98.5	20.0	18.4	91.9	6.94	75 - 130	20	
Ethylbenzene	20.0	19.5	97.6	20.0	18.6	93.1	4.76	80 - 122	20	

LCS_LCS2 - Modified 03/06/2008

PDF File ID: 1038886

Report generated: 03/14/2008 16:10

KEMRON Environmental Services, Inc.

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L08030114 Analyst:CMS/ASP Prep Method:5030B

Instrument ID:HPMS6 Matrix:Water Method:8260B

Workgroup (AAB#):WG265190 Units:ug/L

QC Key:STD Lot #:STD24967

Sample ID:WG265190-02 LCS File ID:6M73378 Run Date:03/11/2008 10:43

Sample ID:WG265190-03 LCS2 File ID:6M73379 Run Date:03/11/2008 11:18

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	18.7	93.6	20.0	18.6	92.8	0.863	55 - 130	20	
Hexachlorobutadiene	20.0	18.8	94.0	20.0	18.0	90.2	4.11	72 - 132	20	
Isopropylbenzene	20.0	18.1	90.3	20.0	17.3	86.6	4.20	80 - 122	20	
p-Isopropyltoluene	20.0	18.8	94.0	20.0	17.9	89.7	4.64	80 - 122	20	
4-Methyl-2-pentanone	20.0	14.7	73.5	20.0	14.5	72.3	1.54	64 - 140	20	
Methylene chloride	20.0	18.6	93.1	20.0	18.4	91.8	1.35	80 - 123	20	
Naphthalene	20.0	18.0	89.9	20.0	18.2	91.2	1.47	59 - 149	20	
n-Propylbenzene	20.0	19.4	97.1	20.0	18.8	94.2	2.96	80 - 129	20	
Styrene	20.0	19.4	97.2	20.0	19.3	96.3	0.954	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	21.7	108	20.0	20.9	105	3.53	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	19.1	95.6	20.0	18.9	94.6	1.02	79 - 125	20	
Tetrachloroethene	20.0	21.5	108	20.0	19.8	98.9	8.32	80 - 124	20	
Toluene	20.0	21.0	105	20.0	20.3	102	3.08	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	18.9	94.7	20.0	18.9	94.4	0.290	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	18.4	92.1	20.0	18.5	92.5	0.471	65 - 135	20	
1,1,1-Trichloroethane	20.0	19.9	99.3	20.0	18.5	92.7	6.91	80 - 134	20	
1,1,2-Trichloroethane	20.0	21.1	106	20.0	21.0	105	0.853	80 - 125	20	
Trichloroethene	20.0	18.8	94.0	20.0	18.2	91.1	3.12	80 - 122	20	
Trichlorofluoromethane	20.0	15.9	79.4	20.0	14.9	74.5	6.36	62 - 151	20	
1,2,3-Trichloropropane	20.0	20.0	99.8	20.0	19.2	95.9	3.94	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	18.9	94.5	20.0	18.6	93.1	1.46	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	19.2	96.0	20.0	18.9	94.3	1.83	80 - 127	20	
Vinyl acetate	20.0	20.3	101	20.0	20.7	104	2.31	10 - 150	20	
Vinyl chloride	20.0	23.3	117	20.0	21.2	106	9.61	65 - 140	20	
o-Xylene	20.0	19.2	95.9	20.0	18.7	93.7	2.34	80 - 122	20	
m-,p-Xylene	40.0	38.5	96.3	40.0	36.8	92.0	4.60	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	98.2	99.1	86 - 118	PASS
1,2-Dichloroethane-d4	94.9	94.4	80 - 120	PASS
Toluene-d8	112	111	88 - 110	FAIL
4-Bromofluorobenzene	99.1	99.6	86 - 115	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008

PDF File ID: 1038886

Report generated: 03/14/2008 16:10

Login Number:L08030114 Analyst:CMS/ASP Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG265343 Units:ug/L
QC Key:STD Lot #:STD25028

Sample ID:WG265343-02 LCS File ID:6M73412 Run Date:03/12/2008 14:22
Sample ID:WG265343-03 LCS2 File ID:6M73413 Run Date:03/12/2008 14:54

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	20.6	103	20.0	20.0	99.9	3.19	40 - 142	20	
Benzene	20.0	20.9	104	20.0	18.4	91.8	12.9	80 - 121	20	
Bromobenzene	20.0	22.3	111	20.0	19.8	98.9	11.8	80 - 120	20	
Bromochloromethane	20.0	19.6	98.2	20.0	18.7	93.3	5.06	65 - 130	20	
Bromodichloromethane	20.0	21.5	108	20.0	20.3	101	5.97	80 - 131	20	
Bromoform	20.0	19.4	96.8	20.0	18.3	91.3	5.83	70 - 130	20	
Bromomethane	20.0	21.2	106	20.0	17.9	89.3	17.1	30 - 145	20	
2-Butanone	20.0	17.0	85.1	20.0	16.4	81.9	3.86	30 - 150	20	
n-Butylbenzene	20.0	22.6	113	20.0	18.5	92.7	19.8	80 - 131	20	
sec-Butylbenzene	20.0	22.6	113	20.0	18.3	91.6	20.7	80 - 127	20	#
tert-Butylbenzene	20.0	21.8	109	20.0	18.1	90.5	18.5	80 - 126	20	
Carbon disulfide	20.0	19.9	99.6	20.0	16.4	82.0	19.3	58 - 138	20	
Carbon tetrachloride	20.0	24.5	123	20.0	19.3	96.4	23.9	65 - 140	20	#
Chlorobenzene	20.0	21.3	107	20.0	19.1	95.4	11.0	80 - 120	20	
Chlorodibromomethane	20.0	23.6	118	20.0	22.6	113	4.52	60 - 135	20	
Chloroethane	20.0	21.7	108	20.0	17.3	86.5	22.5	60 - 135	20	#
2-Chloroethyl vinyl ether	20.0	17.3	86.7	20.0	16.5	82.3	5.17	58 - 151	20	
Chloroform	20.0	22.6	113	20.0	19.7	98.7	13.4	80 - 125	20	
Chloromethane	20.0	23.6	118	20.0	19.2	96.1	20.7	40 - 125	20	#
2-Chlorotoluene	20.0	21.9	109	20.0	17.9	89.4	20.1	80 - 127	20	#
4-Chlorotoluene	20.0	20.5	103	20.0	19.4	96.8	5.76	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	18.3	91.7	20.0	17.6	88.1	4.01	50 - 130	20	
1,2-Dibromoethane	20.0	21.4	107	20.0	20.8	104	2.92	80 - 125	20	
Dibromomethane	20.0	20.6	103	20.0	19.6	98.2	4.49	75 - 125	20	
1,2-Dichlorobenzene	20.0	20.7	103	20.0	18.7	93.4	10.0	80 - 125	20	
1,3-Dichlorobenzene	20.0	21.5	107	20.0	19.0	95.1	12.1	80 - 120	20	
1,4-Dichlorobenzene	20.0	20.4	102	20.0	18.4	92.0	10.4	80 - 120	20	
Dichlorodifluoromethane	20.0	28.0	140	20.0	19.6	97.8	35.6	50 - 133	20	*#
1,1-Dichloroethane	20.0	22.5	112	20.0	19.5	97.6	14.2	80 - 125	20	
1,2-Dichloroethane	20.0	22.3	111	20.0	20.8	104	6.66	80 - 129	20	
1,1-Dichloroethene	20.0	23.2	116	20.0	18.1	90.4	24.8	80 - 132	20	#
cis-1,2-Dichloroethene	20.0	22.7	114	20.0	20.6	103	10.2	70 - 125	20	
trans-1,2-Dichloroethene	20.0	21.7	108	20.0	18.0	89.8	18.8	80 - 127	20	
1,2-Dichloropropane	20.0	20.5	102	20.0	19.0	95.0	7.40	80 - 120	20	
1,3-Dichloropropane	20.0	22.4	112	20.0	20.8	104	7.47	80 - 120	20	
2,2-Dichloropropane	20.0	23.2	116	20.0	18.9	94.3	20.5	80 - 133	20	#
cis-1,3-Dichloropropene	20.0	19.7	98.4	20.0	18.6	92.8	5.91	70 - 130	20	
trans-1,3-Dichloropropene	20.0	21.0	105	20.0	20.1	101	4.19	80 - 130	20	
1,1-Dichloropropene	20.0	22.8	114	20.0	18.4	91.9	21.5	75 - 130	20	#
Ethylbenzene	20.0	22.6	113	20.0	19.4	96.8	15.3	80 - 122	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1038886
Report generated: 03/14/2008 16:10

KEMRON Environmental Services, Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number:L08030114 Analyst:CMS/ASP Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG265343 Units:ug/L
QC Key:STD Lot #:STD25028

Sample ID:WG265343-02 LCS File ID:6M73412 Run Date:03/12/2008 14:22
Sample ID:WG265343-03 LCS2 File ID:6M73413 Run Date:03/12/2008 14:54

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	18.0	89.8	20.0	17.2	86.1	4.12	55 - 130	20	
Hexachlorobutadiene	20.0	21.3	106	20.0	17.0	85.0	22.5	72 - 132	20	#
Isopropylbenzene	20.0	21.0	105	20.0	17.5	87.7	17.9	80 - 122	20	
p-Isopropyltoluene	20.0	21.6	108	20.0	17.8	89.0	19.3	80 - 122	20	
4-Methyl-2-pentanone	20.0	13.7	68.6	20.0	13.7	68.5	0.141	64 - 140	20	
Methylene chloride	20.0	20.9	105	20.0	18.8	94.1	10.6	80 - 123	20	
Naphthalene	20.0	18.4	92.2	20.0	17.5	87.5	5.31	59 - 149	20	
n-Propylbenzene	20.0	22.4	112	20.0	18.6	93.2	18.6	80 - 129	20	
Styrene	20.0	22.2	111	20.0	19.7	98.6	11.7	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	23.4	117	20.0	20.9	105	11.3	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	18.6	92.8	20.0	18.1	90.5	2.57	79 - 125	20	
Tetrachloroethene	20.0	24.7	123	20.0	20.2	101	20.0	80 - 124	20	
Toluene	20.0	23.8	119	20.0	20.9	104	13.1	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	19.2	96.2	20.0	18.3	91.4	5.03	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	19.4	97.2	20.0	17.9	89.7	8.02	65 - 135	20	
1,1,1-Trichloroethane	20.0	23.3	117	20.0	19.1	95.7	19.6	80 - 134	20	
1,1,2-Trichloroethane	20.0	22.1	111	20.0	21.1	105	4.73	80 - 125	20	
Trichloroethene	20.0	21.6	108	20.0	18.5	92.3	15.6	80 - 122	20	
Trichlorofluoromethane	20.0	19.9	99.3	20.0	14.5	72.7	30.9	62 - 151	20	#
1,2,3-Trichloropropane	20.0	19.3	96.3	20.0	17.7	88.7	8.24	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	21.8	109	20.0	18.9	94.3	14.5	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	22.1	110	20.0	18.8	93.9	16.1	80 - 127	20	
Vinyl acetate	20.0	17.7	88.4	20.0	16.8	83.9	5.23	10 - 150	20	
Vinyl chloride	20.0	30.9	154	20.0	24.1	121	24.6	65 - 140	20	*#
o-Xylene	20.0	21.7	109	20.0	19.2	95.9	12.4	80 - 122	20	
m-,p-Xylene	40.0	44.0	110	40.0	37.5	93.8	15.9	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	105	97.4	86 - 118	PASS
1,2-Dichloroethane-d4	98.5	94.0	80 - 120	PASS
Toluene-d8	120	112	88 - 110	FAIL
4-Bromofluorobenzene	105	96.8	86 - 115	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1038886
Report generated: 03/14/2008 16:10

BFB

Login Number: L08030114 Tune ID: WG262907-01
Instrument: HPMS14 Run Date: 02/11/2008
Analyst: CMS Run Time: 17:49
Workgroup: WG262907 File ID: 14M03437
Cal ID: HPMS14-11-FEB-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	21.4	3989	PASS
75.0	95.0	30.0	60.0	48.9	9097	PASS
95.0	95.0	100	100	100	18599	PASS
96.0	95.0	5.00	9.00	7.05	1312	PASS
173	174	0	2.00	0.266	35	PASS
174	95.0	50.0	100	70.7	13145	PASS
175	174	5.00	9.00	7.05	927	PASS
176	174	95.0	101	96.2	12649	PASS
177	176	5.00	9.00	6.59	834	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG262907-02	STD	01	02/11/2008 18:15	
WG262907-03	STD	01	02/11/2008 18:46	
WG262907-04	STD	01	02/11/2008 19:18	
WG262907-05	STD	01	02/11/2008 19:49	
WG262907-06	STD	01	02/11/2008 20:19	
WG262907-07	STD	01	02/11/2008 20:51	
WG262907-08	STD-CCV	01	02/11/2008 21:21	
WG262907-09	STD	01	02/11/2008 21:52	
WG262907-10	STD	01	02/11/2008 22:23	
WG262907-11	STD	01	02/11/2008 22:54	
WG262907-12	SSCV	01	02/12/2008 00:28	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1040281
Report generated 03/14/2008 16:10

BFB

Login Number: L08030114 Tune ID: WG265319-01
Instrument: HPMS14 Run Date: 03/12/2008
Analyst: SMH Run Time: 09:45
Workgroup: WG265319 File ID: 14M04116
Cal ID: HPMS14-11-FEB-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	21.6	5795	PASS
75.0	95.0	30.0	60.0	48.0	12882	PASS
95.0	95.0	100	100	100	26853	PASS
96.0	95.0	5.00	9.00	6.90	1853	PASS
173	174	0	2.00	0.451	88	PASS
174	95.0	50.0	100	72.6	19497	PASS
175	174	5.00	9.00	7.09	1383	PASS
176	174	95.0	101	97.0	18916	PASS
177	176	5.00	9.00	6.63	1254	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG265319-02	CCV	01	03/12/2008 10:08	
WG265320-01	BLANK	01	03/12/2008 11:41	
WG265320-01	BLANK	01	03/12/2008 11:41	
WG265320-02	LCS	01	03/12/2008 12:12	
WG265320-03	LCS	01	03/12/2008 12:43	
L08030114-07	TRIP BLANK	01	03/12/2008 15:49	
WG265320-05	REF	01	03/12/2008 18:24	
WG265320-06	MS	01	03/12/2008 18:55	
WG265320-07	MSD	01	03/12/2008 19:26	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1040281
Report generated 03/14/2008 16:10

BFB

Login Number: L08030114 Tune ID: WG263961-01
Instrument: HPMS6 Run Date: 02/25/2008
Analyst: CMS Run Time: 13:46
Workgroup: WG263961 File ID: 6M73097
Cal ID: HPMS6-25-FEB-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.8	9299	PASS
75.0	95.0	30.0	60.0	47.3	22184	PASS
95.0	95.0	100	100	100	46882	PASS
96.0	95.0	5.00	9.00	6.87	3223	PASS
173	174	0	2.00	0.333	119	PASS
174	95.0	50.0	100	76.2	35725	PASS
175	174	5.00	9.00	5.06	1809	PASS
176	174	95.0	101	98.1	35034	PASS
177	176	5.00	9.00	6.64	2327	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG263961-02	STD	01	02/25/2008 14:41	
WG263961-03	STD	01	02/25/2008 15:13	
WG263961-04	STD	01	02/25/2008 15:45	
WG263961-05	STD	01	02/25/2008 16:17	
WG263961-06	STD	01	02/25/2008 16:54	
WG263961-07	STD	01	02/25/2008 17:26	
WG263961-08	STD-CCV	01	02/25/2008 17:58	
WG263961-09	STD	01	02/25/2008 18:30	
WG263961-10	STD	01	02/25/2008 19:03	
WG263961-11	STD	01	02/25/2008 19:34	
WG263961-12	SSCV	01	02/25/2008 21:11	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1040281
Report generated 03/14/2008 16:10

BFB

Login Number: L08030114 Tune ID: WG265189-01
Instrument: HPMS6 Run Date: 03/11/2008
Analyst: CMS/ASP Run Time: 08:33
Workgroup: WG265189 File ID: 6M73374
Cal ID: HPMS6-25-FEB-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.8	25114	PASS
75.0	95.0	30.0	60.0	47.2	59749	PASS
95.0	95.0	100	100	100	126613	PASS
96.0	95.0	5.00	9.00	6.90	8731	PASS
173	174	0	2.00	0.380	375	PASS
174	95.0	50.0	100	77.9	98680	PASS
175	174	5.00	9.00	7.50	7404	PASS
176	174	95.0	101	96.7	95456	PASS
177	176	5.00	9.00	6.54	6243	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG265189-02	CCV	01	03/11/2008 09:04	
WG265190-01	BLANK	01	03/11/2008 10:11	
WG265190-02	LCS	01	03/11/2008 10:43	
WG265190-03	LCS2	01	03/11/2008 11:18	
L08030114-02	12WW23-030508	01	03/11/2008 18:12	
L08030114-04	12WW20-030608	01	03/11/2008 18:44	
L08030114-05	12WW20-030608-FD	01	03/11/2008 19:16	
L08030114-06	12WW21-030608	01	03/11/2008 19:48	
L08030114-03	12WW24-030508	DL01	03/11/2008 20:20	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1040281
Report generated 03/14/2008 16:10

BFB

Login Number: L08030114 Tune ID: WG265294-01
Instrument: HPMS6 Run Date: 03/12/2008
Analyst: CMS/ASP Run Time: 08:23
Workgroup: WG265294 File ID: 6M73401
Cal ID: HPMS6-25-FEB-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	20.3	22557	PASS
75.0	95.0	30.0	60.0	49.2	54653	PASS
95.0	95.0	100	100	100	110994	PASS
96.0	95.0	5.00	9.00	6.61	7337	PASS
173	174	0	2.00	0.590	508	PASS
174	95.0	50.0	100	77.6	86173	PASS
175	174	5.00	9.00	7.17	6177	PASS
176	174	95.0	101	97.2	83792	PASS
177	176	5.00	9.00	6.92	5795	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG265294-02	CCV	01	03/12/2008 08:52	
WG265343-01	BLANK	01	03/12/2008 13:46	
WG265343-02	LCS	01	03/12/2008 14:22	
WG265343-03	LCS2	01	03/12/2008 14:54	
L08030114-01	12WW22-030508	01	03/12/2008 17:33	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1040281
Report generated 03/14/2008 16:10

INITIAL CALIBRATION SUMMARY

Login Number:L08030114 Instrument ID:HPMS14

Analytical Method:8260B Initial Calibration Date:11-FEB-08 22:54

ICAL Workgroup:WG262907 Column ID:F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.3950	12.2		
1,2-Dichloropropane	CCC	0.2687	5.93		
Chloroform	CCC	0.4822	7.13		
Ethylbenzene	CCC	0.5065	10.9		
Toluene	CCC	1.437	7.40		
Vinyl Chloride	CCC	0.1332	14.9		
1,1,2,2-Tetrachloroethane	SPCC	0.4451	8.24		
1,1-Dichloroethane	SPCC	0.5160	6.60		
Bromoform	SPCC	0.1423	21.7		1.00
Chlorobenzene	SPCC	0.9520	9.47		
Chloromethane	SPCC	0.1996	22.2		1.00
1,1,1,2-Tetrachloroethane		0.3154	9.67		
1,1,1-Trichloroethane		0.4229	11.8		
1,1,2-Trichloroethane		0.2215	4.59		
1,1-Dichloropropene		0.3619	12.1		
1,2,3-Trichlorobenzene		0.9424	10.1		
1,2,3-Trichloropropane		0.1377	6.58		
1,2,4-Trichlorobenzene		1.090	10.2		
1,2,4-Trimethylbenzene		2.791	7.95		
1,2-Dibromo-3-Chloropropane		0.08567	16.9		1.00
1,2-Dibromoethane		0.2102	9.52		
1,2-Dichlorobenzene		1.353	4.23		
1,2-Dichloroethane		0.3534	4.13		
1,3,5-Trimethylbenzene		2.592	11.9		
1,3-Dichlorobenzene		1.513	5.18		
1,3-Dichloropropane		0.4123	3.67		
1,4-Dichlorobenzene		1.558	6.87		
2,2-Dichloropropane		0.3876	14.2		
2-Butanone		0.07142	9.33		
2-Chloroethyl Vinyl Ether		0.08980	13.0		
2-Chlorotoluene		2.373	4.66		
2-Hexanone		0.1317	10.0		
4-Chlorotoluene		2.443	11.2		
4-Methyl-2-Pentanone		0.05564	12.7		
Acetone		0.05118	14.6		
Benzene		1.061	4.32		
Bromobenzene		0.7001	4.59		
Bromochloromethane		0.1376	6.04		
Bromodichloromethane		0.3248	11.3		
Bromomethane		0.1345	16.3		1.00
Carbon Disulfide		0.6697	17.8		1.00
Carbon Tetrachloride		0.3646	14.6		
Chloroethane		0.1765	6.04		
Dibromochloromethane		0.2603	16.1	1.00	
Dibromomethane		0.1178	8.69		

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION SUMMARY

Login Number: L08030114 **Instrument ID:** HPMS14

Analytical Method: 8260B **Initial Calibration Date:** 11-FEB-08 22:54

ICAL Workgroup: WG262907 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Dichlorodifluoromethane		0.2993	7.27		
Hexachlorobutadiene		0.4814	7.88		
Isopropylbenzene		1.556	12.1		
Methylene Chloride		0.2852	20.4		1.00
Naphthalene		1.883	7.12		
Styrene		0.9719	13.1		
Tetrachloroethene		0.3372	11.6		
Trichloroethene		0.2527	11.6		
Trichlorofluoromethane		0.4375	13.6		
Vinyl Acetate		0.2641	14.4		
cis-1,2-Dichloroethene		0.2695	7.05		
cis-1,3-Dichloropropene		0.3635	13.0		
m-,p-Xylene		0.6271	10.4		
n-Butylbenzene		2.805	11.5		
n-Propylbenzene		3.648	13.2		
o-Xylene		0.6094	9.84		
p-Isopropyltoluene		2.798	13.0		
sec-Butylbenzene		3.313	13.0		
tert-Butylbenzene		0.5381	11.2		
trans-1,2-Dichloroethene		0.2481	10.5		
trans-1,3-Dichloropropene		0.4152	12.8		

R = Correlation coefficient; 0.995 minimum

R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008

PDF File ID: 1040279

Report generated 03/14/2008 16:10

INITIAL CALIBRATION SUMMARY

Login Number: L08030114 **Instrument ID:** HPMS6

Analytical Method: 8260B **Initial Calibration Date:** 25-FEB-08 19:34

ICAL Workgroup: WG263961 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.4117	8.64		
1,2-Dichloropropane	CCC	0.2143	6.31		
Chloroform	CCC	0.4581	4.10		
Ethylbenzene	CCC	0.4721	2.09		
Toluene	CCC	1.170	6.99		
Vinyl Chloride	CCC	0.2552	17.9		1.00
1,1,2,2-Tetrachloroethane	SPCC	0.3586	7.45		
1,1-Dichloroethane	SPCC	0.4486	6.26		
Bromoform	SPCC	0.1410	18.1	0.999	
Chlorobenzene	SPCC	0.8770	6.03		
Chloromethane	SPCC	0.3778	14.0		
1,1,1,2-Tetrachloroethane		0.2898	11.7		
1,1,1-Trichloroethane		0.4259	6.76		
1,1,2-Trichloroethane		0.1798	5.82		
1,1-Dichloropropene		0.3216	3.95		
1,2,3-Trichlorobenzene		0.6942	11.0		
1,2,3-Trichloropropane		0.1162	9.71		
1,2,4-Trichlorobenzene		0.8831	14.0		
1,2,4-Trimethylbenzene		2.441	5.37		
1,2-Dibromo-3-Chloropropane		0.06787	6.44		
1,2-Dibromoethane		0.1812	6.42		
1,2-Dichlorobenzene		1.202	10.6		
1,2-Dichloroethane		0.2939	3.49		
1,3,5-Trimethylbenzene		2.287	2.89		
1,3-Dichlorobenzene		1.336	5.68		
1,3-Dichloropropane		0.3202	2.71		
1,4-Dichlorobenzene		1.386	8.59		
2,2-Dichloropropane		0.4090	6.54		
2-Butanone		0.05442	10.4		
2-Chloroethyl Vinyl Ether		0.09558	14.9		
2-Chlorotoluene		2.068	6.01		
2-Hexanone		0.09828	11.2		
4-Chlorotoluene		1.958	4.22		
4-Methyl-2-Pentanone		0.04705	16.1	0.997	
Acetone		0.03852	7.37		
Benzene		0.9029	4.85		
Bromobenzene		0.6195	5.56		
Bromochloromethane		0.1525	2.74		
Bromodichloromethane		0.3212	11.0		
Bromomethane		0.2228	14.5		
Carbon Disulfide		0.7907	6.41		
Carbon Tetrachloride		0.3660	8.90		
Chloroethane		0.2233	7.26		
Dibromochloromethane		0.2407	13.8		
Dibromomethane		0.1160	6.71		

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION SUMMARY

Login Number: L08030114 **Instrument ID:** HPMS6

Analytical Method: 8260B **Initial Calibration Date:** 25-FEB-08 19:34

ICAL Workgroup: WG263961 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Dichlorodifluoromethane		0.4292	5.88		
Hexachlorobutadiene		0.4813	13.1		
Isopropylbenzene		1.463	2.51		
Methylene Chloride		0.3313	33.6		1.00
Naphthalene		1.372	13.4		
Styrene		0.9631	3.96		
Tetrachloroethene		0.3118	7.22		
Trichloroethene		0.2505	4.98		
Trichlorofluoromethane		0.5732	9.27		
Vinyl Acetate		0.1947	8.03		
cis-1,2-Dichloroethene		0.2499	5.82		
cis-1,3-Dichloropropene		0.3437	10.5		
m-,p-Xylene		0.6120	4.10		
n-Butylbenzene		2.394	2.46		
n-Propylbenzene		3.140	3.39		
o-Xylene		0.5916	3.52		
p-Isopropyltoluene		2.552	1.87		
sec-Butylbenzene		2.857	2.78		
tert-Butylbenzene		0.4803	4.44		
trans-1,2-Dichloroethene		0.2521	3.60		
trans-1,3-Dichloropropene		0.3504	8.63		

R = Correlation coefficient; 0.995 minimum

R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

00115157

Login Number:L08030114 Instrument ID:HPMS14

Analytical Method:8260B Initial Calibration Date:11-FEB-08 22:54

Column ID:F

Analyte	WG262907-02			WG262907-03			WG262907-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	1.00	4809.00000	0.3299
1,2-Dichloropropane	NA	NA	NA	0.400	1450.00000	0.2447	1.00	3639.00000	0.2497
Chloroform	0.300	2378.00000	0.5245	0.400	2531.00000	0.4271	1.00	6378.00000	0.4376
Ethylbenzene	NA	NA	NA	0.400	1974.00000	0.4772	1.00	5014.00000	0.4910
Toluene	NA	NA	NA	0.400	5556.00000	1.343	1.00	13872.0000	1.358
Vinyl Chloride	NA	NA	NA	0.400	900.000000	0.1519	1.00	2402.00000	0.1648
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	797.000000	0.3812	1.00	2179.00000	0.4132
1,1-Dichloroethane	NA	NA	NA	0.400	2763.00000	0.4662	1.00	7056.00000	0.4841
Bromoform	NA	NA	NA	NA	NA	NA	1.00	1002.00000	0.09810
Chlorobenzene	NA	NA	NA	0.400	4258.00000	1.029	1.00	9980.00000	0.9773
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	2396.00000	0.1644
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	1168.00000	0.2824	1.00	3059.00000	0.2996
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	1.00	5069.00000	0.3478
1,1,2-Trichloroethane	NA	NA	NA	0.400	840.000000	0.2031	1.00	2308.00000	0.2260
1,1-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	4375.00000	0.3001
1,2,3-Trichlorobenzene	NA	NA	NA	0.400	2360.00000	1.129	1.00	5075.00000	0.9623
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	630.000000	0.1195
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	2713.00000	1.298	1.00	6102.00000	1.157
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	5373.00000	2.570	1.00	13808.0000	2.618
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	701.000000	0.1695	1.00	2109.00000	0.2065
1,2-Dichlorobenzene	NA	NA	NA	0.400	3000.00000	1.435	1.00	6987.00000	1.325
1,2-Dichloroethane	NA	NA	NA	0.400	2017.00000	0.3403	1.00	5047.00000	0.3463
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	4525.00000	2.164	1.00	12005.0000	2.277
1,3-Dichlorobenzene	NA	NA	NA	0.400	3385.00000	1.619	1.00	7842.00000	1.487
1,3-Dichloropropane	NA	NA	NA	0.400	1632.00000	0.3946	1.00	4174.00000	0.4087
1,4-Dichlorobenzene	NA	NA	NA	0.400	3652.00000	1.747	1.00	8467.00000	1.606
2,2-Dichloropropane	NA	NA	NA	0.400	1739.00000	0.2934	1.00	5065.00000	0.3475
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	NA	NA	NA	0.400	4757.00000	2.275	1.00	12080.0000	2.291
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	5123.00000	2.450	1.00	12527.0000	2.375
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	6423.00000	1.084	1.00	15534.0000	1.066
Bromobenzene	NA	NA	NA	0.400	1423.00000	0.6805	1.00	3684.00000	0.6986
Bromochloromethane	NA	NA	NA	0.400	749.000000	0.1264	1.00	1883.00000	0.1292
Bromodichloromethane	NA	NA	NA	0.400	1586.00000	0.2676	1.00	4246.00000	0.2913
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	1633.00000	0.1120
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	7848.00000	0.5384
Carbon Tetrachloride	NA	NA	NA	NA	NA	NA	1.00	4182.00000	0.2869

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

Login Number:L08030114 Instrument ID:HPMS14

Analytical Method:8260B Initial Calibration Date:11-FEB-08 22:54

Column ID:F

Analyte	WG262907-05			WG262907-06			WG262907-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	9354.00000	0.3238	5.00	29512.0000	0.4117	20.0	128362.000	0.4388
1,2-Dichloropropane	2.00	7547.00000	0.2612	5.00	20217.0000	0.2820	20.0	82707.0000	0.2827
Chloroform	2.00	13261.0000	0.4590	5.00	36535.0000	0.5097	20.0	148252.000	0.5068
Ethylbenzene	2.00	9888.00000	0.4857	5.00	28936.0000	0.5630	20.0	120555.000	0.5720
Toluene	2.00	28574.0000	1.403	5.00	79917.0000	1.555	20.0	332159.000	1.576
Vinyl Chloride	2.00	3372.00000	0.1167	5.00	9700.00000	0.1353	20.0	38465.0000	0.1315
1,1,2,2-Tetrachloroethane	2.00	4411.00000	0.4198	5.00	12035.0000	0.4564	20.0	49931.0000	0.4562
1,1-Dichloroethane	2.00	13898.0000	0.4810	5.00	38739.0000	0.5404	20.0	161570.000	0.5523
Bromoform	2.00	2178.00000	0.1070	5.00	6870.00000	0.1337	20.0	30686.0000	0.1456
Chlorobenzene	2.00	19167.0000	0.9414	5.00	52857.0000	1.029	20.0	212121.000	1.007
Chloromethane	2.00	4727.00000	0.1636	5.00	12073.0000	0.1684	20.0	53760.0000	0.1838
1,1,1,2-Tetrachloroethane	2.00	6445.00000	0.3166	5.00	17473.0000	0.3400	20.0	73625.0000	0.3493
1,1,1-Trichloroethane	2.00	10269.0000	0.3554	5.00	31613.0000	0.4410	20.0	135370.000	0.4628
1,1,2-Trichloroethane	2.00	4382.00000	0.2152	5.00	11954.0000	0.2326	20.0	47184.0000	0.2239
1,1-Dichloropropene	2.00	8728.00000	0.3021	5.00	27068.0000	0.3776	20.0	118643.000	0.4056
1,2,3-Trichlorobenzene	2.00	9951.00000	0.9470	5.00	25758.0000	0.9769	20.0	103462.000	0.9453
1,2,3-Trichloropropane	2.00	1401.00000	0.1333	5.00	3741.00000	0.1419	20.0	15335.0000	0.1401
1,2,4-Trichlorobenzene	2.00	11014.0000	1.048	5.00	29425.0000	1.116	20.0	121377.000	1.109
1,2,4-Trimethylbenzene	2.00	28067.0000	2.671	5.00	80542.0000	3.055	20.0	334246.000	3.054
1,2-Dibromo-3-Chloropropane	2.00	652.000000	0.06200	5.00	2041.00000	0.07740	20.0	9070.00000	0.08290
1,2-Dibromoethane	2.00	3978.00000	0.1954	5.00	11149.0000	0.2169	20.0	45953.0000	0.2180
1,2-Dichlorobenzene	2.00	13839.0000	1.317	5.00	36418.0000	1.381	20.0	151265.000	1.382
1,2-Dichloroethane	2.00	10056.0000	0.3481	5.00	27103.0000	0.3781	20.0	105786.000	0.3616
1,3,5-Trimethylbenzene	2.00	25244.0000	2.402	5.00	75490.0000	2.863	20.0	326364.000	2.982
1,3-Dichlorobenzene	2.00	15171.0000	1.444	5.00	41261.0000	1.565	20.0	171427.000	1.566
1,3-Dichloropropane	2.00	8106.00000	0.3981	5.00	21961.0000	0.4273	20.0	88467.0000	0.4198
1,4-Dichlorobenzene	2.00	15960.0000	1.519	5.00	42205.0000	1.601	20.0	172123.000	1.573
2,2-Dichloropropane	2.00	9616.00000	0.3328	5.00	29452.0000	0.4109	20.0	128220.000	0.4383
2-Butanone	NA	NA	NA	5.00	5959.00000	0.08310	20.0	20477.0000	0.07000
2-Chloroethyl Vinyl Ether	NA	NA	NA	5.00	5055.00000	0.07050	20.0	24490.0000	0.08370
2-Chlorotoluene	2.00	23873.0000	2.272	5.00	67113.0000	2.545	20.0	275238.000	2.515
2-Hexanone	2.00	2212.00000	0.1086	5.00	6269.00000	0.1220	20.0	27050.0000	0.1284
4-Chlorotoluene	2.00	25631.0000	2.439	5.00	71053.0000	2.695	20.0	293527.000	2.682
4-Methyl-2-Pentanone	2.00	1285.00000	0.04450	5.00	3564.00000	0.04970	20.0	15712.0000	0.05370
Acetone	NA	NA	NA	5.00	4611.00000	0.06430	20.0	13680.0000	0.04680
Benzene	2.00	29487.0000	1.021	5.00	79481.0000	1.109	20.0	323440.000	1.106
Bromobenzene	2.00	7236.00000	0.6886	5.00	19657.0000	0.7455	20.0	80408.0000	0.7347
Bromochloromethane	2.00	3725.00000	0.1289	5.00	10328.0000	0.1441	20.0	42410.0000	0.1450
Bromodichloromethane	2.00	8318.00000	0.2879	5.00	24195.0000	0.3375	20.0	101750.000	0.3478
Bromomethane	2.00	3046.00000	0.1054	5.00	8481.00000	0.1183	20.0	41602.0000	0.1422
Carbon Disulfide	2.00	13477.0000	0.4665	5.00	48738.0000	0.6799	20.0	221991.000	0.7589
Carbon Tetrachloride	2.00	8380.00000	0.2900	5.00	27273.0000	0.3805	20.0	119617.000	0.4089

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

Login Number: L08030114 Instrument ID: HPMS14

Analytical Method: 8260B Initial Calibration Date: 11-FEB-08 22:54

Column ID: F

Analyte	WG262907-08			WG262907-09			WG262907-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	314916.000	0.4356	100	608178.000	0.4182	200	1192499.00	0.4068
1,2-Dichloropropane	50.0	208066.000	0.2878	100	399821.000	0.2749	200	781926.000	0.2668
Chloroform	50.0	367170.000	0.5079	100	712703.000	0.4900	200	1399215.00	0.4774
Ethylbenzene	50.0	293335.000	0.5508	100	550451.000	0.5071	200	939058.000	0.4052
Toluene	50.0	810948.000	1.523	100	1573720.00	1.450	200	2984598.00	1.288
Vinyl Chloride	50.0	90430.0000	0.1251	100	155641.000	0.1070	NA	NA	NA
1,1,2,2-Tetrachloroethane	50.0	143200.000	0.4867	100	283596.000	0.4697	200	614258.000	0.4779
1,1-Dichloroethane	50.0	397542.000	0.5499	100	775783.000	0.5334	200	1525360.00	0.5204
Bromoform	50.0	90313.0000	0.1696	100	182568.000	0.1682	200	403518.000	0.1741
Chlorobenzene	50.0	518957.000	0.9745	100	979451.000	0.9023	200	1752466.00	0.7562
Chloromethane	50.0	144212.000	0.1995	100	341933.000	0.2351	200	826901.000	0.2821
1,1,1,2-Tetrachloroethane	50.0	185413.000	0.3482	100	346969.000	0.3196	200	619250.000	0.2672
1,1,1-Trichloroethane	50.0	335814.000	0.4645	100	657416.000	0.4520	200	1279997.00	0.4367
1,1,2-Trichloroethane	50.0	124872.000	0.2345	100	239108.000	0.2203	200	501862.000	0.2166
1,1-Dichloropropene	50.0	288598.000	0.3992	100	559389.000	0.3846	200	1066554.00	0.3639
1,2,3-Trichlorobenzene	50.0	270747.000	0.9201	100	518149.000	0.8581	200	1029389.00	0.8009
1,2,3-Trichloropropane	50.0	43089.0000	0.1464	100	83899.0000	0.1389	200	185063.000	0.1440
1,2,4-Trichlorobenzene	50.0	313541.000	1.066	100	610002.000	1.010	200	1181430.00	0.9192
1,2,4-Trimethylbenzene	50.0	877339.000	2.982	100	1723923.00	2.855	200	3242101.00	2.522
1,2-Dibromo-3-Chloropropane	50.0	28624.0000	0.09730	100	57149.0000	0.09460	200	128241.000	0.09980
1,2-Dibromoethane	50.0	124916.000	0.2346	100	239119.000	0.2203	200	511552.000	0.2207
1,2-Dichlorobenzene	50.0	408615.000	1.389	100	812279.000	1.345	200	1603114.00	1.247
1,2-Dichloroethane	50.0	267459.000	0.3700	100	497921.000	0.3423	200	998374.000	0.3406
1,3,5-Trimethylbenzene	50.0	840465.000	2.856	100	1661417.00	2.752	200	3138105.00	2.442
1,3-Dichlorobenzene	50.0	454474.000	1.545	100	907880.000	1.504	200	1763970.00	1.372
1,3-Dichloropropane	50.0	233026.000	0.4376	100	447946.000	0.4126	200	926420.000	0.3998
1,4-Dichlorobenzene	50.0	456670.000	1.552	100	906403.000	1.501	200	1759744.00	1.369
2,2-Dichloropropane	50.0	316565.000	0.4379	100	619139.000	0.4257	200	1214901.00	0.4145
2-Butanone	50.0	52786.0000	0.07300	100	97817.0000	0.06730	200	209781.000	0.07160
2-Chloroethyl Vinyl Ether	50.0	71626.0000	0.09910	100	139167.000	0.09570	200	299345.000	0.1021
2-Chlorotoluene	50.0	702998.000	2.389	100	1380574.00	2.286	200	3100587.00	2.412
2-Hexanone	50.0	77894.0000	0.1463	100	150813.000	0.1389	200	333066.000	0.1437
4-Chlorotoluene	50.0	759077.000	2.580	100	1506774.00	2.495	200	2349446.00	1.828
4-Methyl-2-Pentanone	50.0	44930.0000	0.06210	100	85457.0000	0.05880	200	189588.000	0.06470
Acetone	50.0	34592.0000	0.04780	100	67883.0000	0.04670	200	147370.000	0.05030
Benzene	50.0	786167.000	1.088	100	1512234.00	1.040	200	2862744.00	0.9767
Bromobenzene	50.0	211359.000	0.7183	100	416258.000	0.6894	200	829413.000	0.6453
Bromochloromethane	50.0	106934.000	0.1479	100	201825.000	0.1388	200	410701.000	0.1401
Bromodichloromethane	50.0	262704.000	0.3634	100	511323.000	0.3516	200	1029287.00	0.3512
Bromomethane	50.0	110314.000	0.1526	100	226059.000	0.1554	200	455966.000	0.1556
Carbon Disulfide	50.0	555091.000	0.7678	100	1079406.00	0.7421	200	2151367.00	0.7340
Carbon Tetrachloride	50.0	296183.000	0.4097	100	569763.000	0.3917	200	1126507.00	0.3843

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

00115160

Login Number: L08030114
Analytical Method: 8260B
Instrument ID: HPMS14
Initial Calibration Date: 11-FEB-08 22:54
Column ID: F

Analyte	WG262907-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	283421.000	0.06350
2-Chloroethyl Vinyl Ether	300	391301.000	0.08770
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	437212.000	0.1339
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	250026.000	0.05600
Acetone	NA	NA	NA
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

Login Number: L08030114 **Instrument ID:** HPMS14

Analytical Method: 8260B **Initial Calibration Date:** 11-FEB-08 22:54

Column ID: F

Analyte	WG262907-02			WG262907-03			WG262907-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	2725.00000	0.1869
Dibromochloromethane	NA	NA	NA	0.400	824.000000	0.1992	1.00	2166.00000	0.2121
Dibromomethane	NA	NA	NA	0.400	579.000000	0.09770	1.00	1613.00000	0.1107
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	4624.00000	0.3172
Hexachlorobutadiene	NA	NA	NA	0.400	902.000000	0.4314	1.00	2391.00000	0.4534
Isopropylbenzene	NA	NA	NA	NA	NA	NA	1.00	13170.0000	1.290
Methylene Chloride	NA	NA	NA	NA	NA	NA	1.00	5763.00000	0.3954
Naphthalene	NA	NA	NA	0.400	4547.00000	2.175	1.00	9777.00000	1.854
Styrene	NA	NA	NA	NA	NA	NA	1.00	7909.00000	0.7745
Tetrachloroethene	NA	NA	NA	0.400	1093.00000	0.2643	1.00	3241.00000	0.3174
Trichloroethene	NA	NA	NA	0.400	1171.00000	0.1976	1.00	3467.00000	0.2379
Trichlorofluoromethane	NA	NA	NA	0.400	1858.00000	0.3135	1.00	6918.00000	0.4746
Vinyl Acetate	NA	NA	NA	NA	NA	NA	1.00	3424.00000	0.2349
cis-1,2-Dichloroethene	NA	NA	NA	0.400	1435.00000	0.2421	1.00	3576.00000	0.2453
cis-1,3-Dichloropropene	NA	NA	NA	0.400	1763.00000	0.2975	1.00	4542.00000	0.3116
m-,p-Xylene	NA	NA	NA	0.800	4893.00000	0.5915	2.00	12427.0000	0.6085
n-Butylbenzene	NA	NA	NA	0.400	5107.00000	2.442	1.00	13173.0000	2.498
n-Propylbenzene	NA	NA	NA	0.400	6057.00000	2.897	1.00	17083.0000	3.239
o-Xylene	NA	NA	NA	0.400	2140.00000	0.5174	1.00	5843.00000	0.5722
p-Isopropyltoluene	NA	NA	NA	0.400	4635.00000	2.217	1.00	13226.0000	2.508
sec-Butylbenzene	NA	NA	NA	0.400	5510.00000	2.635	1.00	15799.0000	2.996
tert-Butylbenzene	NA	NA	NA	0.400	926.000000	0.4429	1.00	2704.00000	0.5127
trans-1,2-Dichloroethene	NA	NA	NA	0.400	1194.00000	0.2015	1.00	3322.00000	0.2279
trans-1,3-Dichloropropene	NA	NA	NA	0.400	1386.00000	0.3351	1.00	3639.00000	0.3563

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

Login Number:L08030114 Instrument ID:HPMS14

Analytical Method:8260B Initial Calibration Date:11-FEB-08 22:54

Column ID:F

Analyte	WG262907-05			WG262907-06			WG262907-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	4936.00000	0.1708	5.00	13128.0000	0.1831	20.0	54596.0000	0.1866
Dibromochloromethane	2.00	4651.00000	0.2284	5.00	13512.0000	0.2629	20.0	58525.0000	0.2777
Dibromomethane	2.00	3251.00000	0.1125	5.00	8839.00000	0.1233	20.0	35669.0000	0.1219
Dichlorodifluoromethane	2.00	7502.00000	0.2597	5.00	22345.0000	0.3117	20.0	93332.0000	0.3191
Hexachlorobutadiene	2.00	4595.00000	0.4373	5.00	13436.0000	0.5096	20.0	57752.0000	0.5277
Isopropylbenzene	2.00	27037.0000	1.328	5.00	84522.0000	1.645	20.0	364983.000	1.732
Methylene Chloride	2.00	9486.00000	0.3283	5.00	20425.0000	0.2849	20.0	75701.0000	0.2588
Naphthalene	2.00	18589.0000	1.769	5.00	50319.0000	1.908	20.0	204969.000	1.873
Styrene	2.00	16988.0000	0.8344	5.00	51174.0000	0.9958	20.0	227298.000	1.079
Tetrachloroethene	2.00	6523.00000	0.3204	5.00	18914.0000	0.3680	20.0	79874.0000	0.3790
Trichloroethene	2.00	6589.00000	0.2281	5.00	19396.0000	0.2706	20.0	82058.0000	0.2805
Trichlorofluoromethane	2.00	11124.0000	0.3850	5.00	33699.0000	0.4701	20.0	142109.000	0.4858
Vinyl Acetate	2.00	9120.00000	0.3157	5.00	23178.0000	0.3233	20.0	78316.0000	0.2677
cis-1,2-Dichloroethene	2.00	7390.00000	0.2558	5.00	20301.0000	0.2832	20.0	83901.0000	0.2868
cis-1,3-Dichloropropene	2.00	9245.00000	0.3200	5.00	26253.0000	0.3662	20.0	115068.000	0.3934
m-,p-Xylene	4.00	24961.0000	0.6130	10.0	71287.0000	0.6936	40.0	296777.000	0.7041
n-Butylbenzene	2.00	26362.0000	2.509	5.00	81395.0000	3.087	20.0	353204.000	3.227
n-Propylbenzene	2.00	35673.0000	3.395	5.00	108544.000	4.117	20.0	467418.000	4.271
o-Xylene	2.00	11752.0000	0.5772	5.00	33647.0000	0.6547	20.0	142289.000	0.6752
p-Isopropyltoluene	2.00	26439.0000	2.516	5.00	80824.0000	3.065	20.0	351816.000	3.215
sec-Butylbenzene	2.00	30851.0000	2.936	5.00	96197.0000	3.648	20.0	416473.000	3.805
tert-Butylbenzene	2.00	5168.00000	0.4918	5.00	15846.0000	0.6010	20.0	67132.0000	0.6134
trans-1,2-Dichloroethene	2.00	6691.00000	0.2316	5.00	18976.0000	0.2647	20.0	79787.0000	0.2727
trans-1,3-Dichloropropene	2.00	7557.00000	0.3712	5.00	22236.0000	0.4327	20.0	95028.0000	0.4509

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

Login Number: L08030114 **Instrument ID:** HPMS14

Analytical Method: 8260B **Initial Calibration Date:** 11-FEB-08 22:54

Column ID: F

Analyte	WG262907-08			WG262907-09			WG262907-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	130198.000	0.1801	100	247729.000	0.1703	200	463071.000	0.1580
Dibromochloromethane	50.0	163147.000	0.3064	100	323816.000	0.2983	200	688878.000	0.2973
Dibromomethane	50.0	93674.0000	0.1296	100	177947.000	0.1223	200	364867.000	0.1245
Dichlorodifluoromethane	50.0	223717.000	0.3095	100	429185.000	0.2951	200	828281.000	0.2826
Hexachlorobutadiene	50.0	150515.000	0.5115	100	308426.000	0.5108	200	603538.000	0.4696
Isopropylbenzene	50.0	922363.000	1.732	100	1820586.00	1.677	200	3456951.00	1.492
Methylene Chloride	50.0	185227.000	0.2562	100	349739.000	0.2405	200	680934.000	0.2323
Naphthalene	50.0	568450.000	1.932	100	1083862.00	1.795	200	2256734.00	1.756
Styrene	50.0	589286.000	1.107	100	1157917.00	1.067	200	2194423.00	0.9469
Tetrachloroethene	50.0	199053.000	0.3738	100	385757.000	0.3554	200	740163.000	0.3194
Trichloroethene	50.0	201705.000	0.2790	100	392018.000	0.2695	200	756882.000	0.2582
Trichlorofluoromethane	50.0	344190.000	0.4761	100	664612.000	0.4570	200	1283651.00	0.4379
Vinyl Acetate	50.0	190603.000	0.2636	100	369198.000	0.2538	200	698581.000	0.2383
cis-1,2-Dichloroethene	50.0	208616.000	0.2886	100	409135.000	0.2813	200	800725.000	0.2732
cis-1,3-Dichloropropene	50.0	301701.000	0.4173	100	583008.000	0.4008	200	1175474.00	0.4010
m-,p-Xylene	100	723575.000	0.6794	200	1350421.00	0.6220	400	2340557.00	0.5050
n-Butylbenzene	50.0	911744.000	3.099	100	1792562.00	2.969	200	3351021.00	2.607
n-Propylbenzene	50.0	1182597.00	4.019	100	2317334.00	3.838	200	4385046.00	3.412
o-Xylene	50.0	359586.000	0.6752	100	698144.000	0.6431	200	1298066.00	0.5601
p-Isopropyltoluene	50.0	924901.000	3.143	100	1831149.00	3.033	200	3455418.00	2.688
sec-Butylbenzene	50.0	1088663.00	3.700	100	2163141.00	3.583	200	4113472.00	3.200
tert-Butylbenzene	50.0	171826.000	0.5839	100	337501.000	0.5590	200	642802.000	0.5001
trans-1,2-Dichloroethene	50.0	197848.000	0.2737	100	388061.000	0.2668	200	720964.000	0.2460
trans-1,3-Dichloropropene	50.0	254956.000	0.4787	100	494108.000	0.4552	200	1022492.00	0.4412

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

00115164

Login Number: L08030114
Analytical Method: 8260B
Instrument ID: HPMS14
Initial Calibration Date: 11-FEB-08 22:54
Column ID: F

Analyte	WG262907-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	300	960960.000	0.2153
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

Login Number: L08030114
Instrument ID: HPMS6
Analytical Method: 8260B
Initial Calibration Date: 25-FEB-08 19:34
Column ID: F

Analyte	WG263961-02			WG263961-03			WG263961-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	4413.00000	0.3631	1.00	12032.0000	0.3954
1,2-Dichloropropane	NA	NA	NA	0.400	2747.00000	0.2260	1.00	5971.00000	0.1962
Chloroform	0.300	4132.00000	0.4372	0.400	5939.00000	0.4887	1.00	13736.0000	0.4514
Ethylbenzene	NA	NA	NA	0.400	4999.00000	0.4911	1.00	11661.0000	0.4587
Toluene	NA	NA	NA	0.400	13050.0000	1.282	1.00	30758.0000	1.210
Vinyl Chloride	NA	NA	NA	0.400	4002.00000	0.3293	1.00	8871.00000	0.2915
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	2292.00000	0.3836	1.00	4835.00000	0.3194
1,1-Dichloroethane	NA	NA	NA	0.400	5838.00000	0.4804	1.00	12711.0000	0.4177
Bromoform	NA	NA	NA	NA	NA	NA	1.00	2676.00000	0.1053
Chlorobenzene	NA	NA	NA	0.400	9716.00000	0.9544	1.00	23565.0000	0.9269
Chloromethane	NA	NA	NA	0.400	5420.00000	0.4460	1.00	13704.0000	0.4504
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	2756.00000	0.2707	1.00	6012.00000	0.2365
1,1,1-Trichloroethane	NA	NA	NA	0.400	4982.00000	0.4099	1.00	13019.0000	0.4278
1,1,2-Trichloroethane	NA	NA	NA	0.400	1749.00000	0.1718	1.00	4091.00000	0.1609
1,1-Dichloropropene	NA	NA	NA	0.400	3701.00000	0.3045	1.00	9640.00000	0.3168
1,2,3-Trichlorobenzene	NA	NA	NA	NA	NA	NA	1.00	11220.0000	0.7413
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	1467.00000	0.09690
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	6871.00000	1.150	1.00	13295.0000	0.8784
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	16062.0000	2.688	1.00	34367.0000	2.271
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	1794.00000	0.1762	1.00	4014.00000	0.1579
1,2-Dichlorobenzene	0.300	5273.00000	1.126	0.400	8880.00000	1.486	1.00	18333.0000	1.211
1,2-Dichloroethane	NA	NA	NA	0.400	3300.00000	0.2715	1.00	8877.00000	0.2917
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	13937.0000	2.333	1.00	32385.0000	2.140
1,3-Dichlorobenzene	NA	NA	NA	0.400	8800.00000	1.473	1.00	19160.0000	1.266
1,3-Dichloropropane	NA	NA	NA	0.400	3192.00000	0.3135	1.00	7895.00000	0.3105
1,4-Dichlorobenzene	0.300	6506.00000	1.389	0.400	9902.00000	1.657	1.00	20379.0000	1.346
2,2-Dichloropropane	NA	NA	NA	0.400	4857.00000	0.3996	1.00	11881.0000	0.3904
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	NA	NA	NA	0.400	13707.0000	2.294	1.00	29177.0000	1.928
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	12734.0000	2.131	1.00	29214.0000	1.930
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	12091.0000	0.9949	1.00	28449.0000	0.9349
Bromobenzene	0.300	2696.00000	0.5756	0.400	4066.00000	0.6805	1.00	8972.00000	0.5928
Bromochloromethane	NA	NA	NA	0.400	1970.00000	0.1621	1.00	4638.00000	0.1524
Bromodichloromethane	NA	NA	NA	0.400	3720.00000	0.3061	1.00	8829.00000	0.2902
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	6108.00000	0.2007
Carbon Disulfide	NA	NA	NA	0.400	8740.00000	0.7191	1.00	23013.0000	0.7563
Carbon Tetrachloride	NA	NA	NA	0.400	3763.00000	0.3096	1.00	10900.0000	0.3582

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

Login Number: L08030114
Instrument ID: HPMS6
Analytical Method: 8260B
Initial Calibration Date: 25-FEB-08 19:34
Column ID: F

Analyte	WG263961-05			WG263961-06			WG263961-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	23570.0000	0.3949	5.00	60924.0000	0.4018	20.0	256056.000	0.4068
1,2-Dichloropropane	2.00	12557.0000	0.2104	5.00	31447.0000	0.2074	20.0	129059.000	0.2051
Chloroform	2.00	27155.0000	0.4549	5.00	67902.0000	0.4478	20.0	280076.000	0.4450
Ethylbenzene	2.00	23678.0000	0.4732	5.00	59943.0000	0.4777	20.0	244854.000	0.4712
Toluene	2.00	59007.0000	1.179	5.00	152147.000	1.212	20.0	630525.000	1.213
Vinyl Chloride	2.00	15736.0000	0.2636	5.00	37391.0000	0.2466	20.0	153194.000	0.2434
1,1,2,2-Tetrachloroethane	2.00	11999.0000	0.3976	5.00	25467.0000	0.3374	20.0	102613.000	0.3331
1,1-Dichloroethane	2.00	26427.0000	0.4427	5.00	67961.0000	0.4482	20.0	275668.000	0.4380
Bromoform	2.00	6220.00000	0.1243	5.00	15320.0000	0.1221	20.0	70934.0000	0.1365
Chlorobenzene	2.00	46826.0000	0.9358	5.00	107122.000	0.8536	20.0	442706.000	0.8519
Chloromethane	2.00	24419.0000	0.4091	5.00	56528.0000	0.3728	20.0	219998.000	0.3495
1,1,1,2-Tetrachloroethane	2.00	14049.0000	0.2808	5.00	33709.0000	0.2686	20.0	148895.000	0.2865
1,1,1-Trichloroethane	2.00	23906.0000	0.4005	5.00	61211.0000	0.4037	20.0	264169.000	0.4197
1,1,2-Trichloroethane	2.00	9726.00000	0.1944	5.00	22261.0000	0.1774	20.0	91722.0000	0.1765
1,1-Dichloropropene	2.00	18696.0000	0.3132	5.00	48165.0000	0.3177	20.0	208117.000	0.3307
1,2,3-Trichlorobenzene	2.00	25066.0000	0.8306	5.00	53728.0000	0.7118	20.0	209704.000	0.6807
1,2,3-Trichloropropane	2.00	3982.00000	0.1319	5.00	8373.00000	0.1109	20.0	33838.0000	0.1098
1,2,4-Trichlorobenzene	2.00	29038.0000	0.9622	5.00	66001.0000	0.8745	20.0	255877.000	0.8306
1,2,4-Trimethylbenzene	2.00	77196.0000	2.558	5.00	186823.000	2.475	20.0	742591.000	2.411
1,2-Dibromo-3-Chloropropane	2.00	2289.00000	0.07580	5.00	5009.00000	0.06640	20.0	19811.0000	0.06430
1,2-Dibromoethane	2.00	9236.00000	0.1846	5.00	21988.0000	0.1752	20.0	94154.0000	0.1812
1,2-Dichlorobenzene	2.00	40084.0000	1.328	5.00	88880.0000	1.178	20.0	351139.000	1.140
1,2-Dichloroethane	2.00	18120.0000	0.3036	5.00	44789.0000	0.2954	20.0	183708.000	0.2919
1,3,5-Trimethylbenzene	2.00	71067.0000	2.355	5.00	174348.000	2.310	20.0	710378.000	2.306
1,3-Dichlorobenzene	2.00	42961.0000	1.424	5.00	102363.000	1.356	20.0	394191.000	1.280
1,3-Dichloropropane	2.00	16697.0000	0.3337	5.00	38926.0000	0.3102	20.0	166209.000	0.3198
1,4-Dichlorobenzene	2.00	44922.0000	1.489	5.00	103575.000	1.372	20.0	404128.000	1.312
2,2-Dichloropropane	2.00	23152.0000	0.3879	5.00	60234.0000	0.3973	20.0	254626.000	0.4046
2-Butanone	NA	NA	NA	5.00	7195.00000	0.04750	20.0	31634.0000	0.05030
2-Chloroethyl Vinyl Ether	2.00	4763.00000	0.07980	5.00	12105.0000	0.07980	20.0	58097.0000	0.09230
2-Chlorotoluene	2.00	66435.0000	2.201	5.00	158792.000	2.104	20.0	625471.000	2.030
2-Hexanone	NA	NA	NA	5.00	10041.0000	0.08000	20.0	47629.0000	0.09160
4-Chlorotoluene	2.00	60400.0000	2.001	5.00	145362.000	1.926	20.0	594651.000	1.930
4-Methyl-2-Pentanone	NA	NA	NA	5.00	5319.00000	0.03510	20.0	25946.0000	0.04120
Acetone	NA	NA	NA	5.00	6209.00000	0.04100	20.0	24910.0000	0.03960
Benzene	2.00	53488.0000	0.8961	5.00	136167.000	0.8981	20.0	564490.000	0.8969
Bromobenzene	2.00	19999.0000	0.6627	5.00	44959.0000	0.5957	20.0	187714.000	0.6093
Bromochloromethane	2.00	9120.00000	0.1528	5.00	23065.0000	0.1521	20.0	93745.0000	0.1489
Bromodichloromethane	2.00	18188.0000	0.3047	5.00	44525.0000	0.2937	20.0	190390.000	0.3025
Bromomethane	2.00	11369.0000	0.1905	5.00	30041.0000	0.1981	20.0	134685.000	0.2140
Carbon Disulfide	2.00	44071.0000	0.7383	5.00	120577.000	0.7953	20.0	520755.000	0.8274
Carbon Tetrachloride	2.00	20806.0000	0.3486	5.00	53809.0000	0.3549	20.0	235257.000	0.3738

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

Login Number: L08030114 **Instrument ID:** HPMS6

Analytical Method: 8260B **Initial Calibration Date:** 25-FEB-08 19:34

Column ID: F

Analyte	WG263961-08			WG263961-09			WG263961-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	668021.000	0.4113	100	1408928.00	0.4362	200	3009077.00	0.4840
1,2-Dichloropropane	50.0	339436.000	0.2090	100	716222.000	0.2217	200	1482511.00	0.2385
Chloroform	50.0	723937.000	0.4458	100	1497176.00	0.4635	200	3038194.00	0.4887
Ethylbenzene	50.0	638065.000	0.4621	100	1415808.00	0.4697	200	2997717.00	0.4729
Toluene	50.0	1600704.00	1.159	100	3244296.00	1.076	200	6519779.00	1.029
Vinyl Chloride	50.0	362527.000	0.2232	100	609896.000	0.1888	NA	NA	NA
1,1,2,2-Tetrachloroethane	50.0	308324.000	0.3683	100	665509.000	0.3695	200	1295359.00	0.3602
1,1-Dichloroethane	50.0	697624.000	0.4296	100	1393592.00	0.4314	200	3114920.00	0.5010
Bromoform	50.0	222350.000	0.1610	100	518676.000	0.1721	200	1051885.00	0.1659
Chlorobenzene	50.0	1150188.00	0.8329	100	2523672.00	0.8373	200	5217180.00	0.8230
Chloromethane	50.0	503940.000	0.3103	100	1038548.00	0.3215	200	2255431.00	0.3628
1,1,1,2-Tetrachloroethane	50.0	421332.000	0.3051	100	1000657.00	0.3320	200	2142463.00	0.3380
1,1,1-Trichloroethane	50.0	680360.000	0.4189	100	1408702.00	0.4361	200	3051760.00	0.4909
1,1,2-Trichloroethane	50.0	255825.000	0.1853	100	567639.000	0.1883	200	1163664.00	0.1836
1,1-Dichloropropene	50.0	517851.000	0.3189	100	1047948.00	0.3244	200	2155529.00	0.3467
1,2,3-Trichlorobenzene	50.0	558737.000	0.6674	100	1111920.00	0.6174	200	2195545.00	0.6104
1,2,3-Trichloropropane	50.0	101167.000	0.1209	100	219916.000	0.1221	200	433815.000	0.1206
1,2,4-Trichlorobenzene	50.0	682996.000	0.8159	100	1392956.00	0.7734	200	2804891.00	0.7799
1,2,4-Trimethylbenzene	50.0	1970003.00	2.353	100	4301901.00	2.389	200	8562821.00	2.381
1,2-Dibromo-3-Chloropropane	50.0	58392.0000	0.06980	100	119412.000	0.06630	200	232188.000	0.06460
1,2-Dibromoethane	50.0	267556.000	0.1938	100	579650.000	0.1923	200	1193451.00	0.1883
1,2-Dichlorobenzene	50.0	935001.000	1.117	100	2004021.00	1.113	200	4025741.00	1.119
1,2-Dichloroethane	50.0	478381.000	0.2946	100	961341.000	0.2976	200	1894123.00	0.3047
1,3,5-Trimethylbenzene	50.0	1887577.00	2.255	100	4137335.00	2.297	200	8279623.00	2.302
1,3-Dichlorobenzene	50.0	1068441.00	1.276	100	2335668.00	1.297	200	4739310.00	1.318
1,3-Dichloropropane	50.0	451656.000	0.3271	100	987828.000	0.3277	200	2020586.00	0.3188
1,4-Dichlorobenzene	50.0	1072409.00	1.281	100	2349796.00	1.305	200	4747627.00	1.320
2,2-Dichloropropane	50.0	655954.000	0.4039	100	1345692.00	0.4166	200	2930252.00	0.4713
2-Butanone	50.0	92656.0000	0.05710	100	188430.000	0.05830	200	386971.000	0.06220
2-Chloroethyl Vinyl Ether	50.0	162134.000	0.09980	100	346637.000	0.1073	200	711631.000	0.1145
2-Chlorotoluene	50.0	1669008.00	1.994	100	3633873.00	2.018	200	7103345.00	1.975
2-Hexanone	50.0	149069.000	0.1080	100	318963.000	0.1058	200	616913.000	0.09730
4-Chlorotoluene	50.0	1546052.00	1.847	100	3477554.00	1.931	200	7087991.00	1.971
4-Methyl-2-Pentanone	50.0	77735.0000	0.04790	100	171810.000	0.05320	200	342715.000	0.05510
Acetone	50.0	67550.0000	0.04160	100	122810.000	0.03800	200	229764.000	0.03700
Benzene	50.0	1414583.00	0.8710	100	2818742.00	0.8726	200	5340170.00	0.8590
Bromobenzene	50.0	504438.000	0.6026	100	1115289.00	0.6192	200	2291706.00	0.6372
Bromochloromethane	50.0	242546.000	0.1493	100	483688.000	0.1497	200	949375.000	0.1527
Bromodichloromethane	50.0	525323.000	0.3235	100	1157196.00	0.3582	200	2427787.00	0.3905
Bromomethane	50.0	371895.000	0.2290	100	790426.000	0.2447	200	1755355.00	0.2824
Carbon Disulfide	50.0	1303139.00	0.8024	100	2626736.00	0.8132	200	5432610.00	0.8738
Carbon Tetrachloride	50.0	607946.000	0.3743	100	1245518.00	0.3856	200	2629553.00	0.4230

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

00115168

Login Number:L08030114
Analytical Method:8260B

Instrument ID:HPMS6
Initial Calibration Date:25-FEB-08 19:34
Column ID:F

Analyte	WG263961-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	524327.000	0.05110
2-Chloroethyl Vinyl Ether	NA	NA	NA
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	986988.000	0.1070
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	511499.000	0.04980
Acetone	300	348430.000	0.03390
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

Login Number: L08030114
Instrument ID: HPMS6
Analytical Method: 8260B
Initial Calibration Date: 25-FEB-08 19:34
Column ID: F

Analyte	WG263961-02			WG263961-03			WG263961-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	0.400	2622.00000	0.2157	1.00	6264.00000	0.2059
Dibromochloromethane	NA	NA	NA	0.400	2076.00000	0.2039	1.00	5206.00000	0.2048
Dibromomethane	NA	NA	NA	0.400	1256.00000	0.1033	1.00	3482.00000	0.1144
Dichlorodifluoromethane	NA	NA	NA	0.400	5446.00000	0.4481	1.00	13922.0000	0.4575
Hexachlorobutadiene	NA	NA	NA	0.400	3722.00000	0.6230	1.00	7615.00000	0.5031
Isopropylbenzene	NA	NA	NA	0.400	14670.0000	1.441	1.00	35828.0000	1.409
Methylene Chloride	NA	NA	NA	0.400	7115.00000	0.5854	1.00	11610.0000	0.3815
Naphthalene	NA	NA	NA	0.400	10045.0000	1.681	1.00	19789.0000	1.307
Styrene	NA	NA	NA	0.400	9576.00000	0.9406	1.00	22430.0000	0.8822
Tetrachloroethene	NA	NA	NA	0.400	3522.00000	0.3460	1.00	8288.00000	0.3260
Trichloroethene	NA	NA	NA	0.400	2870.00000	0.2361	1.00	7432.00000	0.2442
Trichlorofluoromethane	NA	NA	NA	0.400	6346.00000	0.5222	1.00	16714.0000	0.5493
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	2766.00000	0.2276	1.00	7407.00000	0.2434
cis-1,3-Dichloropropene	NA	NA	NA	0.400	3949.00000	0.3249	1.00	9538.00000	0.3135
m-,p-Xylene	NA	NA	NA	0.800	13256.0000	0.6511	2.00	30927.0000	0.6082
n-Butylbenzene	NA	NA	NA	0.400	14481.0000	2.424	1.00	34764.0000	2.297
n-Propylbenzene	NA	NA	NA	0.400	19754.0000	3.306	1.00	46072.0000	3.044
o-Xylene	NA	NA	NA	0.400	6443.00000	0.6329	1.00	14528.0000	0.5714
p-Isopropyltoluene	NA	NA	NA	0.400	15434.0000	2.583	1.00	37206.0000	2.458
sec-Butylbenzene	NA	NA	NA	0.400	16866.0000	2.823	1.00	40717.0000	2.690
tert-Butylbenzene	NA	NA	NA	0.400	2655.00000	0.4444	1.00	7471.00000	0.4936
trans-1,2-Dichloroethene	NA	NA	NA	0.400	3015.00000	0.2481	1.00	8143.00000	0.2676
trans-1,3-Dichloropropene	NA	NA	NA	0.400	3379.00000	0.3319	1.00	7540.00000	0.2966

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

Login Number: L08030114
Instrument ID: HPMS6
Analytical Method: 8260B
Initial Calibration Date: 25-FEB-08 19:34
Column ID: F

Analyte	WG263961-05			WG263961-06			WG263961-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	12479.0000	0.2091	5.00	32965.0000	0.2174	20.0	141288.000	0.2245
Dibromochloromethane	2.00	10869.0000	0.2172	5.00	28112.0000	0.2240	20.0	126353.000	0.2431
Dibromomethane	2.00	6963.00000	0.1166	5.00	17017.0000	0.1122	20.0	70506.0000	0.1120
Dichlorodifluoromethane	2.00	25062.0000	0.4199	5.00	69901.0000	0.4610	20.0	270193.000	0.4293
Hexachlorobutadiene	2.00	14835.0000	0.4916	5.00	32820.0000	0.4348	20.0	140634.000	0.4565
Isopropylbenzene	2.00	74834.0000	1.496	5.00	182601.000	1.455	20.0	784686.000	1.510
Methylene Chloride	2.00	20022.0000	0.3354	5.00	43181.0000	0.2848	20.0	162769.000	0.2586
Naphthalene	2.00	48875.0000	1.620	5.00	101760.000	1.348	20.0	406742.000	1.320
Styrene	2.00	49619.0000	0.9917	5.00	119554.000	0.9527	20.0	508453.000	0.9784
Tetrachloroethene	2.00	16299.0000	0.3257	5.00	40028.0000	0.3190	20.0	162771.000	0.3132
Trichloroethene	2.00	15003.0000	0.2513	5.00	37481.0000	0.2472	20.0	153248.000	0.2435
Trichlorofluoromethane	2.00	31422.0000	0.5264	5.00	82620.0000	0.5449	20.0	356837.000	0.5669
Vinyl Acetate	2.00	11110.0000	0.1861	5.00	30985.0000	0.2044	20.0	132669.000	0.2108
cis-1,2-Dichloroethene	2.00	14861.0000	0.2490	5.00	38701.0000	0.2552	20.0	154888.000	0.2461
cis-1,3-Dichloropropene	2.00	19009.0000	0.3185	5.00	47361.0000	0.3124	20.0	210901.000	0.3351
m-,p-Xylene	4.00	64395.0000	0.6435	10.0	152747.000	0.6086	40.0	635993.000	0.6119
n-Butylbenzene	2.00	74112.0000	2.456	5.00	183687.000	2.434	20.0	757335.000	2.458
n-Propylbenzene	2.00	95977.0000	3.180	5.00	239392.000	3.172	20.0	999799.000	3.245
o-Xylene	2.00	30724.0000	0.6140	5.00	73581.0000	0.5863	20.0	303256.000	0.5835
p-Isopropyltoluene	2.00	77149.0000	2.556	5.00	196083.000	2.598	20.0	803266.000	2.608
sec-Butylbenzene	2.00	88063.0000	2.918	5.00	219526.000	2.909	20.0	905226.000	2.938
tert-Butylbenzene	2.00	14778.0000	0.4897	5.00	35569.0000	0.4713	20.0	147059.000	0.4774
trans-1,2-Dichloroethene	2.00	15224.0000	0.2550	5.00	38164.0000	0.2517	20.0	155158.000	0.2465
trans-1,3-Dichloropropene	2.00	17365.0000	0.3471	5.00	41191.0000	0.3282	20.0	187840.000	0.3614

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

Login Number: L08030114 **Instrument ID:** HPMS6

Analytical Method: 8260B **Initial Calibration Date:** 25-FEB-08 19:34

Column ID: F

Analyte	WG263961-08			WG263961-09			WG263961-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	363178.000	0.2236	100	751228.000	0.2326	200	1599364.00	0.2573
Dibromochloromethane	50.0	368962.000	0.2672	100	854688.000	0.2836	200	1786704.00	0.2819
Dibromomethane	50.0	191025.000	0.1176	100	394984.000	0.1223	200	806831.000	0.1298
Dichlorodifluoromethane	50.0	651212.000	0.4010	100	1266342.00	0.3920	200	2641012.00	0.4248
Hexachlorobutadiene	50.0	364818.000	0.4358	100	784059.000	0.4353	200	1690726.00	0.4701
Isopropylbenzene	50.0	2045596.00	1.481	100	4489182.00	1.489	200	9014068.00	1.422
Methylene Chloride	50.0	417120.000	0.2568	100	856155.000	0.2650	200	1760104.00	0.2831
Naphthalene	50.0	1113520.00	1.330	100	2174913.00	1.208	200	4184058.00	1.163
Styrene	50.0	1358265.00	0.9836	100	3017693.00	1.001	200	6174097.00	0.9740
Tetrachloroethene	50.0	414822.000	0.3004	100	854424.000	0.2835	200	1776741.00	0.2803
Trichloroethene	50.0	398907.000	0.2456	100	837520.000	0.2593	200	1719891.00	0.2766
Trichlorofluoromethane	50.0	940635.000	0.5792	100	1985816.00	0.6147	200	4238890.00	0.6818
Vinyl Acetate	50.0	338588.000	0.2085	100	605075.000	0.1873	200	1064456.00	0.1712
cis-1,2-Dichloroethene	50.0	400556.000	0.2466	100	813974.000	0.2520	200	1738088.00	0.2796
cis-1,3-Dichloropropene	50.0	569133.000	0.3504	100	1238868.00	0.3835	200	2558728.00	0.4116
m-,p-Xylene	100	1660741.00	0.6013	200	3613414.00	0.5994	400	7254550.00	0.5722
n-Butylbenzene	50.0	1990946.00	2.378	100	4262031.00	2.366	200	8403020.00	2.336
n-Propylbenzene	50.0	2591093.00	3.095	100	5575723.00	3.096	200	10728542.0	2.983
o-Xylene	50.0	801712.000	0.5806	100	1760587.00	0.5841	200	3674553.00	0.5797
p-Isopropyltoluene	50.0	2119459.00	2.532	100	4594408.00	2.551	200	9100790.00	2.530
sec-Butylbenzene	50.0	2383784.00	2.848	100	5216398.00	2.896	200	10190924.0	2.834
tert-Butylbenzene	50.0	389200.000	0.4649	100	874092.000	0.4853	200	1855908.00	0.5160
trans-1,2-Dichloroethene	50.0	394759.000	0.2431	100	782615.000	0.2423	200	1630243.00	0.2622
trans-1,3-Dichloropropene	50.0	521532.000	0.3777	100	1152197.00	0.3823	200	2398116.00	0.3783

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

00115172

Login Number: L08030114
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 25-FEB-08 19:34
Column ID: F

Analyte	WG263961-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1040279
Report generated 03/14/2008 16:10

KEMRON Environmental Services, Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number:L08030114 Run Date:02/12/2008 Sample ID:WG262907-12
Instrument ID:HPMS14 Run Time:00:28 Method:8260B
File ID:14M03450 Analyst:CMS QC Key:STD
ICal Workgroup:WG262907 Cal ID:HPMS14 - 11-FEB-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	20.7	ug/L	0.499	3.50	30	
1,1-Dichloroethene	CCC	20.0	20.9	ug/L	0.412	4.30	30	
1,2-Dichloropropane	CCC	20.0	20.9	ug/L	0.281	4.50	30	
Ethylbenzene	CCC	20.0	22.2	ug/L	0.563	11.2	30	
Toluene	CCC	20.0	21.3	ug/L	1.53	6.60	30	
Vinyl Chloride	CCC	20.0	19.7	ug/L	0.132	1.30	30	
Bromoform	SPCC	20.0	17.7	ug/L	0.140	11.4	30	
Chlorobenzene	SPCC	20.0	20.7	ug/L	0.985	3.50	30	
Chloromethane	SPCC	20.0	18.8	ug/L	0.176	5.90	30	
1,1-Dichloroethane	SPCC	20.0	20.8	ug/L	0.536	3.90	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	21.0	ug/L	0.467	4.80	30	
Acetone		20.0	22.1	ug/L	0.0566	10.6	30	
Benzene		20.0	20.5	ug/L	1.09	2.40	30	
Bromobenzene		20.0	21.0	ug/L	0.736	5.20	30	
Bromochloromethane		20.0	21.1	ug/L	0.145	5.30	30	
Bromodichloromethane		20.0	21.7	ug/L	0.353	8.50	30	
Bromomethane		20.0	21.4	ug/L	0.160	7.00	30	
2-Butanone		20.0	21.8	ug/L	0.0777	8.80	30	
n-Butylbenzene		20.0	22.1	ug/L	3.10	10.4	30	
sec-Butylbenzene		20.0	22.2	ug/L	3.68	11.0	30	
tert-Butylbenzene		20.0	22.1	ug/L	0.596	10.7	30	
Carbon Disulfide		20.0	21.9	ug/L	0.821	9.40	30	
Carbon Tetrachloride		20.0	21.4	ug/L	0.391	7.20	30	
Dibromochloromethane		20.0	19.0	ug/L	0.279	5.00	30	
Chloroethane		20.0	21.3	ug/L	0.189	6.70	30	
2-Chloroethyl Vinyl Ether		20.0	19.3	ug/L	0.0866	3.60	30	
2-Chlorotoluene		20.0	20.9	ug/L	2.48	4.50	30	
4-Chlorotoluene		20.0	21.0	ug/L	2.56	4.90	30	
1,2-Dibromo-3-Chloropropane		20.0	19.0	ug/L	0.0847	5.20	30	
1,2-Dibromoethane		20.0	21.0	ug/L	0.221	5.20	30	
Dibromomethane		20.0	21.2	ug/L	0.125	6.00	30	
1,2-Dichlorobenzene		20.0	20.3	ug/L	1.37	1.40	30	
1,3-Dichlorobenzene		20.0	20.2	ug/L	1.53	1.20	30	
1,4-Dichlorobenzene		20.0	19.7	ug/L	1.53	1.60	30	
Dichlorodifluoromethane		20.0	20.1	ug/L	0.301	0.400	30	
1,2-Dichloroethane		20.0	20.0	ug/L	0.354	0.100	30	
cis-1,2-Dichloroethene		20.0	21.7	ug/L	0.292	8.30	30	
trans-1,2-Dichloroethene		20.0	21.2	ug/L	0.262	5.80	30	
1,3-Dichloropropane		20.0	20.9	ug/L	0.430	4.40	30	
2,2-Dichloropropane		20.0	20.2	ug/L	0.393	1.20	30	
cis-1,3-Dichloropropene		20.0	20.8	ug/L	0.378	4.00	30	
trans-1,3-Dichloropropene		20.0	19.6	ug/L	0.406	2.10	30	

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1040280
Report generated 03/14/2008 16:10

Login Number:L08030114 Run Date:02/12/2008 Sample ID:WG262907-12
Instrument ID:HPMS14 Run Time:00:28 Method:8260B
File ID:14M03450 Analyst:CMS QC Key:STD
ICal Workgroup:WG262907 Cal ID:HPMS14 - 11-FEB-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	21.4	ug/L	0.388	7.20	30	
2-Hexanone		20.0	20.8	ug/L	0.137	4.00	30	
Hexachlorobutadiene		20.0	21.2	ug/L	0.510	6.00	30	
Isopropylbenzene		20.0	20.2	ug/L	1.57	0.900	30	
p-Isopropyltoluene		20.0	21.8	ug/L	3.05	8.90	30	
4-Methyl-2-Pentanone		20.0	21.1	ug/L	0.0586	5.30	30	
Methylene Chloride		20.0	20.3	ug/L	0.262	1.30	30	
Naphthalene		20.0	20.3	ug/L	1.91	1.30	30	
n-Propylbenzene		20.0	22.3	ug/L	4.07	11.6	30	
Styrene		20.0	22.4	ug/L	1.09	12.0	30	
1,1,1,2-Tetrachloroethane		20.0	21.7	ug/L	0.342	8.30	30	
Tetrachloroethene		20.0	21.8	ug/L	0.367	8.80	30	
1,2,3-Trichlorobenzene		20.0	19.9	ug/L	0.939	0.300	30	
1,2,4-Trichlorobenzene		20.0	19.8	ug/L	1.08	1.10	30	
1,1,1-Trichloroethane		20.0	21.3	ug/L	0.451	6.70	30	
1,1,2-Trichloroethane		20.0	20.7	ug/L	0.229	3.30	30	
Trichloroethene		20.0	21.8	ug/L	0.276	9.00	30	
Trichlorofluoromethane		20.0	17.8	ug/L	0.390	10.8	30	
1,2,3-Trichloropropane		20.0	20.7	ug/L	0.142	3.30	30	
1,2,4-Trimethylbenzene		20.0	21.7	ug/L	3.02	8.40	30	
1,3,5-Trimethylbenzene		20.0	22.4	ug/L	2.90	12.0	30	
Vinyl Acetate		20.0	20.4	ug/L	0.269	2.00	40	
o-Xylene		20.0	22.1	ug/L	0.674	10.6	30	
m-,p-Xylene		40.0	43.9	ug/L	0.688	9.70	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

KEMRON Environmental Services, Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number:L08030114 Run Date:02/25/2008 Sample ID:WG263961-12
Instrument ID:HPMS6 Run Time:21:11 Method:8260B
File ID:6M73111 Analyst:CMS QC Key:STD
ICal Workgroup:WG263961 Cal ID: HPMS6 - 25-FEB-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	19.3	ug/L	0.442	3.50	30	
1,1-Dichloroethene	CCC	20.0	19.9	ug/L	0.409	0.600	30	
1,2-Dichloropropane	CCC	20.0	19.3	ug/L	0.206	3.70	30	
Ethylbenzene	CCC	20.0	20.0	ug/L	0.473	0.100	30	
Toluene	CCC	20.0	20.6	ug/L	1.21	3.00	30	
Vinyl Chloride	CCC	20.0	21.2	ug/L	0.258	6.00	30	
Bromoform	SPCC	20.0	16.6	ug/L	0.129	17.2	30	
Chlorobenzene	SPCC	20.0	19.3	ug/L	0.847	3.40	30	
Chloromethane	SPCC	20.0	18.8	ug/L	0.356	5.80	30	
1,1-Dichloroethane	SPCC	20.0	19.2	ug/L	0.431	4.10	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	18.7	ug/L	0.335	6.60	30	
Acetone		20.0	21.9	ug/L	0.0422	9.70	30	
Benzene		20.0	20.0	ug/L	0.903	0	30	
Bromobenzene		20.0	19.4	ug/L	0.600	3.10	30	
Bromochloromethane		20.0	19.2	ug/L	0.146	4.10	30	
Bromodichloromethane		20.0	18.8	ug/L	0.302	5.90	30	
Bromomethane		20.0	21.3	ug/L	0.237	6.40	30	
2-Butanone		20.0	20.7	ug/L	0.0564	3.70	30	
n-Butylbenzene		20.0	20.4	ug/L	2.44	2.10	30	
sec-Butylbenzene		20.0	20.7	ug/L	2.95	3.40	30	
tert-Butylbenzene		20.0	20.0	ug/L	0.481	0.100	30	
Carbon Disulfide		20.0	20.2	ug/L	0.799	1.00	30	
Carbon Tetrachloride		20.0	20.0	ug/L	0.365	0.200	30	
Dibromochloromethane		20.0	19.9	ug/L	0.239	0.600	30	
Chloroethane		20.0	21.9	ug/L	0.245	9.70	30	
2-Chloroethyl Vinyl Ether		20.0	18.4	ug/L	0.0879	8.10	30	
2-Chlorotoluene		20.0	19.8	ug/L	2.04	1.20	30	
4-Chlorotoluene		20.0	19.3	ug/L	1.89	3.50	30	
1,2-Dibromo-3-Chloropropane		20.0	18.2	ug/L	0.0618	8.90	30	
1,2-Dibromoethane		20.0	19.9	ug/L	0.180	0.700	30	
Dibromomethane		20.0	19.0	ug/L	0.111	4.80	30	
1,2-Dichlorobenzene		20.0	18.6	ug/L	1.12	6.80	30	
1,3-Dichlorobenzene		20.0	19.0	ug/L	1.27	4.80	30	
1,4-Dichlorobenzene		20.0	18.4	ug/L	1.28	7.90	30	
Dichlorodifluoromethane		20.0	25.1	ug/L	0.540	25.7	30	
1,2-Dichloroethane		20.0	19.1	ug/L	0.280	4.60	30	
cis-1,2-Dichloroethene		20.0	20.3	ug/L	0.254	1.60	30	
trans-1,2-Dichloroethene		20.0	19.1	ug/L	0.240	4.70	30	
1,3-Dichloropropane		20.0	19.7	ug/L	0.315	1.70	30	
2,2-Dichloropropane		20.0	18.5	ug/L	0.378	7.60	30	
cis-1,3-Dichloropropene		20.0	18.2	ug/L	0.312	9.10	30	
trans-1,3-Dichloropropene		20.0	17.6	ug/L	0.309	11.8	30	

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1040280
Report generated 03/14/2008 16:10

Login Number:L08030114 Run Date:02/25/2008 Sample ID:WG263961-12
Instrument ID:HPMS6 Run Time:21:11 Method:8260B
File ID:6M73111 Analyst:CMS QC Key:STD
ICal Workgroup:WG263961 Cal ID: HPMS6 - 25-FEB-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	19.6	ug/L	0.316	1.80	30	
2-Hexanone		20.0	19.1	ug/L	0.0939	4.40	30	
Hexachlorobutadiene		20.0	18.6	ug/L	0.448	6.90	30	
Isopropylbenzene		20.0	18.9	ug/L	1.38	5.70	30	
p-Isopropyltoluene		20.0	19.8	ug/L	2.53	0.900	30	
4-Methyl-2-Pentanone		20.0	17.2	ug/L	0.0431	14.2	30	
Methylene Chloride		20.0	21.5	ug/L	0.276	7.60	30	
Naphthalene		20.0	18.9	ug/L	1.29	5.70	30	
n-Propylbenzene		20.0	20.4	ug/L	3.20	2.00	30	
Styrene		20.0	20.4	ug/L	0.982	1.90	30	
1,1,1,2-Tetrachloroethane		20.0	19.4	ug/L	0.282	2.80	30	
Tetrachloroethene		20.0	19.5	ug/L	0.304	2.50	30	
1,2,3-Trichlorobenzene		20.0	19.1	ug/L	0.663	4.60	30	
1,2,4-Trichlorobenzene		20.0	18.4	ug/L	0.810	8.20	30	
1,1,1-Trichloroethane		20.0	19.2	ug/L	0.409	4.00	30	
1,1,2-Trichloroethane		20.0	19.6	ug/L	0.177	1.80	30	
Trichloroethene		20.0	19.6	ug/L	0.246	1.90	30	
Trichlorofluoromethane		20.0	17.2	ug/L	0.494	13.9	30	
1,2,3-Trichloropropane		20.0	18.2	ug/L	0.106	8.80	30	
1,2,4-Trimethylbenzene		20.0	19.9	ug/L	2.43	0.400	30	
1,3,5-Trimethylbenzene		20.0	20.3	ug/L	2.33	1.70	30	
Vinyl Acetate		20.0	13.0	ug/L	0.127	34.8	40	
o-Xylene		20.0	20.1	ug/L	0.595	0.600	30	
m-,p-Xylene		40.0	39.8	ug/L	0.609	0.500	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

Login Number:L08030114 Run Date:03/12/2008 Sample ID:WG265319-02
Instrument ID:HPMS14 Run Time:10:08 Method:8260B
File ID:14M04117 Analyst:SMH QC Key:STD
Workgroup (AAB#):WG265320 Cal ID:HPMS14 - 11-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	49.7	ug/L	0.479	0.652	20	
1,1-Dichloroethene	CCC	50.0	53.7	ug/L	0.424	7.45	20	
1,2-Dichloropropane	CCC	50.0	50.0	ug/L	0.269	0.0690	20	
Ethylbenzene	CCC	50.0	54.1	ug/L	0.548	8.24	20	
Toluene	CCC	50.0	51.8	ug/L	1.49	3.59	20	
Vinyl Chloride	CCC	50.0	48.7	ug/L	0.130	2.66	20	
Bromoform	SPCC	50.0	47.5	ug/L	0.157	5.05	40	
Chlorobenzene	SPCC	50.0	50.0	ug/L	0.952	0.0252	40	
Chloromethane	SPCC	50.0	40.9	ug/L	0.165	18.2	40	
1,1-Dichloroethane	SPCC	50.0	50.0	ug/L	0.516	0.0842	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	49.8	ug/L	0.443	0.428	40	
Acetone		50.0	45.0	ug/L	0.0460	10.1	40	
Benzene		50.0	49.2	ug/L	1.04	1.58	40	
Bromobenzene		50.0	51.8	ug/L	0.725	3.57	40	
Bromochloromethane		50.0	47.7	ug/L	0.131	4.60	40	
Bromodichloromethane		50.0	53.0	ug/L	0.344	5.93	40	
Bromomethane		50.0	43.4	ug/L	0.133	13.1	40	
2-Butanone		50.0	39.7	ug/L	0.0567	20.6	40	
n-Butylbenzene		50.0	54.9	ug/L	3.08	9.76	40	
sec-Butylbenzene		50.0	56.6	ug/L	3.75	13.1	40	
tert-Butylbenzene		50.0	55.2	ug/L	0.594	10.3	40	
Carbon Disulfide		50.0	55.5	ug/L	0.835	11.0	40	
Carbon Tetrachloride		50.0	55.2	ug/L	0.402	10.3	40	
Dibromochloromethane		50.0	48.7	ug/L	0.289	2.52	40	
Chloroethane		50.0	50.4	ug/L	0.178	0.850	40	
2-Chloroethyl Vinyl Ether		50.0	42.6	ug/L	0.0765	14.8	40	
2-Chlorotoluene		50.0	51.8	ug/L	2.46	3.68	40	
4-Chlorotoluene		50.0	52.0	ug/L	2.54	4.01	40	
1,2-Dibromo-3-Chloropropane		50.0	42.5	ug/L	0.0787	15.0	40	
1,2-Dibromoethane		50.0	51.2	ug/L	0.216	2.48	40	
Dibromomethane		50.0	50.1	ug/L	0.118	0.187	40	
1,2-Dichlorobenzene		50.0	49.1	ug/L	1.33	1.74	40	
1,3-Dichlorobenzene		50.0	50.7	ug/L	1.53	1.44	40	
1,4-Dichlorobenzene		50.0	49.0	ug/L	1.53	2.09	40	
Dichlorodifluoromethane		50.0	56.4	ug/L	0.338	12.9	40	
1,2-Dichloroethane		50.0	47.2	ug/L	0.334	5.61	40	
cis-1,2-Dichloroethene		50.0	51.0	ug/L	0.275	2.07	40	
trans-1,2-Dichloroethene		50.0	53.4	ug/L	0.265	6.86	40	
1,3-Dichloropropane		50.0	48.7	ug/L	0.402	2.56	40	
2,2-Dichloropropane		50.0	58.9	ug/L	0.457	17.8	40	
cis-1,3-Dichloropropene		50.0	54.7	ug/L	0.398	9.38	40	
trans-1,3-Dichloropropene		50.0	54.8	ug/L	0.455	9.64	40	

CCV - Modified 03/05/2008
PDF File ID: 1040282
Report generated 03/14/2008 16:10

KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030114 Run Date:03/12/2008 Sample ID:WG265319-02
Instrument ID:HPMS14 Run Time:10:08 Method:8260B
File ID:14M04117 Analyst:SMH QC Key:STD
Workgroup (AAB#):WG265320 Cal ID:HPMS14 - 11-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	53.5	ug/L	0.387	6.96	40	
2-Hexanone		50.0	44.8	ug/L	0.118	10.4	40	
Hexachlorobutadiene		50.0	50.0	ug/L	0.481	0.0632	40	
Isopropylbenzene		50.0	55.1	ug/L	1.72	10.2	40	
p-Isopropyltoluene		50.0	56.9	ug/L	3.19	13.9	40	
4-Methyl-2-Pentanone		50.0	45.3	ug/L	0.0504	9.46	40	
Methylene Chloride		50.0	47.8	ug/L	0.239	4.35	40	
Naphthalene		50.0	42.6	ug/L	1.60	14.8	40	
n-Propylbenzene		50.0	57.0	ug/L	4.16	14.1	40	
Styrene		50.0	54.7	ug/L	1.06	9.30	40	
1,1,1,2-Tetrachloroethane		50.0	53.6	ug/L	0.338	7.24	40	
Tetrachloroethene		50.0	56.5	ug/L	0.381	13.1	40	
1,2,3-Trichlorobenzene		50.0	43.3	ug/L	0.816	13.5	40	
1,2,4-Trichlorobenzene		50.0	45.3	ug/L	0.987	9.47	40	
1,1,1-Trichloroethane		50.0	53.3	ug/L	0.451	6.63	40	
1,1,2-Trichloroethane		50.0	48.1	ug/L	0.213	3.74	40	
Trichloroethene		50.0	54.2	ug/L	0.274	8.44	40	
Trichlorofluoromethane		50.0	56.7	ug/L	0.496	13.4	40	
1,2,3-Trichloropropane		50.0	49.1	ug/L	0.135	1.88	40	
1,2,4-Trimethylbenzene		50.0	53.1	ug/L	2.97	6.26	40	
1,3,5-Trimethylbenzene		50.0	56.1	ug/L	2.91	12.3	40	
Vinyl Acetate		50.0	62.5	ug/L	0.330	24.9	40	
o-Xylene		50.0	54.0	ug/L	0.658	7.95	40	
m-,p-Xylene		100	107	ug/L	0.674	7.46	40	
1,2-Dichloroethene		100	104	ug/L	0.270	4.46	40	
Xylenes		150	161	ug/L	0.666	7.63	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1040282
Report generated 03/14/2008 16:10

Login Number:L08030114 Run Date:03/11/2008 Sample ID:WG265189-02
Instrument ID:HPMS6 Run Time:09:04 Method:8260B
File ID:6M73375 Analyst:CMS/ASP QC Key:STD
Workgroup (AAB#):WG265190 Cal ID: HPMS6 - 25-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	54.1	ug/L	0.495	8.13	20	
1,1-Dichloroethene	CCC	50.0	58.5	ug/L	0.481	16.9	20	
1,2-Dichloropropane	CCC	50.0	49.0	ug/L	0.210	1.95	20	
Ethylbenzene	CCC	50.0	53.5	ug/L	0.506	7.09	20	
Toluene	CCC	50.0	56.7	ug/L	1.33	13.4	20	
Vinyl Chloride	CCC	50.0	55.6	ug/L	0.244	11.2	20	
Bromoform	SPCC	50.0	48.3	ug/L	0.158	3.45	40	
Chlorobenzene	SPCC	50.0	51.5	ug/L	0.903	2.99	40	
Chloromethane	SPCC	50.0	43.9	ug/L	0.332	12.2	40	
1,1-Dichloroethane	SPCC	50.0	55.9	ug/L	0.502	11.8	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	45.6	ug/L	0.327	8.75	40	
Acetone		50.0	50.9	ug/L	0.0392	1.72	40	
Benzene		50.0	50.6	ug/L	0.914	1.22	40	
Bromobenzene		50.0	53.1	ug/L	0.658	6.17	40	
Bromochloromethane		50.0	47.1	ug/L	0.144	5.75	40	
Bromodichloromethane		50.0	49.6	ug/L	0.319	0.768	40	
Bromomethane		50.0	59.5	ug/L	0.265	18.9	40	
2-Butanone		50.0	41.3	ug/L	0.0449	17.4	40	
n-Butylbenzene		50.0	54.4	ug/L	2.61	8.85	40	
sec-Butylbenzene		50.0	55.3	ug/L	3.16	10.5	40	
tert-Butylbenzene		50.0	54.9	ug/L	0.528	9.83	40	
Carbon Disulfide		50.0	56.2	ug/L	0.889	12.4	40	
Carbon Tetrachloride		50.0	59.8	ug/L	0.437	19.5	40	
Dibromochloromethane		50.0	58.2	ug/L	0.280	16.4	40	
Chloroethane		50.0	57.6	ug/L	0.257	15.1	40	
2-Chloroethyl Vinyl Ether		50.0	41.6	ug/L	0.0795	16.8	40	
2-Chlorotoluene		50.0	52.6	ug/L	2.17	5.15	40	
4-Chlorotoluene		50.0	51.8	ug/L	2.03	3.63	40	
1,2-Dibromo-3-Chloropropane		50.0	43.5	ug/L	0.0590	13.0	40	
1,2-Dibromoethane		50.0	52.3	ug/L	0.190	4.62	40	
Dibromomethane		50.0	45.7	ug/L	0.106	8.69	40	
1,2-Dichlorobenzene		50.0	48.0	ug/L	1.15	3.93	40	
1,3-Dichlorobenzene		50.0	51.7	ug/L	1.38	3.36	40	
1,4-Dichlorobenzene		50.0	49.9	ug/L	1.38	0.258	40	
Dichlorodifluoromethane		50.0	60.2	ug/L	0.517	20.5	40	
1,2-Dichloroethane		50.0	50.4	ug/L	0.296	0.721	40	
cis-1,2-Dichloroethene		50.0	55.6	ug/L	0.278	11.2	40	
trans-1,2-Dichloroethene		50.0	57.1	ug/L	0.288	14.3	40	
1,3-Dichloropropane		50.0	52.2	ug/L	0.335	4.50	40	
2,2-Dichloropropane		50.0	58.7	ug/L	0.480	17.4	40	
cis-1,3-Dichloropropene		50.0	48.9	ug/L	0.336	2.28	40	
trans-1,3-Dichloropropene		50.0	57.6	ug/L	0.404	15.2	40	

CCV - Modified 03/05/2008
PDF File ID: 1040282
Report generated 03/14/2008 16:10

KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030114 Run Date:03/11/2008 Sample ID:WG265189-02
Instrument ID:HPMS6 Run Time:09:04 Method:8260B
File ID:6M73375 Analyst:CMS/ASP QC Key:STD
Workgroup (AAB#):WG265190 Cal ID: HPMS6 - 25-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	55.5	ug/L	0.357	11.0	40	
2-Hexanone		50.0	43.1	ug/L	0.0848	13.7	40	
Hexachlorobutadiene		50.0	52.0	ug/L	0.501	4.08	40	
Isopropylbenzene		50.0	53.9	ug/L	1.58	7.78	40	
p-Isopropyltoluene		50.0	55.2	ug/L	2.82	10.5	40	
4-Methyl-2-Pentanone		50.0	32.4	ug/L	0.0329	35.3	40	
Methylene Chloride		50.0	51.1	ug/L	0.263	2.22	40	
Naphthalene		50.0	41.0	ug/L	1.13	18.0	40	
n-Propylbenzene		50.0	55.2	ug/L	3.47	10.4	40	
Styrene		50.0	51.0	ug/L	0.983	2.05	40	
1,1,1,2-Tetrachloroethane		50.0	58.2	ug/L	0.337	16.4	40	
Tetrachloroethene		50.0	60.0	ug/L	0.374	20.1	40	
1,2,3-Trichlorobenzene		50.0	44.9	ug/L	0.623	10.3	40	
1,2,4-Trichlorobenzene		50.0	45.6	ug/L	0.806	8.72	40	
1,1,1-Trichloroethane		50.0	56.5	ug/L	0.481	12.9	40	
1,1,2-Trichloroethane		50.0	52.0	ug/L	0.187	3.91	40	
Trichloroethene		50.0	53.3	ug/L	0.267	6.56	40	
Trichlorofluoromethane		50.0	59.8	ug/L	0.685	19.5	40	
1,2,3-Trichloropropane		50.0	47.5	ug/L	0.110	4.93	40	
1,2,4-Trimethylbenzene		50.0	52.5	ug/L	2.56	5.02	40	
1,3,5-Trimethylbenzene		50.0	54.5	ug/L	2.49	9.06	40	
Vinyl Acetate		50.0	71.2	ug/L	0.277	42.4	40	*
o-Xylene		50.0	51.9	ug/L	0.614	3.73	40	
m-,p-Xylene		100	104	ug/L	0.639	4.43	40	
1,2-Dichloroethene		100	113	ug/L	0.283	12.7	40	
Xylenes		150	156	ug/L	0.626	4.20	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1040282
Report generated 03/14/2008 16:10

KEMRON Environmental Services, Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115181

Login Number:L08030114 Run Date:03/12/2008 Sample ID:WG265294-02

Instrument ID:HPMS6 Run Time:08:52 Method:8260B

File ID:6M73402 Analyst:CMS/ASP QC Key:STD

Workgroup (AAB#):WG265343 Cal ID: HPMS6 - 25-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	52.9	ug/L	0.485	5.77	20	
1,1-Dichloroethene	CCC	50.0	51.3	ug/L	0.423	2.65	20	
1,2-Dichloropropane	CCC	50.0	48.5	ug/L	0.208	2.95	20	
Ethylbenzene	CCC	50.0	50.1	ug/L	0.474	0.298	20	
Toluene	CCC	50.0	53.8	ug/L	1.26	7.67	20	
Vinyl Chloride	CCC	50.0	46.8	ug/L	0.211	6.45	20	
Bromoform	SPCC	50.0	50.6	ug/L	0.166	1.16	40	
Chlorobenzene	SPCC	50.0	50.4	ug/L	0.884	0.749	40	
Chloromethane	SPCC	50.0	39.9	ug/L	0.302	20.2	40	
1,1-Dichloroethane	SPCC	50.0	53.4	ug/L	0.479	6.80	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	46.7	ug/L	0.335	6.58	40	
Acetone		50.0	52.6	ug/L	0.0405	5.27	40	
Benzene		50.0	47.8	ug/L	0.862	4.48	40	
Bromobenzene		50.0	52.3	ug/L	0.648	4.59	40	
Bromochloromethane		50.0	47.5	ug/L	0.145	5.04	40	
Bromodichloromethane		50.0	50.3	ug/L	0.323	0.651	40	
Bromomethane		50.0	48.2	ug/L	0.215	3.64	40	
2-Butanone		50.0	44.3	ug/L	0.0482	11.3	40	
n-Butylbenzene		50.0	48.6	ug/L	2.33	2.71	40	
sec-Butylbenzene		50.0	48.7	ug/L	2.78	2.58	40	
tert-Butylbenzene		50.0	49.1	ug/L	0.472	1.71	40	
Carbon Disulfide		50.0	52.3	ug/L	0.827	4.64	40	
Carbon Tetrachloride		50.0	52.4	ug/L	0.384	4.78	40	
Dibromochloromethane		50.0	60.1	ug/L	0.290	20.3	40	
Chloroethane		50.0	51.2	ug/L	0.229	2.35	40	
2-Chloroethyl Vinyl Ether		50.0	43.8	ug/L	0.0837	12.5	40	
2-Chlorotoluene		50.0	46.9	ug/L	1.94	6.26	40	
4-Chlorotoluene		50.0	50.9	ug/L	1.99	1.73	40	
1,2-Dibromo-3-Chloropropane		50.0	44.9	ug/L	0.0609	10.2	40	
1,2-Dibromoethane		50.0	54.9	ug/L	0.199	9.71	40	
Dibromomethane		50.0	47.3	ug/L	0.110	5.46	40	
1,2-Dichlorobenzene		50.0	47.9	ug/L	1.15	4.23	40	
1,3-Dichlorobenzene		50.0	50.5	ug/L	1.35	1.07	40	
1,4-Dichlorobenzene		50.0	49.1	ug/L	1.36	1.85	40	
Dichlorodifluoromethane		50.0	47.8	ug/L	0.410	4.43	40	
1,2-Dichloroethane		50.0	51.7	ug/L	0.304	3.32	40	
cis-1,2-Dichloroethene		50.0	53.8	ug/L	0.269	7.58	40	
trans-1,2-Dichloroethene		50.0	52.5	ug/L	0.265	5.05	40	
1,3-Dichloropropane		50.0	54.0	ug/L	0.346	8.10	40	
2,2-Dichloropropane		50.0	53.2	ug/L	0.436	6.49	40	
cis-1,3-Dichloropropene		50.0	49.5	ug/L	0.340	1.06	40	
trans-1,3-Dichloropropene		50.0	59.3	ug/L	0.416	18.7	40	

CCV - Modified 03/05/2008

PDF File ID: 1040282

Report generated 03/14/2008 16:10

KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030114 Run Date:03/12/2008 Sample ID:WG265294-02
Instrument ID:HPMS6 Run Time:08:52 Method:8260B
File ID:6M73402 Analyst:CMS/ASP QC Key:STD
Workgroup (AAB#):WG265343 Cal ID: HPMS6 - 25-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	49.3	ug/L	0.317	1.44	40	
2-Hexanone		50.0	45.9	ug/L	0.0902	8.24	40	
Hexachlorobutadiene		50.0	47.1	ug/L	0.453	5.83	40	
Isopropylbenzene		50.0	49.9	ug/L	1.46	0.228	40	
p-Isopropyltoluene		50.0	49.8	ug/L	2.54	0.376	40	
4-Methyl-2-Pentanone		50.0	35.1	ug/L	0.0358	29.8	40	
Methylene Chloride		50.0	50.4	ug/L	0.259	0.779	40	
Naphthalene		50.0	42.9	ug/L	1.18	14.2	40	
n-Propylbenzene		50.0	49.8	ug/L	3.13	0.472	40	
Styrene		50.0	50.8	ug/L	0.979	1.63	40	
1,1,1,2-Tetrachloroethane		50.0	58.5	ug/L	0.339	17.0	40	
Tetrachloroethene		50.0	54.0	ug/L	0.337	8.07	40	
1,2,3-Trichlorobenzene		50.0	45.4	ug/L	0.631	9.12	40	
1,2,4-Trichlorobenzene		50.0	46.1	ug/L	0.814	7.82	40	
1,1,1-Trichloroethane		50.0	50.8	ug/L	0.433	1.60	40	
1,1,2-Trichloroethane		50.0	53.4	ug/L	0.192	6.85	40	
Trichloroethene		50.0	48.5	ug/L	0.243	2.98	40	
Trichlorofluoromethane		50.0	48.7	ug/L	0.558	2.67	40	
1,2,3-Trichloropropane		50.0	48.1	ug/L	0.112	3.75	40	
1,2,4-Trimethylbenzene		50.0	50.8	ug/L	2.48	1.62	40	
1,3,5-Trimethylbenzene		50.0	51.1	ug/L	2.34	2.20	40	
Vinyl Acetate		50.0	70.8	ug/L	0.276	41.7	40	*
o-Xylene		50.0	50.9	ug/L	0.602	1.77	40	
m-,p-Xylene		100	99.2	ug/L	0.607	0.782	40	
1,2-Dichloroethene		100	106	ug/L	0.267	6.31	40	
Xylenes		150	150	ug/L	0.605	0.0696	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1040282
Report generated 03/14/2008 16:10

Login Number:L08030114
Instrument ID:HPMS6
Workgroup (AAB#):WG265190

CCV Number:WG265189-02
CAL ID: HPMS6-25-FEB-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG265189-02	NA	NA	333411	589882	846372
Upper Limit	NA	NA	666822	1179764	1692744
Lower Limit	NA	NA	166706	294941	423186
L08030114-02	1.00	01	257337	441356	605168
L08030114-03	2.00	DL01	233884	407201	569604
L08030114-04	1.00	01	253536	426646	579597
L08030114-05	1.00	01	257326	439488	600658
L08030114-06	1.00	01	238546	412605	557945
WG265190-01	1.00	01	283978	492400	678046
WG265190-02	1.00	01	300343	505630	685032
WG265190-03	1.00	01	304337	518850	705948

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1040283
Report generated 03/14/2008 16:10

Login Number:L08030114
Instrument ID:HPMS6
Workgroup (AAB#):WG265343

CCV Number:WG265294-02
CAL ID: HPMS6-25-FEB-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG265294-02	NA	NA	308934	529047	754707
Upper Limit	NA	NA	617868	1058094	1509414
Lower Limit	NA	NA	154467	264524	377354
L08030114-01	1.00	01	245034	416423	563751
WG265343-01	1.00	01	239902	410669	560010
WG265343-02	1.00	01	239343	400001	548624
WG265343-03	1.00	01	263896	440219	596727

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1040283
Report generated 03/14/2008 16:10

Login Number:L08030114
Instrument ID:HPMS14
Workgroup (AAB#):WG265320

CCV Number:WG265319-02
CAL ID: HPMS14-11-FEB-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG265319-02	NA	NA	159237	302399	411468
Upper Limit	NA	NA	318474	604798	822936
Lower Limit	NA	NA	79619	151200	205734
L08030114-07	1.00	01	123589	240374	338651
WG265320-01	1.00	01	139705	268457	371536
WG265320-02	1.00	01	144375	276680	372839
WG265320-03	1.00	01	137192	265797	367717
WG265320-05	1.00	01	118972	229432	319926
WG265320-06	1.00	01	128535	244937	330450
WG265320-07	1.00	01	132177	251216	338807

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1040283
Report generated 03/14/2008 16:10

Login Number:L08030114
Instrument ID:HPMS6
Workgroup (AAB#):WG265190

CCV Number:WG265189-02
CAL ID: HPMS6-25-FEB-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG265189-02	NA	NA	18.86	15.31	10.83
Upper Limit	NA	NA	19.36	15.81	11.33
Lower Limit	NA	NA	18.36	14.81	10.33
L08030114-02	1.00	01	18.86	15.31	10.82
L08030114-03	2.00	DL01	18.86	15.3	10.83
L08030114-04	1.00	01	18.86	15.3	10.82
L08030114-05	1.00	01	18.86	15.31	10.83
L08030114-06	1.00	01	18.86	15.31	10.82
WG265190-01	1.00	01	18.86	15.3	10.83
WG265190-02	1.00	01	18.86	15.3	10.82
WG265190-03	1.00	01	18.86	15.3	10.83

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1040285
Report generated 03/14/2008 16:10

Login Number:L08030114
Instrument ID:HPMS6
Workgroup (AAB#):WG265343

CCV Number:WG265294-02
CAL ID: HPMS6-25-FEB-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG265294-02	NA	NA	18.86	15.3	10.83
Upper Limit	NA	NA	19.36	15.8	11.33
Lower Limit	NA	NA	18.36	14.8	10.33
L08030114-01	1.00	01	18.86	15.3	10.83
WG265343-01	1.00	01	18.86	15.3	10.83
WG265343-02	1.00	01	18.86	15.3	10.83
WG265343-03	1.00	01	18.86	15.31	10.82

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1040285
Report generated 03/14/2008 16:10

Login Number:L08030114 CCV Number:WG265319-02
Instrument ID:HPMS14 CAL ID: HPMS14-11-FEB-08
Workgroup (AAB#):WG265320 Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG265319-02	NA	NA	17.24	14.45	10.84
Upper Limit	NA	NA	17.74	14.95	11.34
Lower Limit	NA	NA	16.74	13.95	10.34
L08030114-07	1.00	01	17.242	14.454	10.847
WG265320-01	1.00	01	17.242	14.454	10.847
WG265320-02	1.00	01	17.242	14.454	10.836
WG265320-03	1.00	01	17.242	14.454	10.847
WG265320-05	1.00	01	17.242	14.454	10.847
WG265320-06	1.00	01	17.242	14.454	10.836
WG265320-07	1.00	01	17.242	14.454	10.847

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1040285
Report generated 03/14/2008 16:10

2.1.2 RSK 175

2.1.2.1 Summary Data

LABORATORY REPORT

L08030114

03/18/08 15:17

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW20-030608	L08030114-04	RSK175	1	07-MAR-08
12WW20-030608-FD	L08030114-05	RSK175	1	07-MAR-08
12WW21-030608	L08030114-06	RSK175	1	07-MAR-08
12WW21-030608	L08030114-06	RSK175	10	07-MAR-08

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115192

Sample Number: **L08030114-04**
Client ID: **12WW20-030608**
Matrix: **Water**
Workgroup Number: **WG265197**
Collect Date: **03/06/2008 09:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **03/11/2008 21:45**
Cal Date: **02/08/2008 14:22**
Run Date: **03/11/2008 21:45**
File ID: **16G11854**

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	2.85		0.500	0.250
ethene	74-85-1		U	0.500	0.250
ethane	74-84-0		U	0.500	0.250

U Not detected at or above adjusted sample detection limit

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115193

Sample Number: **L08030114-05**
Client ID: **12WW20-030608-FD**
Matrix: **Water**
Workgroup Number: **WG265197**
Collect Date: **03/06/2008 09:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **03/11/2008 22:06**
Cal Date: **02/08/2008 14:22**
Run Date: **03/11/2008 22:06**
File ID: **16G11855**

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	2.23		0.500	0.250
ethene	74-85-1		U	0.500	0.250
ethane	74-84-0		U	0.500	0.250

U Not detected at or above adjusted sample detection limit

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115194

Sample Number: **L08030114-06**
Client ID: **12WW21-030608**
Matrix: **Water**
Workgroup Number: **WG265197**
Collect Date: **03/06/2008 10:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **03/11/2008 22:27**
Cal Date: **02/08/2008 14:22**
Run Date: **03/11/2008 22:27**
File ID: **16G11856**

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	1140	I	0.500	0.250
ethene	74-85-1		U	0.500	0.250
ethane	74-84-0		U	0.500	0.250

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115195

Sample Number: **L08030114-06**
Client ID: **12WW21-030608**
Matrix: **Water**
Workgroup Number: **WG265307**
Collect Date: **03/06/2008 10:50**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **FJB**
Dilution: **10**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **03/12/2008 23:30**
Cal Date: **02/08/2008 14:22**
Run Date: **03/12/2008 23:30**
File ID: **16G11896**

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	743		5.00	2.50
ethene	74-85-1		U	5.00	2.50
ethane	74-84-0		U	5.00	2.50

U Not detected at or above adjusted sample detection limit

2.1.2.2 QC Summary Data

KEMRON Environmental Services
Data Checklist

Date: 08-FEB-2008
Analyst: FJB
Analyst: NPM
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 20686
Analytical Workgroups: WG262719

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	SMH
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
13-FEB-2008

Secondary Reviewer:
25-FEB-2008

Generated: FEB-25-2008 08:53:39

KEMRON Environmental Services
Data Checklist

Date: 09-FEB-2008
Analyst: FJB
Analyst: NPM
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 20689
Analytical Workgroups: WG262719

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	SMH
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
13-FEB-2008

Secondary Reviewer:
25-FEB-2008

Generated: FEB-25-2008 08:57:31

KEMRON Environmental Services, Inc.

Data Checklist

Date: 11-MAR-2008
Analyst: FJB
Analyst: NPM
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 21108
Analytical Workgroups: WG265194, WG265197

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	NPM
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
12-MAR-2008

Secondary Reviewer:
13-MAR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-13-2008 09:38:53

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Data Checklist

Date: 12-MAR-2008
Analyst: FJB
Analyst: NPM
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 21124
Analytical Workgroups: WG265306, WG265307

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	NPM
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
13-MAR-2008

Secondary Reviewer:
13-MAR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-13-2008 15:15:19

RSK-175 - Example Calculation for Methane

ICAL Plot - Linear Regression (y = ax)

1.0 Calculate the Regression Constant (a)

Where:
ICAL_x = the ICAL concentration = x
ICAL_r = the ICAL response (area) = y

ICAL_x	ICAL_r	[ICAL_r}^2	[ICAL-x][ICAL-r]
0.1	21538	463885444	2153.8
1	77578	6018346084	77578
10	665937	4.43472E+11	6659370
20	1376031	1.89346E+12	27520620
50	3424931	1.17302E+13	171246550
100	6927945	4.79964E+13	692794500
200	14533928	2.11235E+14	2906785600
300	21776507	4.74216E+14	6532952100
		7.47521E+14	10338038472
		a:	**72307.84758**

2.0 Calculate the concentration in extract, x:

Where:
y = response of methane from quant report = **37493410**
x = y/a = 37493410/72307 = 518.52

3.0 Calculate the concentration in sample, Cs:

Cs = x (MW/Tf) (HS/S) (DF)

Where:

x = Concentration in extract	**518.5247695**	umol/mol
MW = molecular weight of analyte	**16.04**	ug/umol
TF = temperature factor = (22.45)(313/273)	**25.68**	L/mol
HS = headspace volume	**0.015**	L
S = sample volume remaining after headspace removal	**0.00547**	L
DF = dilution factor	**10**	
Cs = calculated sample concentration	**8881.427692**	ug/L

RSK-175 - Example Calculation for Carbon Dioxide

ICAL Plot - Quadratic Regression (y = Ax^2 + Bx +C)

Ax^2 + Bx + (C - y) = 0

Step 1 - Calculate the concentration in extract, x:

Data from quadratic regression plot:		
Value of A from plot:	**0.916**	
Value of B from plot:	**1540**	
Value of C from plot:	**0**	
Response for carbon dioxide from quantitation report (y):	**8763828**	
Value of C - y	**-8763828**	
Solving for x using the quadratic formula:		
Root 1 - Computed x1:	**2364.716284**	umol/mol
Root 2 - Computed x2:	**-4045.938991**	

Step 2 - Calculate the concentration in sample, Cs:

Cs = x (MW/Tf) (HS/S) (DF)

Where:

x = Concentration in extract :	**2364.716284**	umol/mol
MW = molecular weight of analyte:	**44**	ug/umol
TF = temperature factor = (22.45)(313/273):	**25.68**	L/mol
HS = initial headspace volume (extraction log):	**0.015**	L
S = final volume (extraction log):	**0.00547**	L
DF = dilution factor:	**1**	
Cs = calculated sample concentration:	**11110.6798**	ug/L

Note: Temperature = 40 C = 313 K

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 020808
Analyst1: FJB Analyst2: NPM
Method: RSK175 SOP: RSK01 Rev: 7
Method: 5021 SOP: RSK01 Rev: 7

Maintenance Log ID: 18711

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: STD18652

Column 1 ID: RTQPLOT Column 2 ID: RTQPLOT
Workgroups: WG262719

Comments: NO REANALYSIS REQUIRED. WG262719-09 SSCV WILL BE REPORTED FROM DATA FILE 020908.

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G11463	50umol/mol STD	NA	1	1	STD23589	02/08/08 10:31
2	16G11464	WG262719-01 0.1umol/mol STD	NA	1	1	STD23589	02/08/08 11:31
3	16G11465	WG262719-02 1umol/mol STD	NA	1	1	STD23589	02/08/08 11:52
4	16G11466	WG262719-03 10umol/mol STD	NA	1	1	STD23589	02/08/08 12:36
5	16G11467	WG262719-04 20umol/mol STD	NA	1	1	STD23589	02/08/08 12:57
6	16G11468	WG262719-05 50umol/mol STD	NA	1	1	STD23589	02/08/08 13:18
7	16G11469	WG262719-06 100umol/mol STD	NA	1	1	STD23589	02/08/08 13:39
8	16G11470	WG262719-07 200umol/mol STD	NA	1	1	STD23589	02/08/08 14:00
9	16G11471	WG262719-08 300umol/mol STD	NA	1	1	STD23589	02/08/08 14:22

Approved: February 25, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 020908
Analyst1: FJB Analyst2: NPM
Method: RSK175 SOP: RSK01 Rev: 7
Method: 5021 SOP: RSK01 Rev: 7

Maintenance Log ID: 18711

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: STD18652

Column 1 ID: RTQPLOT Column 2 ID: RTQPLOT
Workgroups: WG262719

Comments: NO REANALYSIS REQUIRED. REPORT WG262719-09 SSCV FOR CURVE RUN ON 2/08/08 (DATA FILE 020808).

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G11472	WG262776-01 50umol/mol STD	NA	1	1	STD23589	02/09/08 12:08
2	16G11473	WG2627 BLANK	NA	1	1		02/09/08 12:30
3	16G11474	WG262719-09 20umol/mol STD ALT SRCE	NA	1	1	STD23589	02/09/08 12:51
4	16G11475	WG262776-02 50umol/mol STD	NA	1	1	STD23589	02/09/08 13:13
5	16G11476	WG262719-09 20umol/mol STD ALT SRCE	NA	1	1	STD23589	02/09/08 13:33
6	16G11477	WG262776-03 50umol/mol STD	NA	1	1	STD23589	02/09/08 14:03

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X			
File ID: 16G11474				
	DNR			

Approved: February 25, 2008

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HP16 Dataset: 031108
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 7
Method: 5021 SOP: RSK01 Rev: 7

Maintenance Log ID: 23256

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: STD18652

Column 1 ID: RTQPLOT Column 2 ID: RTQPLOT
Workgroups: WG265194, WG265197

Comments: REANALYSIS REQUIRED. SEE INDIVIDUAL NOTES

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G11824	WG265192-01 50umol/mol STD	NA	1	1	STD23589	03/11/08 09:50
2	16G11825	WG265194-01 BLANK	NA	1	1		03/11/08 10:35
3	16G11826	WG265194-02 20umol/mol LCS	NA	1	1	STD23589	03/11/08 10:56
4	16G11827	L08030065-16 A	7	1	1		03/11/08 12:17
5	16G11828	L08030065-18 A	7	1	1		03/11/08 12:37
6	16G11829	L08030065-20 A	7	1	1		03/11/08 12:59
7	16G11830	L08030065-06 A	7	1	1		03/11/08 13:19
8	16G11831	L08030140-01 A	7	1	1		03/11/08 13:40
9	16G11832	L08030140-16 A MS	7	1	1	STD23589	03/11/08 14:02
10	16G11833	L08030140-17 A MSD	7	1	1	STD23589	03/11/08 14:23
11	16G11834	L08030140-02 A	7	1	1		03/11/08 14:44
12	16G11835	WG265192-02 50umol/mol STD	NA	1	1	STD23589	03/11/08 15:05
13	16G11836	L08030140-03 A	7	1	1		03/11/08 15:26
14	16G11837	L08030140-04 A	7	1	1		03/11/08 15:48
15	16G11838	L08030140-05 A	7	1	1		03/11/08 16:09
16	16G11839	L08030140-06 A	7	1	1		03/11/08 16:29
17	16G11840	L08030140-07 A	7	1	1		03/11/08 16:50
18	16G11841	L08030140-08 A	7	1	1		03/11/08 17:11
19	16G11842	L08030140-09 A	7	1	1		03/11/08 17:32
20	16G11843	L08030140-10 A	7	1	1		03/11/08 17:53
21	16G11844	L08030140-11 A	7	1	1		03/11/08 18:14
22	16G11845	L08030140-12 A	7	1	1		03/11/08 18:35
23	16G11846	WG265192-03 50umol/mol STD	NA	1	1	STD23589	03/11/08 18:55
24	16G11847	L08030140-13 A	7	1	1		03/11/08 19:17
25	16G11848	L08030140-14 A	7	1	1		03/11/08 19:38
26	16G11849	WG265192-04 50umol/mol STD	NA	1	1	STD23589	03/11/08 20:00
27	16G11850	WG265197-01 BLANK	NA	1	1		03/11/08 20:21
28	16G11851	WG265197-02 20umol/mol LCS	NA	1	1	STD23589	03/11/08 20:42
29	16G11852	WG265197-03 20umol/mol LCS DUP	NA	1	1	STD23589	03/11/08 21:03
30	16G11853	L08030140-18 A	7	1	1		03/11/08 21:24
31	16G11854	L08030114-04 A	7	1	1		03/11/08 21:45
32	16G11855	L08030114-05 A	7	1	1		03/11/08 22:06
33	16G11856	L08030114-06 A	7	1	1		03/11/08 22:27
34	16G11857	WG265192-05 50umol/mol STD	NA	1	1	STD23589	03/11/08 22:49

Approved: March 13, 2008

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HP16 Dataset: 031108
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 7
Method: 5021 SOP: RSK01 Rev: 7

Maintenance Log ID: 23256

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: STD18652

Column 1 ID: RTQPLOT Column 2 ID: RTQPLOT
Workgroups: WG265194, WG265197

Comments: REANALYSIS REQUIRED. SEE INDIVIDUAL NOTES

Comments

Seq.	Rerun	Dil.	Reason	Analytes
8	X	50	Over Calibration Range	methane
File ID: 16G11831				
11	X	50	Over Calibration Range	methane
File ID: 16G11834				
13	X	50	Over Calibration Range	methane
File ID: 16G11836				
14	X	100	Over Calibration Range	methane
File ID: 16G11837				
15	X	100	Over Calibration Range	methane
File ID: 16G11838				
16	X	100	Over Calibration Range	methane
File ID: 16G11839				
17	X	50	Over Calibration Range	methane
File ID: 16G11840				
18	X	20	Over Calibration Range	methane
File ID: 16G11841				
19	X	50	Over Calibration Range	methane
File ID: 16G11842				
20	X	100	Over Calibration Range	methane
File ID: 16G11843				
21	X	100	Over Calibration Range	methane
File ID: 16G11844				
22	X	100	Over Calibration Range	methane
File ID: 16G11845				

Approved: March 13, 2008

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HP16 Dataset: 031108
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 7
Method: 5021 SOP: RSK01 Rev: 7

Maintenance Log ID: 23256

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: STD18652

Column 1 ID: RTQPLOT Column 2 ID: RTQPLOT
Workgroups: WG265194, WG265197

Comments: REANALYSIS REQUIRED. SEE INDIVIDUAL NOTES

Comments

Seq.	Rerun	Dil.	Reason	Analytes
24	X	100	Over Calibration Range	methane
File ID: 16G11847				
25	X	100	Over Calibration Range	methane
File ID: 16G11848				
30	X	100	Over Calibration Range	methane
File ID: 16G11853				
33	X	10	Over Calibration Range	methane
File ID: 16G11856				

Approved: March 13, 2008

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HP16 Dataset: 031208
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 7
Method: 5021 SOP: RSK01 Rev: 7

Maintenance Log ID: 23270

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: STD18652

Column 1 ID: RTQPLOT Column 2 ID: RTQPLOT
Workgroups: WG265306, WG265307

Comments: REANALYSIS REQUIRED FOR WG265306. SEE INDIVIDUAL NOTES.
NO REANALYSIS REQUIRED FOR WG265307.

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
19	16G11858	WG265305-01 50umol/mol STD	NA	1	1	STD23589	03/12/08 09:02
20	16G11859	WG265306-01 BLANK	NA	1	1		03/12/08 09:26
21	16G11860	WG265306-02 20umol/mol LCS	NA	1	1	STD23589	03/12/08 09:47
22	16G11861	WG265306-03 20umol/mol LCS DUP	NA	1	1	STD23589	03/12/08 10:08
23	16G11862	L08030185-01 A 10X	7	1	10		03/12/08 11:32
24	16G11863	L08030185-02 A 10X	7	1	10		03/12/08 11:53
25	16G11864	L08030185-03 A 10X	7	1	10		03/12/08 12:14
26	16G11865	L08030185-04 A 10X	7	1	10		03/12/08 12:36
27	16G11866	L08030185-06 A 10X	7	1	10		03/12/08 12:57
28	16G11867	L08030185-07 A 10X	7	1	10		03/12/08 13:18
29	16G11868	L08030185-08 A 10X	7	1	10		03/12/08 13:39
30	16G11869	WG265305-02 50umol/mol STD	NA	1	1	STD23589	03/12/08 14:00
31	16G11870	L08030185-09 A 10X	7	1	10		03/12/08 14:21
32	16G11871	L08030185-10 A 10X	7	1	10		03/12/08 14:43
33	16G11872	L08030185-11 A 10X	7	1	10		03/12/08 15:04
34	16G11873	L08030185-12 A 10X	7	1	10		03/12/08 15:25
35	16G11874	L08030185-13 A 10X	7	1	10		03/12/08 15:45
36	16G11875	L08030140-01 B 50X	7	1	50		03/12/08 16:06
37	16G11876	L08030140-02 B 50X	7	1	50		03/12/08 16:27
38	16G11877	L08030140-03 B 50X	7	1	50		03/12/08 16:48
39	16G11878	L08030140-04 B 100X	7	1	100		03/12/08 17:09
40	16G11879	L08030140-05 B 100X	7	1	100		03/12/08 17:30
41	16G11880	WG265305-03 50umol/mol STD	NA	1	1	STD23589	03/12/08 17:51
42	16G11881	L08030140-06 B 100X	7	1	100		03/12/08 18:12
43	16G11882	L08030140-07 B 50X	7	1	50		03/12/08 18:33
44	16G11883	L08030140-08 B 20X	7	1	20		03/12/08 18:54
1	16G11884	WG265305-04 50umol/mol STD	NA	1	1	STD23589	03/12/08 19:16
2	16G11885	WG265307-01 BLANK	NA	1	1		03/12/08 19:36
3	16G11886	WG265307-02 20umol/mol LCS	NA	1	1	STD23589	03/12/08 19:57
4	16G11887	WG265307-03 20umol/mol LCS DUP	NA	1	1	STD23589	03/12/08 20:19
5	16G11888	L08030140-09 B 50X	7	1	50		03/12/08 20:40
6	16G11889	L08030140-10 B 100X	7	1	100		03/12/08 21:01

Approved: March 13, 2008

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HP16 Dataset: 031208
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 7
Method: 5021 SOP: RSK01 Rev: 7

Maintenance Log ID: 23270

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: STD18652

Column 1 ID: RTQPLOT Column 2 ID: RTQPLOT
Workgroups: WG265306, WG265307

Comments: REANALYSIS REQUIRED FOR WG265306. SEE INDIVIDUAL NOTES.
NO REANALYSIS REQUIRED FOR WG265307.

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
7	16G11890	L08030140-11 B 100X	7	1	100		03/12/08 21:22
8	16G11891	L08030140-12 B 100X	7	1	100		03/12/08 21:43
9	16G11892	L08030140-13 B 100X	7	1	100		03/12/08 22:05
10	16G11893	L08030140-14 B 100X	7	1	100		03/12/08 22:26
11	16G11894	L08030140-18 B 100X	7	1	100		03/12/08 22:47
12	16G11895	WG265305-05 50umol/mol STD	NA	1	1	STD23589	03/12/08 23:08
13	16G11896	L08030114-06 B 10X	7	1	10		03/12/08 23:30
14	16G11897	L08030189-01 A	7	1	1		03/12/08 23:51
15	16G11898	L08030189-03 A	7	1	1		03/13/08 00:13
16	16G11899	L08030189-05 A	7	1	1		03/13/08 00:34
17	16G11900	L08030189-07 A	7	1	1		03/13/08 00:55
18	16G11901	WG265305-06 50umol/mol STD	NA	1	1	STD23589	03/13/08 01:16

Comments

Seq.	Rerun	Dil.	Reason	Analytes
23	X	50	Over Calibration Range	METHANE AND CO2
File ID: 16G11862				
24	X	10	Check Standard Failure	
File ID: 16G11863				
25	X	100	Over Calibration Range	METHANE AND CO2
File ID: 16G11864				
26	X	100	Over Calibration Range	METHANE AND CO2
File ID: 16G11865				
27	X	200	Over Calibration Range	METHANE AND CO2
File ID: 16G11866				
28	X	100	Over Calibration Range	METHANE AND CO2
File ID: 16G11867				
29	X	100	Over Calibration Range	METHANE AND CO2

Approved: March 13, 2008

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HP16 Dataset: 031208
Analyst1: FJB Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 7
Method: 5021 SOP: RSK01 Rev: 7

Maintenance Log ID: 23270

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: STD18652

Column 1 ID: RTQPLOT Column 2 ID: RTQPLOT
Workgroups: WG265306, WG265307

Comments: REANALYSIS REQUIRED FOR WG265306. SEE INDIVIDUAL NOTES.
NO REANALYSIS REQUIRED FOR WG265307.

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 16G11868				
31	X	200	Over Calibration Range	METHANE AND CO2
File ID: 16G11870				
32	X	100	Over Calibration Range	METHANE AND CO2
File ID: 16G11871				
33	X	100	Over Calibration Range	METHANE AND CO2
File ID: 16G11872				
34	X	100	Over Calibration Range	METHANE AND CO2
File ID: 16G11873				
35	X	100	Over Calibration Range	METHANE AND CO2
File ID: 16G11874				

Approved: March 13, 2008

KEMRON Environmental Services, Inc.

HOLDING TIMES

EQUIVALENT TO AFCEE FORM 9

00115211

Analytical Method: RSK175 AAB#: WG265197

Login Number: L08030114

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW20-030608	03/06/08	03/07/08	03/11/08	14	5.52	03/11/08	14	5.52	
12WW21-030608	03/06/08	03/07/08	03/11/08	14	5.48	03/11/08	14	5.48	
12WW20-030608-FD	03/06/08	03/07/08	03/11/08	14	5.53	03/11/08	14	5.53	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1040272
Report generated 03/14/2008 16:10

KEMRON Environmental Services, Inc.

HOLDING TIMES

EQUIVALENT TO AFCEE FORM 9

00115212

Analytical Method: RSK175 AAB#: WG265307

Login Number: L08030114

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW21-030608	03/06/08	03/07/08	03/12/08	14	6.53	03/12/08	14	6.53	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008

PDF File ID: 1040272

Report generated 03/14/2008 16:10

METHOD BLANK SUMMARY

Login Number: L08030114
Work Group: WG265197
Blank File ID: 16G11850
Blank Sample ID: WG265197-01
Prep Date: 03/11/08 20:21
Instrument ID: HP16
Analyzed Date: 03/11/08 20:21
Method: RSK175
Analyst: FJB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG265197-02	16G11851	03/11/08 20:42	01
LCS2	WG265197-03	16G11852	03/11/08 21:03	01
12WW20-030608	L08030114-04	16G11854	03/11/08 21:45	01
12WW20-030608-FD	L08030114-05	16G11855	03/11/08 22:06	01
12WW21-030608	L08030114-06	16G11856	03/11/08 22:27	01

Report Name: BLANK_SUMMARY
PDF File ID: 1038568
Report generated 03/14/2008 16:10

METHOD BLANK SUMMARY

Login Number: L08030114
Work Group: WG265307
Blank File ID: 16G11885
Blank Sample ID: WG265307-01
Prep Date: 03/12/08 19:36
Instrument ID: HP16
Analyzed Date: 03/12/08 19:36
Method: RSK175
Analyst: FJB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG265307-02	16G11886	03/12/08 19:57	01
LCS2	WG265307-03	16G11887	03/12/08 20:19	01
12WW21-030608	L08030114-06	16G11896	03/12/08 23:30	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1038568
Report generated 03/14/2008 16:10

METHOD BLANK REPORT

Login Number:L08030114 Prep Date:03/11/08 20:21 Sample ID:WG265197-01
Instrument ID:HP16 Run Date:03/11/08 20:21 Prep Method:5021
File ID:16G11850 Analyst:FJB Method:RSK175
Workgroup (AAB#):WG265197 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HP16-08-FEB-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
methane	0.250	0.500	0.250	1	U
ethene	0.250	0.500	0.250	1	U
ethane	0.250	0.500	0.250	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

Report Name:BLANK
PDF ID: 1038569
14-MAR-2008 16:10

KEMRON Environmental Services, Inc.

METHOD BLANK REPORT

00115216

Login Number:L08030114 Prep Date:03/12/08 19:36 Sample ID:WG265307-01
Instrument ID:HP16 Run Date:03/12/08 19:36 Prep Method:5021
File ID:16G11885 Analyst:FJB Method:RSK175
Workgroup (AAB#):WG265307 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HP16-08-FEB-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
methane	0.250	0.500	0.250	1	U
ethene	0.250	0.500	0.250	1	U
ethane	0.250	0.500	0.250	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

Report Name:BLANK
PDF ID: 1038569
14-MAR-2008 16:10

KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030114 Analyst:FJB Prep Method:5021
Instrument ID:HP16 Matrix:Water Method:RSK175
Workgroup (AAB#):WG265307 Units:ug/L
QC Key:STD Lot #:STD23589

Sample ID:WG265307-02 LCS File ID:16G11886 Run Date:03/12/2008 19:57
Sample ID:WG265307-03 LCS2 File ID:16G11887 Run Date:03/12/2008 20:19

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
methane	34.3	31.6	92.2	34.3	28.5	83.2	10.2	56 - 140	40	
ethene	59.9	59.7	99.7	59.9	54.9	91.6	8.43	56 - 140	40	
ethane	64.2	62.2	96.9	64.2	56.9	88.6	8.92	56 - 137	40	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1038567
Report generated: 03/14/2008 16:10

Login Number:L08030114 Analyst:FJB Prep Method:5021
Instrument ID:HP16 Matrix:Water Method:RSK175
Workgroup (AAB#):WG265197 Units:ug/L
QC Key:STD Lot #:STD23589

Sample ID:WG265197-02 LCS File ID:16G11851 Run Date:03/11/2008 20:42
Sample ID:WG265197-03 LCS2 File ID:16G11852 Run Date:03/11/2008 21:03

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
methane	34.3	27.4	80.0	34.3	27.3	79.7	0.328	56 - 140	40	
ethene	59.9	53.1	88.6	59.9	52.6	87.8	0.922	56 - 140	40	
ethane	64.2	54.6	85.1	64.2	53.9	83.9	1.43	56 - 137	40	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1038567
Report generated: 03/14/2008 16:10

INITIAL CALIBRATION SUMMARY

00115219

Login Number:L08030114
Instrument ID:HP16
Analytical Method:RSK175
Initial Calibration Date:08-FEB-08 14:22
ICAL Workgroup:WG262719
Column ID:F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
ethane		48060	14.4		
ethene		44450	13.6		
methane		29580	27.6		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 1040273
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

00115220

Login Number:L08030114
Analytical Method:RSK175

Instrument ID:HP16
Initial Calibration Date:08-FEB-08 14:22
Column ID:F

Analyte	WG262719-01			WG262719-02			WG262719-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
ethane	0.100	3749.00000	37490	1.00	59307.0000	59310	10.0	454918.000	45490
ethene	0.100	3445.00000	34450	1.00	52620.0000	52620	10.0	428814.000	42880
methane	0.100	4809.00000	48090	1.00	33134.0000	33130	10.0	246067.000	24610

INT_CAL - Modified 03/06/2008
PDF File ID: 1040273
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

Login Number: L08030114
Instrument ID: HP16
Analytical Method: RSK175
Initial Calibration Date: 08-FEB-08 14:22
Column ID: F

Analyte	WG262719-04			WG262719-05			WG262719-06		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
ethane	20.0	820110.000	41010	50.0	2359132.00	47180	100	4942823.00	49430
ethene	20.0	752665.000	37630	50.0	2204223.00	44080	100	4676849.00	46770
methane	20.0	442942.000	22150	50.0	1271453.00	25430	100	2669261.00	26690

INT_CAL - Modified 03/06/2008
PDF File ID: 1040273
Report generated 03/14/2008 16:10

INITIAL CALIBRATION DATA

00115222

Login Number: L08030114
Instrument ID: HP16
Analytical Method: RSK175
Initial Calibration Date: 08-FEB-08 14:22
Column ID: F

Analyte	WG262719-07			WG262719-08		
	CONC	RESP	RF	CONC	RESP	RF
ethane	200	10668095.0	53340	300	15362942.0	51210
ethene	200	9914033.00	49570	300	14274959.0	47580
methane	200	5784964.00	28920	300	8291692.00	27640

INT_CAL - Modified 03/06/2008
PDF File ID: 1040273
Report generated 03/14/2008 16:10

Login Number:L08030114 Run Date:02/09/2008 Sample ID:WG262719-09
Instrument ID:HP16 Run Time:13:33 Method:RSK175
File ID:16G11476 Analyst:FJB QC Key:STD
ICal Workgroup:WG262719 Cal ID: HP16 - 08-FEB-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
methane		34.3	32.6	ug/L	26500	4.80	30	
ethene		59.9	62.4	ug/L	46300	4.20	30	
ethane		64.2	65.9	ug/L	49300	2.60	30	

* Exceeds %D Limit

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1040274
Report generated 03/14/2008 16:10

KEMRON Environmental Services, Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115224

Login Number:L08030114 Run Date:03/11/2008 Sample ID:WG265192-04

Instrument ID:HP16 Run Time:20:00 Method:RSK175

File ID:16G11849 Analyst:FJB QC Key:STD

Workgroup (AAB#):WG265197 Cal ID: HP16 - 08-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	75.2	ug/L	24500	12.2	25	
ethene		150	147	ug/L	43600	2.01	25	
ethane		160	151	ug/L	45200	6.00	25	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1040275

Report generated 03/14/2008 16:10

KEMRON Environmental Services, Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115225

Login Number: L08030114 Run Date: 03/11/2008 Sample ID: WG265192-05

Instrument ID: HP16 Run Time: 22:49 Method: RSK175

File ID: 16G11857 Analyst: FJB QC Key: STD

Workgroup (AAB#): WG265197 Cal ID: HP16 - 08-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	77.3	ug/L	25200	9.75	25	
ethene		150	151	ug/L	44700	0.598	25	
ethane		160	156	ug/L	46600	3.03	25	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1040275

Report generated 03/14/2008 16:10

Login Number:L08030114 Run Date:03/12/2008 Sample ID:WG265305-04
Instrument ID:HP16 Run Time:19:16 Method:RSK175
File ID:16G11884 Analyst:FJB QC Key:STD
Workgroup (AAB#):WG265307 Cal ID: HP16 - 08-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	78.3	ug/L	25500	8.62	25	
ethene		150	153	ug/L	45300	1.98	25	
ethane		160	157	ug/L	46900	2.39	25	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 1040275
Report generated 03/14/2008 16:10

KEMRON Environmental Services, Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115227

Login Number:L08030114 Run Date:03/12/2008 Sample ID:WG265305-05

Instrument ID:HP16 Run Time:23:08 Method:RSK175

File ID:16G11895 Analyst:FJB QC Key:STD

Workgroup (AAB#):WG265307 Cal ID: HP16 - 08-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	89.8	ug/L	29200	4.86	25	
ethene		150	166	ug/L	49300	10.9	25	
ethane		160	176	ug/L	52600	9.54	25	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1040275

Report generated 03/14/2008 16:10

Login Number:L08030114 Run Date:03/13/2008 Sample ID:WG265305-06
Instrument ID:HP16 Run Time:01:16 Method:RSK175
File ID:16G11901 Analyst:FJB QC Key:STD
Workgroup (AAB#):WG265307 Cal ID: HP16 - 08-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	71.8	ug/L	23400	16.2	25	
ethene		150	136	ug/L	40500	8.93	25	
ethane		160	140	ug/L	41800	13.1	25	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 1040275
Report generated 03/14/2008 16:10

2.2 General Chemistry Data

2.2.1 Method 9056

2.2.1.1 Summary Data

LABORATORY REPORT

00115232

L08030114

03/18/08 15:17

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW20-030608	L08030114-04	300.0	2	07-MAR-08
12WW20-030608	L08030114-04	300.0	30	07-MAR-08
12WW20-030608-FD	L08030114-05	300.0	2	07-MAR-08
12WW20-030608-FD	L08030114-05	300.0	30	07-MAR-08
12WW21-030608	L08030114-06	300.0	5	07-MAR-08
12WW21-030608	L08030114-06	300.0	150	07-MAR-08

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115233

Sample Number: **L08030114-04**
Client ID: **12WW20-030608**
Matrix: **Water**
Workgroup Number: **WG265052**
Collect Date: **03/06/2008 09:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **2**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **03/07/2008 14:09**
Cal Date: **03/07/2008 11:35**
Run Date: **03/07/2008 14:09**
File ID: **I20307081409.05**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	196	I	0.400	0.200
Nitrate	14797-55-8		U	1.20	0.200
Nitrite	14797-65-0		U	0.800	0.200
Sulfate	14808-79-8	133	I	2.00	1.00

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115234

Sample Number: **L08030114-04**
Client ID: **12WW20-030608**
Matrix: **Water**
Workgroup Number: **WG265052**
Collect Date: **03/06/2008 09:20**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **30**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **03/07/2008 17:20**
Cal Date: **03/07/2008 11:35**
Run Date: **03/07/2008 17:20**
File ID: **I20307081720.16**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	241		6.00	3.00
Sulfate	14808-79-8	137		30.0	15.0

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115235

Sample Number: **L08030114-05**
Client ID: **12WW20-030608-FD**
Matrix: **Water**
Workgroup Number: **WG265052**
Collect Date: **03/06/2008 09:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **2**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **03/07/2008 14:26**
Cal Date: **03/07/2008 11:35**
Run Date: **03/07/2008 14:26**
File ID: **I20307081426.06**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	198	I	0.400	0.200
Nitrate	14797-55-8		U	1.20	0.200
Nitrite	14797-65-0		U	0.800	0.200
Sulfate	14808-79-8	133	I	2.00	1.00

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115236

Sample Number: **L08030114-05**
Client ID: **12WW20-030608-FD**
Matrix: **Water**
Workgroup Number: **WG265052**
Collect Date: **03/06/2008 09:20**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **30**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **03/07/2008 17:37**
Cal Date: **03/07/2008 11:35**
Run Date: **03/07/2008 17:37**
File ID: **I203070817 37.17**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	244		6.00	3.00
Sulfate	14808-79-8	139		30.0	15.0

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115237

Sample Number: **L08030114-06**
Client ID: **12WW21-030608**
Matrix: **Water**
Workgroup Number: **WG265052**
Collect Date: **03/06/2008 10:50**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **5**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **03/07/2008 14:43**
Cal Date: **03/07/2008 11:35**
Run Date: **03/07/2008 14:43**
File ID: **I20307081443.07**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	972	I	1.00	0.500
Nitrate	14797-55-8		U	3.00	0.500
Nitrite	14797-65-0		U	2.00	0.500
Sulfate	14808-79-8	391	I	5.00	2.50

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115238

Sample Number: **L08030114-06**
Client ID: **12WW21-030608**
Matrix: **Water**
Workgroup Number: **WG265052**
Collect Date: **03/06/2008 10:50**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **DSF**
Dilution: **150**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **03/07/2008 17:55**
Cal Date: **03/07/2008 11:35**
Run Date: **03/07/2008 17:55**
File ID: **I203070817 55.18**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	1540		30.0	15.0
Sulfate	14808-79-8	419		150	75.0

2.2.1.2 QC Summary Data

The concentrations (ppm) of the calibration standards and the resulting area counts are used to determine the equation of a linear or quadratic plot.
The slope and y-intercept of that line are used to calculate the quantity of the analyzed unkown samples.
Amount(ppm) = [(slope)(area count of unknown) + y-intercept](dilution)
(The slope is the amt/area also identified as the CF or calibration factor)

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: IC2 Dataset: 030708 CURVE IC2.SEQ
Analyst1: DSF Analyst2: NA
Method: 9056/300 SOP: IC1 Rev: 7

Maintenance Log ID: 23208

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG265021

Internal STD: NA Surrogate STD: NA Calibration STD STD24336

Comments: This is a Method 300/9056 Calibration Curve.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I20307081008.01	WG265021-01 STD \#1	1	1		03/07/08 10:08
2	I20307081025.02	WG265021-02 STD \#2	1	1		03/07/08 10:25
3	I20307081042.03	WG265021-03 STD \#3	1	1		03/07/08 10:42
4	I20307081100.04	WG265021-04 STD \#4	1	1		03/07/08 11:00
5	I20307081117.05	WG265021-05 STD \#5	1	1		03/07/08 11:17
6	I20307081135.06	WG265021-06 STD \#6	1	1		03/07/08 11:35
7	I20307081152.07	WG265021-07 ALT STD	1	1		03/07/08 11:52
8	I20307081210.08	ELUENT	1	1		03/07/08 12:10
9	I20307081227.09	DI WATER	1	1		03/07/08 12:27

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Page: 1 Approved: 10-MAR-08

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: IC2 Dataset: 030708 IC2.SEQ

Analyst1: DSF Analyst2: NA

Method: 9056/300 SOP: IC1 Rev: 7

Maintenance Log ID: 23227

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG265052

Internal STD: NA Surrogate STD: NA Calibration STD STD24336

Comments: Samples L08030114-04, -05 and -06 were analyzed at a dilution only due top very high pre-run screen results for chloride.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I20307081259.01	WG265054-01 ANION CCV	1	1		03/07/08 12:59
2	I20307081316.02	WG265054-02 ANION CCB	1	1		03/07/08 13:16
3	I20307081334.03	WG265052-01 ANION BLANK	1	1		03/07/08 13:34
4	I20307081351.04	WG265052-02 ANION LCS	1	1		03/07/08 13:51
5	I20307081409.05	L08030114-04 (Cl, NO2, NO3, SO4) 1/2	1	2		03/07/08 14:09
6	I20307081426.06	L08030114-05 (Cl, NO2, NO3, SO4) 1/2	1	2		03/07/08 14:26
7	I20307081443.07	L08030114-06 (Cl, NO2, NO3, SO4) 1/5	1	5		03/07/08 14:43
8	I20307081501.08	L08030116-01 (F,Cl,NO3,Br,NO3,SO4) REF	1	1		03/07/08 15:01
9	I20307081518.09	WG265052-04 DUP 116-01	1	1		03/07/08 15:18
10	I20307081536.10	WG265052-05 MS 116-01	1	1		03/07/08 15:36
11	I20307081553.11	WG265052-06 MSD 116-01	1	1		03/07/08 15:53
12	I20307081610.12	L08030116-02 (F,Cl,NO3,Br,NO3,SO4)	1	1		03/07/08 16:10
13	I20307081628.13	WG265054-03 ANION CCV	1	1		03/07/08 16:28
14	I20307081645.14	WG265054-04 ANION CCB	1	1		03/07/08 16:45
15	I20307081703.15	L08030116-03 (F,Cl,NO3,Br,NO3,SO4)	1	1		03/07/08 17:03
16	I20307081720.16	L08030114-04 RR Cl, SO4 1/30	1	30		03/07/08 17:20
17	I20307081737.17	L08030114-05 RR Cl, SO4 1/30	1	30		03/07/08 17:37
18	I20307081755.18	L08030114-06 RR Cl, SO4 1/150	1	150		03/07/08 17:55
19	I20307081812.19	L08030116-01 RR Cl, NO3 1/3	1	3		03/07/08 18:12
20	I20307081830.20	L08030116-02 RR Cl, NO3 1/4	1	4		03/07/08 18:30
21	I20307081847.21	L08030116-03 RR Cl, NO3 1/3	1	3		03/07/08 18:47
22	I20307081905.22	WG265054-05 ANION CCV	1	1		03/07/08 19:05
23	I20307081922.23	WG265054-06 ANION CCB	1	1		03/07/08 19:22

Comments

Seq.	Rerun	Dil.	Reason	Analytes
5	X	30	Over Calibration Range	Chloride, Sulfate
6	X	30	Over Calibration Range	Chloride, Sulfate
7	X	150	Over Calibration Range	Chloride, Sulfate
8	X	3	Over Calibration Range	Chloride, Nitrate
10				

Page: 1 Approved: 11-MAR-08

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: IC2 Dataset: 030708 IC2.SEQ

Analyst1: DSF Analyst2: NA

Method: 9056/300 SOP: IC1 Rev: 7

Maintenance Log ID: 23227

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG265052

Internal STD: NA Surrogate STD: NA STD24336

Comments

Seq.	Rerun	Dil.	Reason	Analytes
	The %Recoveries for chloride and nitrate were below their advisory limit. The %RPD was well within their advisoryl limit.			
12	X	4	Elevated Analyte	Chloride, Nitrate
15	X	3	Elevated Analyte	Chloride, Nitrate

 Approved: 11-MAR-08

KEMRON Environmental Services, Inc.

Data Checklist

Date: 07-MAR-2008
Analyst: DSF
Analyst: NA
Method: 300/9056
Instrument: IC2
Curve Workgroup: NA
Runlog ID: 21053
Analytical Workgroups: THIS IS A METHOD 300/9056 CALIBRATION CURVE

ANALYTICAL	
System Performance Check	
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	X
Window standard (FID)	NA
Initial Calibration	
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	
% D/% Drift	NA
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	NA
TCL hits	NA
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	
Recoveries	NA
Surrogate recoveries	NA
MS/MSD/Sample duplicates	
Recoveries	NA
%RPD	NA
Samples	
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	DSF
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
07-MAR-2008
Debra S. Frederick

Secondary Reviewer:
10-MAR-2008
Michael Cohen

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-10-2008 08:34:47

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Data Checklist

Date: 07-MAR-2008
Analyst: DSF
Analyst: NA
Method: 300/9056
Instrument: IC2
Curve Workgroup: NA
Runlog ID: 21078
Analytical Workgroups: L08030114, L08030116

ANALYTICAL	
System Performance Check	
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	X
Window standard (FID)	NA
Initial Calibration	
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	
% D/% Drift	X
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	X
Special standards	NA
Blanks	X
TCL hits	NA
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	
Recoveries	X
%RPD	X
Samples	
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	X
Check for completeness	X
Primary Reviewer	DSF
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
11-MAR-2008
Debra S. Frederick

Secondary Reviewer:
11-MAR-2008
Michael Cohen

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-11-2008 13:27:53

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

HOLDING TIMES

EQUIVALENT TO AFCEE FORM 9

00115246

Analytical Method: 300.0 AAB#: WG265052

Login Number: L08030114

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW21-030608	03/06/08	03/07/08	03/07/08	28	1.30	03/07/08	28	1.30	
12WW20-030608	03/06/08	03/07/08	03/07/08	28	1.20	03/07/08	28	1.20	
12WW20-030608-FD	03/06/08	03/07/08	03/07/08	28	1.21	03/07/08	28	1.21	
12WW21-030608	03/06/08	03/07/08	03/07/08	28	1.16	03/07/08	28	1.16	
12WW20-030608	03/06/08	03/07/08	03/07/08	28	1.33	03/07/08	28	1.33	
12WW20-030608-FD	03/06/08	03/07/08	03/07/08	28	1.35	03/07/08	28	1.35	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008

PDF File ID: 1037024

Report generated 03/18/2008 12:40

METHOD BLANK SUMMARY

Login Number: L08030114
Work Group: WG265052
Blank File ID: I20307081334.03
Blank Sample ID: WG265052-01
Prep Date: 03/07/08 13:34
Instrument ID: IC2
Analyzed Date: 03/07/08 13:34
Method: 300.0
Analyst: DSF

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG265052-02	I20307081351.04	03/07/08 13:51	01
12WW20-030608	L08030114-04	I20307081409.05	03/07/08 14:09	DL01
12WW20-030608-FD	L08030114-05	I20307081426.06	03/07/08 14:26	DL01
12WW21-030608	L08030114-06	I20307081443.07	03/07/08 14:43	DL01
DUP	WG265052-04	I20307081518.09	03/07/08 15:18	01
12WW20-030608	L08030114-04	I20307081720.16	03/07/08 17:20	DL02
12WW20-030608-FD	L08030114-05	I20307081737.17	03/07/08 17:37	DL02
12WW21-030608	L08030114-06	I20307081755.18	03/07/08 17:55	DL02

Report Name: BLANK_SUMMARY
PDF File ID: 1037025
Report generated 03/18/2008 12:40

METHOD BLANK REPORT

Login Number:L08030114 Prep Date:03/07/08 13:34 Sample ID:WG265052-01
Instrument ID:IC2 Run Date:03/07/08 13:34 Prep Method:300.0
File ID:I20307081334.03 Analyst:DSF Method:300.0
Workgroup (AAB#):WG265052 Matrix:Water Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID:IC2-07-MAR-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0.100	1	U
Nitrate	0.100	0.600	0.100	1	U
Nitrite	0.100	0.400	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

Report Name:BLANK
PDF ID: 1037026
18-MAR-2008 12:40

Login Number: L08030114 Run Date: 03/07/2008 Sample ID: WG265052-02
Instrument ID: IC2 Run Time: 13:51 Prep Method: 300.0
File ID: I20307081351.04 Analyst: DSF Method: 300.0
Workgroup (AAB#): WG265052 Matrix: Water Units: mg/L
QC Key: STD Lot#: STD24336 Cal ID: IC2-07-MAR-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Chloride	6.00	6.11	102	90 - 110	
Nitrate	4.07	4.16	102	90 - 110	
Nitrite	3.65	3.70	101	90 - 110	
Sulfate	30.0	30.4	101	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 1037027
Report generated: 03/18/2008 12:40

INITIAL CALIBRATION SUMMARY

Login Number: L08030114 **Instrument ID:** IC2
Analytical Method: 300.0 **Initial Calibration Date:** 07-MAR-08 11:35
ICAL Workgroup: WG265021 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Chloride		9.774	7.53		
Nitrate		4.195	9.53		
Nitrite		4.568	7.95		
Sulfate		12.37	7.17		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum
This method always uses quadratic calibration model (R^2)

INT_CAL - Modified 03/06/2008
PDF File ID: 1038136
Report generated 03/18/2008 12:40

KEMRON Environmental Services, Inc.

INITIAL CALIBRATION DATA

00115251

Login Number: L08030114

Instrument ID: IC2

Analytical Method: 300.0

Initial Calibration Date: 07-MAR-08 11:35

Column ID: F

Analyte	WG265021-01			WG265021-02			WG265021-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloride	0.200	0.0180000000	11.11	2.00	0.195000000	10.26	4.00	0.417000000	9.592
Nitrate	0.136	0.0270000000	5.019	1.36	0.313000000	4.330	2.71	0.658000000	4.120
Nitrite	0.122	0.0230000000	5.296	1.22	0.262000000	4.648	2.44	0.536000000	4.544
Sulfate	1.00	0.0720000000	13.89	10.0	0.777000000	12.87	20.0	1.61000000	12.42

INT_CAL - Modified 03/06/2008
PDF File ID: 1038136
Report generated 03/18/2008 12:40

INITIAL CALIBRATION DATA

Login Number: L08030114
Analytical Method: 300.0
Instrument ID: IC2
Initial Calibration Date: 07-MAR-08 11:35
Column ID: F

Analyte	WG265021-04			WG265021-05			WG265021-06		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloride	6.00	0.640000000	9.375	8.00	0.859000000	9.313	12.0	1.33400000	8.996
Nitrate	4.07	1.03000000	3.948	5.42	1.37100000	3.954	8.13	2.13900000	3.802
Nitrite	3.65	0.824000000	4.434	4.87	1.13400000	4.296	7.31	1.74300000	4.192
Sulfate	30.0	2.51000000	11.95	40.0	3.39100000	11.80	60.0	5.30900000	11.30

INT_CAL - Modified 03/06/2008
PDF File ID: 1038136
Report generated 03/18/2008 12:40

KEMRON Environmental Services, Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number:L08030114 Run Date:03/07/2008 Sample ID:WG265021-07
Instrument ID:IC2 Run Time:11:52 Method:300.0
File ID:I20307081152.07 Analyst:DSF QC Key:STD
ICal Workgroup:WG265021 Cal ID: IC2 - 07-MAR-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloride		6.00	6.15	mg/L	9.20	2.40	10	
Nitrate		4.07	4.17	mg/L	3.91	2.40	10	
Nitrite		3.65	3.74	mg/L	4.31	2.20	10	
Sulfate		30.0	30.5	mg/L	11.8	1.60	10	

* Exceeds %D Limit

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1038137
Report generated 03/18/2008 12:40

KEMRON Environmental Services, Inc.

CONTINUING CALIBRATION BLANK (CCB)

00115254

Login Number:L08030114 Run Date:03/07/2008 Sample ID:WG265054-02

Instrument ID:IC2 Run Time:13:16 Method:300.0

File ID:I20307081316.02 Analyst:DSF Units:mg/L

Workgroup (AAB#):WG265052 Cal ID: IC2 -

Matrix:WATER

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

CCB - Modified 03/05/2008
PDF File ID: 1037029
Report generated 03/18/2008 12:40

KEMRON Environmental Services, Inc.

CONTINUING CALIBRATION BLANK (CCB)

00115255

Login Number:L08030114 Run Date:03/07/2008 Sample ID:WG265054-04

Instrument ID:IC2 Run Time:16:45 Method:300.0

File ID:I20307081645.14 Analyst:DSF Units:mg/L

Workgroup (AAB#):WG265052 Cal ID: IC2 -

Matrix:WATER

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

CCB - Modified 03/05/2008
PDF File ID: 1037029
Report generated 03/18/2008 12:40

KEMRON Environmental Services, Inc.

CONTINUING CALIBRATION BLANK (CCB)

00115256

Login Number:L08030114 Run Date:03/07/2008 Sample ID:WG265054-06

Instrument ID:IC2 Run Time:19:22 Method:300.0

File ID:I20307081922.23 Analyst:DSF Units:mg/L

Workgroup (AAB#):WG265052 Cal ID: IC2 -

Matrix:WATER

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL
F = Result is between MDL and RL
* = Result is above RL

CCB - Modified 03/05/2008
PDF File ID: 1037029
Report generated 03/18/2008 12:40

Login Number:L08030114 Run Date:03/07/2008 Sample ID:WG265054-01
Instrument ID:IC2 Run Time:12:59 Method:300.0
File ID:I20307081259.01 Analyst:DSF QC Key:STD
Workgroup (AAB#):WG265052 Cal ID: IC2 - 07-MAR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	6.10	mg/L	9.27	1.73	10	
Nitrate		4.07	4.15	mg/L	3.92	2.09	10	
Nitrite		3.65	3.69	mg/L	4.36	1.11	10	
Sulfate		30.0	30.4	mg/L	11.9	1.24	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 1037028
Report generated 03/18/2008 12:40

KEMRON Environmental Services, Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115258

Login Number:L08030114 Run Date:03/07/2008 Sample ID:WG265054-03

Instrument ID:IC2 Run Time:16:28 Method:300.0

File ID:I20307081628.13 Analyst:DSF QC Key:STD

Workgroup (AAB#):WG265052 Cal ID: IC2 - 07-MAR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	6.18	mg/L	9.16	2.92	10	
Nitrate		4.07	4.20	mg/L	3.87	3.34	10	
Nitrite		3.65	3.72	mg/L	4.33	1.82	10	
Sulfate		30.0	31.0	mg/L	11.6	3.35	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1037028

Report generated 03/18/2008 12:40

KEMRON Environmental Services, Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115259

Login Number:L08030114 Run Date:03/07/2008 Sample ID:WG265054-05

Instrument ID:IC2 Run Time:19:05 Method:300.0

File ID:I20307081905.22 Analyst:DSF QC Key:STD

Workgroup (AAB#):WG265052 Cal ID: IC2 - 07-MAR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	6.25	mg/L	9.05	4.13	10	
Nitrate		4.07	4.23	mg/L	3.84	4.08	10	
Nitrite		3.65	3.75	mg/L	4.29	2.75	10	
Sulfate		30.0	31.3	mg/L	11.5	4.31	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1037028

Report generated 03/18/2008 12:40

2.2.2 Total Organic Carbon Data

2.2.2.1 Summary Data

LABORATORY REPORT

00115262

L08030114

03/18/08 15:17

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW20-030608	L08030114-04	415.1	1	07-MAR-08
12WW20-030608	L08030114-04	415.1	1	07-MAR-08
12WW20-030608-FD	L08030114-05	415.1	1	07-MAR-08
12WW20-030608-FD	L08030114-05	415.1	1	07-MAR-08
12WW21-030608	L08030114-06	415.1	1	07-MAR-08
12WW21-030608	L08030114-06	415.1	1	07-MAR-08

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115263

Sample Number: **L08030114-04**
Client ID: **12WW20-030608**
Matrix: **Water**
Workgroup Number: **WG265132**
Collect Date: **03/06/2008 09:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **JBK**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **03/10/2008 16:45**
Cal Date: **02/29/2008 10:31**
Run Date: **03/10/2008 16:45**
File ID: **TC3-10-2008..19**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Organic Carbon		2.78		1.00	0.500

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115264

Sample Number: **L08030114-04**
Client ID: **12WW20-030608**
Matrix: **Water**
Workgroup Number: **WG265132**
Collect Date: **03/06/2008 09:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **JBK**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **03/10/2008 16:45**
Cal Date: **02/29/2008 10:31**
Run Date: **03/10/2008 16:45**
File ID: **TC3-10-2008..19**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Inorganic Carbon		15.9		1.00	0.500

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115265

Sample Number: **L08030114-05**
Client ID: **12WW20-030608-FD**
Matrix: **Water**
Workgroup Number: **WG265132**
Collect Date: **03/06/2008 09:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **JBK**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **03/10/2008 16:57**
Cal Date: **02/29/2008 10:31**
Run Date: **03/10/2008 16:57**
File ID: **TC3-10-2008..20**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Inorganic Carbon		14.6		1.00	0.500

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115266

Sample Number: **L08030114-05**
Client ID: **12WW20-030608-FD**
Matrix: **Water**
Workgroup Number: **WG265132**
Collect Date: **03/06/2008 09:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **JBK**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **03/10/2008 16:57**
Cal Date: **02/29/2008 10:31**
Run Date: **03/10/2008 16:57**
File ID: **TC3-10-2008..20**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Organic Carbon		2.89		1.00	0.500

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115267

Sample Number: **L08030114-06**
Client ID: **12WW21-030608**
Matrix: **Water**
Workgroup Number: **WG265132**
Collect Date: **03/06/2008 10:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **JBK**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **03/10/2008 17:10**
Cal Date: **02/29/2008 10:31**
Run Date: **03/10/2008 17:10**
File ID: **TC3-10-2008..21**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Organic Carbon		2.37		1.00	0.500

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030114**
Report Date : **March 18, 2008**

00115268

Sample Number: **L08030114-06**
Client ID: **12WW21-030608**
Matrix: **Water**
Workgroup Number: **WG265132**
Collect Date: **03/06/2008 10:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **JBK**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **03/10/2008 17:10**
Cal Date: **02/29/2008 10:31**
Run Date: **03/10/2008 17:10**
File ID: **TC3-10-2008..21**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Inorganic Carbon		27.8		1.00	0.500

2.2.2.2 QC Summary Data

Total Organic Carbon Example Calculations
(Direct Readout Parameter)

(Readout)/(dilution) = mg/L

where:

Readout = direct readout from the instrument
dilution = dilution in decimal form (ex. 1/5 dilution = 0.2)

KEMRON Environmental Services, Inc.

Data Checklist

Date: 10-MAR-2008
Analyst: JBK
Analyst: NA
Method: TOC
Instrument: TOC
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG265134 WG265132

Calibration/Linearity	2/29/2008
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JBK
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
11-MAR-2008

Secondary Reviewer:
12-MAR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-12-2008 14:11:34

KEMRON Environmental Services, Inc.

HOLDING TIMES

EQUIVALENT TO AFCEE FORM 9

00115272

Analytical Method:415.1 AAB#:WG265132

Login Number:L08030114

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW21-030608	03/06/08	03/07/08	03/10/08	28	4.26	03/10/08	28	4.26	
12WW20-030608	03/06/08	03/07/08	03/10/08	28	4.31	03/10/08	28	4.31	
12WW20-030608-FD	03/06/08	03/07/08	03/10/08	28	4.32	03/10/08	28	4.32	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1038362
Report generated 03/12/2008 11:31

METHOD BLANK SUMMARY

Login Number: L08030114
Work Group: WG265132
Blank File ID: TC3-10-2008..04
Blank Sample ID: WG265132-01
Prep Date: 03/10/08 13:47
Instrument ID: TOC-VWP
Analyzed Date: 03/10/08 13:47
Method: 415.1
Analyst: JBK

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG265132-02	TC3-10-2008..05	03/10/08 13:59	01
LCS2	WG265132-03	TC3-10-2008..06	03/10/08 14:10	01
12WW20-030608	L08030114-04	TC3-10-2008..19	03/10/08 16:45	01
12WW20-030608	L08030114-04	TC3-10-2008..19	03/10/08 16:45	01
12WW20-030608-FD	L08030114-05	TC3-10-2008..20	03/10/08 16:57	01
12WW20-030608-FD	L08030114-05	TC3-10-2008..20	03/10/08 16:57	01
12WW21-030608	L08030114-06	TC3-10-2008..21	03/10/08 17:10	01
12WW21-030608	L08030114-06	TC3-10-2008..21	03/10/08 17:10	01
DUP	WG265132-05	TC3-10-2008..31	03/10/08 19:14	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1038363
Report generated 03/12/2008 11:31

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

METHOD BLANK REPORT

00115274

Login Number:L08030114 Prep Date:03/10/08 13:47 Sample ID:WG265132-01
Instrument ID:TOC-VWP Run Date:03/10/08 13:47 Prep Method:415.1
File ID:TC3-10-2008..04 Analyst:JBK Method:415.1
Workgroup (AAB#):WG265132 Matrix:Water Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID:TOC-VW-29-FEB-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

Report Name:BLANK
PDF ID: 1038364
12-MAR-2008 11:31

KEMRON Environmental Services, Inc.
LABORATORY CONTROL SAMPLE (LCS)

00115275

Login Number:L08030114 Analyst:JBK Prep Method:415.1
Instrument ID:TOC-VWP Matrix:Water Method:415.1
Workgroup (AAB#):WG265132 Units:mg/L
QC Key:STD Lot #:STD23654
Sample ID:WG265132-02 LCS File ID:TC3-10-2008..05 Run Date:03/10/2008 13:59
Sample ID:WG265132-03 LCS2 File ID:TC3-10-2008..06 Run Date:03/10/2008 14:10

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	24.6	98.4	25.0	25.0	100	1.73	85 - 115	15	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1038365
Report generated: 03/12/2008 11:31

2.2.2.3 Raw Data

KEMRON ENVIRONMENTAL SERVICES

WG#: _____

Total Organic Carbon

MAKE DAILY

CCV (TOC): see below
($^{10}/_{200}$(1000) = 50 mg/L) ($^{2}/_{200}$(1000) = 10 mg/L)

CCV (TIC): _____
($^{5}/_{200}$(1000) = 25 mg/L)

LCS (TOC): _____
($^{5}/_{200}$(1000) = 25 mg/L)

MS (TOC): _____

Calibration Curve Date: _____

☑ EPA 415.1 / SM5310-C TOC / TOC-4 / TOC-D / TOCLOW
☐ SW846 9060 TOC-14 / TOC-44

SOP: K _____ Rev. _____
Instrument: Shimadzu TOC-VWP/ASI

DAILY CHECK

☑ drain reservoir filled
☑ ASI water bottle full
☐ dilution water bottle full

☑ 3rd bottle full
☑ sufficient gas
☑ sufficient persulfate

☑ sufficient acid
☑ waste container

Position	Sample ID	Dilution
1	TC curve	
2	TIC curve	
3	TC ICV	
4	TIC ICV	
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

Position	Sample ID	Dilution
26	curve std	
27	TC: std 22588	
28	TIC: std 23787	
29		
30		
31	ICV	
32	TC: std 23654	
33	TIC: std 23789	
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		

Position	Sample ID	Dilution
51		
52	see SOP for	
53	curve points	
54		
55		
56		
57	$^{5}/_{200}$(1000)=25	
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		

Analyst: Deanna Roberts Date: 2/29/08 Time: _____

DCN#73665

Deanna Roberts

Approved: March 03, 2008

	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TC	TCCURVE		Comple	02/29/2008 09:57:02 AM	0, 1, 2
2	IC	TICCURVE		Comple	02/29/2008 10:39:38 AM	0, 6, 7
3	TC	TC ICV	TC:24.15mg/L	Comple	02/29/2008 10:48:22 AM	11
4	IC	TIC ICV	IC:23.66mg/L	Comple	02/29/2008 10:55:46 AM	12

Approved: March 03, 2008

Instr.Information

System	TOCVW ASI
Detector	Wet Chemical

Cal. Curve

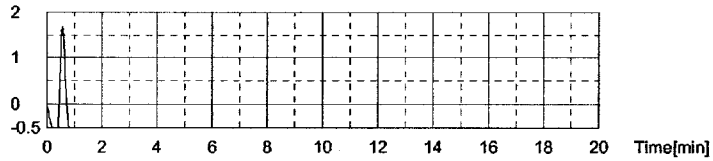
Sample Name:	TCCURVE
Sample ID:	Untitled
Cal. Curve:	TCCURVE-02-29-2008.2008_02_29_09_24_20.cal
Status	Completed

Type	Anal.
Standard	TC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	3.634	500uL	1	*******		02/29/2008 09:27:38 AM

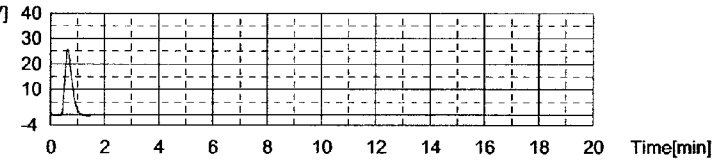
Acid Add. 0.000%
Mean Area 3.634



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	47.88	500uL	1	*******		02/29/2008 09:32:51 AM

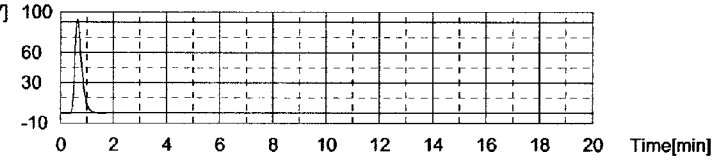
Acid Add. 0.000%
Mean Area 47.88



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	173.4	500uL	1	*******		02/29/2008 09:38:32 AM

Acid Add. 0.000%
Mean Area 173.4

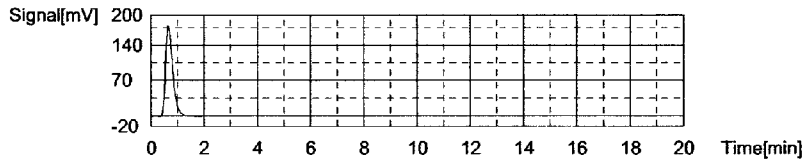


Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	345.1	500uL	1	*******		02/29/2008 09:44:22 AM

Approved: March 03, 2008

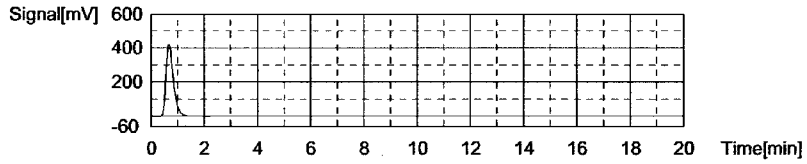
Acid Add. 0.000%
Mean Area 345.1



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	840.1	500uL	1	********		02/29/2008 09:50:32 AM

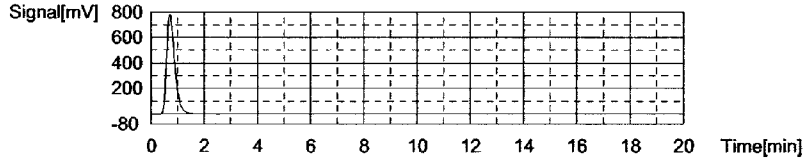
Acid Add. 0.000%
Mean Area 840.1



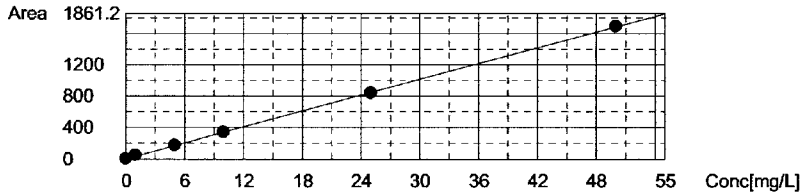
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1692	500uL	1	********		02/29/2008 09:57:02 AM

Acid Add. 0.000%
Mean Area 1692



Slope: 33.63
Intercept 6.935
r^2 0.999933
Zero Shift No



Cal. Curve

Sample Name: TICCURVE
Sample ID: Untitled
Cal. Curve: TICCURVE-02-29-2008.2008_02_29_09_57_02.cal
Status Completed

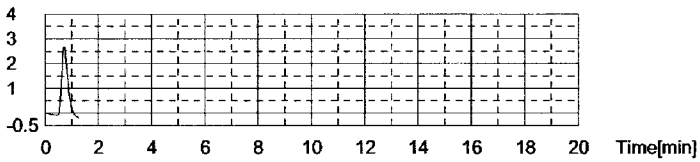
Type	Anal.
Standard	TC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	4.591	500uL	1	********		02/29/2008 10:00:36 AM

Approved: March 03, 2008

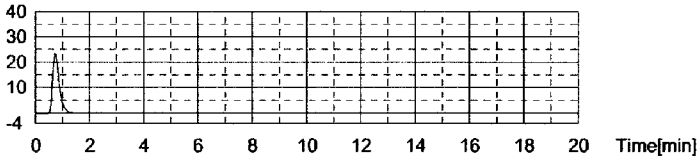
Acid Add. 10.00%
Mean Area 4.591



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	39.85	500uL	1	*******		02/29/2008 10:07:51 AM

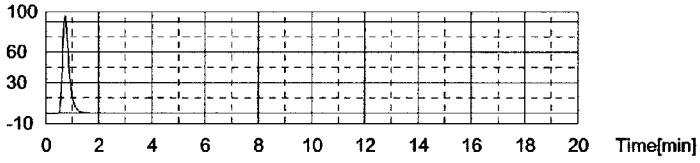
Acid Add. 10.00%
Mean Area 39.85



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	160.7	500uL	1	*******		02/29/2008 10:15:22 AM

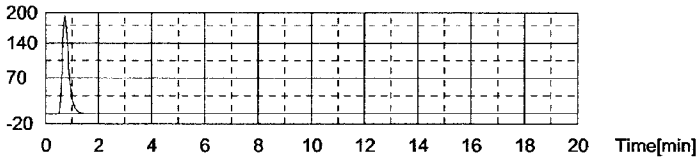
Acid Add. 10.00%
Mean Area 160.7



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	322.9	500uL	1	*******		02/29/2008 10:23:00 AM

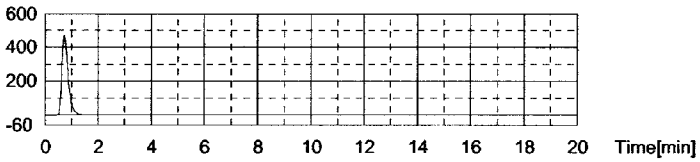
Acid Add. 10.00%
Mean Area 322.9



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	773.0	500uL	1	*******		02/29/2008 10:31:03 AM

Acid Add. 10.00%
Mean Area 773.0

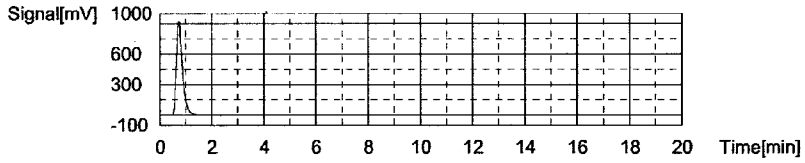


Conc: 50.00mg/L

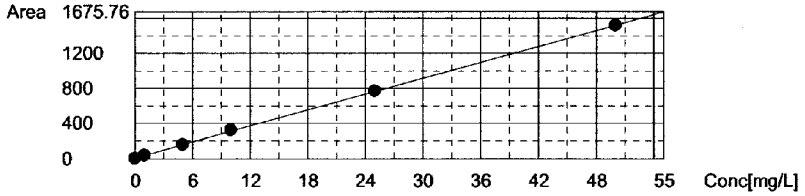
Approved: March 03, 2008

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1519	500uL	1	*******		02/29/2008 10:39:38 AM

Acid Add. 10.00%
Mean Area 1519



Slope: 30.24
Intercept 11.34
r^2 0.999891
Zero Shift No



Sample

Sample Name: TC ICV
Sample ID: Untitled
Origin: TCCURVE-02-29-2008.cal
Status Completed
Chk. Result

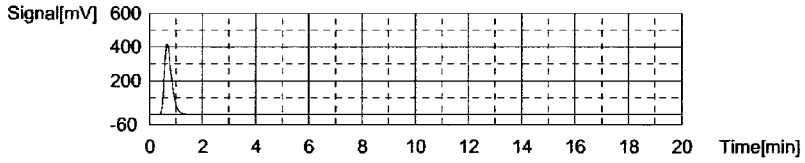
Type	Anal.	Dil.	Result
Unknown	TC	1.000	TC:24.15mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	819.2	24.15mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	02/29/2008 10:48:22 AM

Mean Area 819.2
Mean Conc. 24.15mg/L



Sample

Sample Name: TIC ICV
Sample ID: Untitled
Origin: TICCURVE-02-29-2008.cal
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	IC	1.000	IC:23.66mg/L

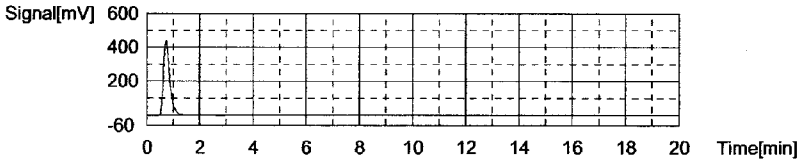
1. Det

Approved: March 03, 2008

Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	727.0	23.66mg/L	500ul	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	02/29/2008 10:55:46 AM

Mean Area 727.0
Mean Conc. 23.66mg/L



Approved: March 03, 2008

KEMRON ENVIRONMENTAL SERVICES

WORKGROUP: WG265132
WG 265134

WG#: _____

Total Organic Carbon

MAKE DAILY

CCV (TOC): Std 22588 $\left(\frac{10}{200}(1000) = 50\ mg/L\right)$ $\left(\frac{3}{200}(1000) = 10\ mg/L\right)$

CCV (TIC): Std 23787 $\left(\frac{5}{200}(1000) = 25\ mg/L\right)$

LCS (TOC): Std 23654 $\left(\frac{5}{200}(1000) = 25\ mg/L\right)$

MS (TOC): Std 23654 .4(1000)/40 = 10

Calibration Curve Date: 2/29/08

☑ EPA 415.1 / SM5310-C TOC / TOC-4 / TOC-D / TOCLOW
☐ SW846 9060 TOC-14 / TOC-44

SOP: K 4151 Rev. 11
Instrument: Shimadzu TOC-VWP/ASI

☑ drain reservoir filled
☑ ASI water bottle full
☑ dilution water bottle full

DAILY CHECK
☑ 3rd bottle full
☑ sufficient gas
☑ sufficient persulfate

☑ sufficient acid
☑ waste container

Position	Sample ID	Dilution
1	CCV50	
2	CCV10	
3	TIC 25	
4	Blank	
5	LCS 25	
6	LCS Dup	
7	03-087-01	
8	03-097-01	
9	-02	
10	03-098-01	
11	-02	
12	03-099-01	
13	-02	
14	-03	
15	CCV	
16	CCB	
17	03-099-04	
18	-05	
19	03-114-04	
20	-05	
21	-06	
22	03-122-01	
23	03-123-01	
24	-02	
25	03-116-01	

Position	Sample ID	Dilution
26	03-116-02	
27	CCV	
28	CCB	
29	03-116-03	
30	03-140-01	1/2
31	Dup-01	↓
32	MS-16	↓
33	MSD-17	↓
34	Blank	
35	LCS 25	
36	LCS Dup	
37	03-140-02	1/2
38	-03	↓
39	CCV	
40	CCB	
41	03-140-04	1/4
42	-05	↓
43	-06	1/10
44	-07	1/2
45	-08	1/3
46	-09	1/4
47	-10	1/5
48	-11	1/10
49	-12	1/2
50	-13	↓

Position	Sample ID	Dilution
51	CCV	
52	CCB	
53	03-140-14	1/4
54	-18	1/2
55	Dup ↓	1/2
56	MS ↓	1/2
57		
58		
59		
60		
61		
62	TIC 25	
63	CCV	
64	CCB	
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		

Analyst: _____ Date: 3/10/08 Time: 1305

DCN#73844

Approved: March 12, 2008

	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TOC	CCV 50	!!Error!! TOC:51.39mg/L TC:51.23mg/L IC:-0.1574mg	Comple	03/10/2008 01:14:42 PM	1
2	TOC	CCV 10	!!Error!! TOC:10.46mg/L TC:10.40mg/L IC:-0.06050m	Comple	03/10/2008 01:25:59 PM	2
3	TOC	TIC 25	TOC:1.789mg/L TC:27.64mg/L IC:25.85mg/L	Comple	03/10/2008 01:38:55 PM	3
4	TOC	WG265132-01 BLANK	!!Error!! TOC:0.1387mg/L TC:0.07340mg/L IC:-0.065	Comple	03/10/2008 01:47:23 PM	0
5	TOC	WG265132-02 LCS25	!!Error!! TOC:24.61mg/L TC:24.47mg/L IC:-0.1358mg	Comple	03/10/2008 01:59:09 PM	5
6	TOC	WG265132-03 LCSDP	!!Error!! TOC:25.04mg/L TC:24.90mg/L IC:-0.1420mg	Comple	03/10/2008 02:10:50 PM	6
7	TOC	L08030087-01	!!Error!! TOC:0.3597mg/L TC:0.1985mg/L IC:-0.1612	Comple	03/10/2008 02:21:34 PM	7
8	TOC	L08030097-01	TOC:2.898mg/L TC:8.901mg/L IC:6.004mg/L	Comple	03/10/2008 02:33:33 PM	8
9	TOC	L08030097-02	TOC:5.810mg/L TC:27.58mg/L IC:21.77mg/L	Comple	03/10/2008 02:46:57 PM	9
10	TOC	L08030098-01	TOC:4.034mg/L TC:7.376mg/L IC:3.342mg/L	Comple	03/10/2008 02:58:49 PM	10
11	TOC	L08030098-02	TOC:3.965mg/L TC:7.260mg/L IC:3.295mg/L	Comple	03/10/2008 03:10:38 PM	11
12	TOC	L08030099-01	TOC:2.523mg/L TC:18.94mg/L IC:16.42mg/L	Comple	03/10/2008 03:23:09 PM	12
13	TOC	L08030099-02	TOC:1.950mg/L TC:16.77mg/L IC:14.82mg/L	Comple	03/10/2008 03:35:36 PM	13
14	TOC	L08030099-03	TOC:1.795mg/L TC:14.02mg/L IC:12.22mg/L	Comple	03/10/2008 03:47:45 PM	14
15	TOC	CCV	!!Error!! TOC:48.96mg/L TC:48.85mg/L IC:-0.1057mg	Comple	03/10/2008 03:59:53 PM	15
16	TOC	CCB	!!Error!! TOC:0.1438mg/L TC:0.03142mg/L IC:-0.112	Comple	03/10/2008 04:08:17 PM	0
17	TOC	L08030099-04	TOC:1.763mg/L TC:13.48mg/L IC:11.72mg/L	Comple	03/10/2008 04:20:11 PM	17
18	TOC	L08030099-05	TOC:1.055mg/L TC:8.226mg/L IC:7.171mg/L	Comple	03/10/2008 04:32:12 PM	18
19	TOC	L08030114-04	TOC:2.780mg/L TC:18.71mg/L IC:15.93mg/L	Comple	03/10/2008 04:45:03 PM	19
20	TOC	L08030114-05	TOC:2.892mg/L TC:17.45mg/L IC:14.55mg/L	Comple	03/10/2008 04:57:20 PM	20
21	TOC	L08030114-06	TOC:2.374mg/L TC:30.21mg/L IC:27.84mg/L	Comple	03/10/2008 05:10:55 PM	21
22	TOC	L08030122-01	TOC:11.90mg/L TC:44.99mg/L IC:33.09mg/L	Comple	03/10/2008 05:29:06 PM	22
23	TOC	L08030123-01	TOC:2.974mg/L TC:10.20mg/L IC:7.224mg/L	Comple	03/10/2008 05:41:09 PM	23
24	TOC	L08030123-02	TOC:2.933mg/L TC:8.702mg/L IC:5.769mg/L	Comple	03/10/2008 05:53:08 PM	24
25	TOC	L08030116-01	TOC:1.037mg/L TC:11.99mg/L IC:10.96mg/L	Comple	03/10/2008 06:04:50 PM	25
26	TOC	L08030116-02	TOC:0.9035mg/L TC:11.35mg/L IC:10.45mg/L	Comple	03/10/2008 06:16:38 PM	26
27	TOC	CCV	!!Error!! TOC:49.08mg/L TC:48.97mg/L IC:-0.1094mg	Comple	03/10/2008 06:28:40 PM	27
28	TOC	CCB	!!Error!! TOC:0.1381mg/L TC:0.02514mg/L IC:-0.112	Comple	03/10/2008 06:37:03 PM	0
29	TOC	L08030116-03	TOC:1.731mg/L TC:14.02mg/L IC:12.29mg/L	Comple	03/10/2008 06:49:20 PM	29
30	TOC	L08030140-01 (2)	TOC:3.123mg/L TC:15.74mg/L IC:12.62mg/L	Comple	03/10/2008 07:01:37 PM	30
31	TOC	WG265132-05 (2) DUP	TOC:3.291mg/L TC:21.77mg/L IC:18.48mg/L	Comple	03/10/2008 07:14:30 PM	31
32	TOC	L08030140-16 (2) MS	TOC:8.134mg/L TC:24.66mg/L IC:16.53mg/L	Comple	03/10/2008 07:27:22 PM	32
33	TOC	L08030140-17 (2) MSD	TOC:8.628mg/L TC:22.23mg/L IC:13.60mg/L	Comple	03/10/2008 07:40:02 PM	33
34	TOC	WG265134-01 BLANK	!!Error!! TOC:0.1496mg/L TC:0.07251mg/L IC:-0.077	Comple	03/10/2008 07:48:32 PM	0
35	TOC	WG265134-02 LCS25	!!Error!! TOC:24.61mg/L TC:24.57mg/L IC:-0.03322m	Comple	03/10/2008 08:00:11 PM	35
36	TOC	WG265134-03 LCSDP	!!Error!! TOC:24.92mg/L TC:24.78mg/L IC:-0.1369mg	Comple	03/10/2008 08:11:49 PM	36
37	TOC	L08030140-02 (2)	TOC:3.564mg/L TC:22.66mg/L IC:19.10mg/L	Comple	03/10/2008 08:24:28 PM	37
38	TOC	L08030140-03 (2)	TOC:8.815mg/L TC:29.91mg/L IC:21.10mg/L	Comple	03/10/2008 08:37:22 PM	38
39	TOC	CCV	!!Error!! TOC:49.51mg/L TC:49.45mg/L IC:-0.06586m	Comple	03/10/2008 08:49:29 PM	39
40	TOC	CCB	!!Error!! TOC:0.1392mg/L TC:0.03308mg/L IC:-0.106	Comple	03/10/2008 08:57:53 PM	0
41	TOC	L08030140-04 (4) X	TOC:14.95mg/L TC:63.25mg/L IC:48.30mg/L	Comple	03/10/2008 09:12:23 PM	41
42	TOC	L08030140-05 (4) X	TOC:29.75mg/L TC:63.93mg/L IC:34.18mg/L	Comple	03/10/2008 09:25:57 PM	42
43	TOC	L08030140-06 (10)	TOC:12.52mg/L TC:19.09mg/L IC:6.569mg/L	Comple	03/10/2008 09:38:14 PM	43
44	TOC	L08030140-07 (2)	TOC:13.26mg/L TC:26.31mg/L IC:13.05mg/L	Comple	03/10/2008 09:50:48 PM	44
45	TOC	L08030140-08 (3)	TOC:22.81mg/L TC:29.02mg/L IC:6.218mg/L	Comple	03/10/2008 10:03:15 PM	45
46	TOC	L08030140-09 (4)	TOC:17.62mg/L TC:38.48mg/L IC:20.86mg/L	Comple	03/10/2008 10:16:11 PM	46
47	TOC	L08030140-10 (5) X	TOC:1.988mg/L TC:10.64mg/L IC:8.656mg/L	Comple	03/10/2008 10:27:54 PM	47
48	TOC	L08030140-11 (10) X	TOC:5.400mg/L TC:9.942mg/L IC:4.542mg/L	Comple	03/10/2008 10:39:44 PM	48
49	TOC	L08030140-12 (2)	TOC:5.557mg/L TC:29.13mg/L IC:23.57mg/L	Comple	03/10/2008 10:52:42 PM	49
50	TOC	L08030140-13 (2)	TOC:5.188mg/L TC:30.00mg/L IC:24.82mg/L	Comple	03/10/2008 11:05:57 PM	50
51	TOC	CCV	!!Error!! TOC:49.02mg/L TC:48.97mg/L IC:-0.04767m	Comple	03/10/2008 11:18:05 PM	51
52	TOC	CCB	!!Error!! TOC:0.1358mg/L TC:0.03451mg/L IC:-0.101	Comple	03/10/2008 11:26:29 PM	0
53	TOC	L08030140-14 (4)	TOC:4.752mg/L TC:22.95mg/L IC:18.20mg/L	Comple	03/10/2008 11:39:05 PM	53
54	TOC	L08030140-18 (2)	TOC:3.274mg/L TC:15.43mg/L IC:12.15mg/L	Comple	03/10/2008 11:51:25 PM	54
55	TOC	~~SK 05~~ WG 265134-05 DUP ½	TOC:4.662mg/L TC:27.67mg/L IC:23.01mg/L	Comple	03/11/2008 12:04:56 AM	55
56	TOC	WG 265134-04 MS ½	TOC:11.11mg/L TC:32.50mg/L IC:21.39mg/L	Comple	03/11/2008 12:18:06 AM	56
57	TOC		TOC:0.4204mg/L TC:0.4354mg/L IC:0.01505mg/L	Comple	03/11/2008 12:28:56 AM	57
58	TOC		!!Error!! TOC:0.3618mg/L TC:0.2383mg/L IC:-0.1235	Comple	03/11/2008 12:39:44 AM	58
59	TOC		!!Error!! TOC:0.3076mg/L TC:0.2071mg/L IC:-0.1005	Comple	03/11/2008 12:50:29 AM	59
60	TOC		!!Error!! TOC:0.3073mg/L TC:0.2047mg/L IC:-0.1026	Comple	03/11/2008 01:01:15 AM	60
61	TOC		!!Error!! TOC:0.3208mg/L TC:0.2276mg/L IC:-0.0931	Comple	03/11/2008 01:12:00 AM	61
62	TOC		TOC:2.145mg/L TC:31.13mg/L IC:28.99mg/L	Comple	03/11/2008 01:25:23 AM	62
63	TOC	CCV	!!Error!! TOC:49.20mg/L TC:49.12mg/L IC:-0.08094m	Comple	03/11/2008 01:37:30 AM	63
64	TOC	CCB	!!Error!! TOC:0.1355mg/L TC:0.02874mg/L IC:-0.106	Comple	03/11/2008 01:45:54 AM	0

Approved: March 12, 2008

Instr.Information

System TOCVW ASI
Detector Wet Chemical

Sample

Sample Name: CCV 50
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

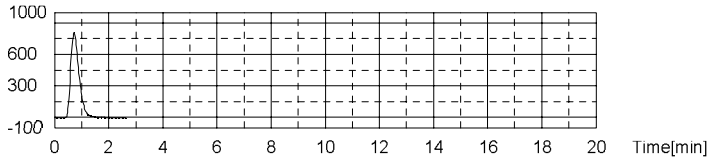
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:51.39mg/L TC:51.23mg/L IC:-0.1574mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1730	51.23mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 01:10:41 PM

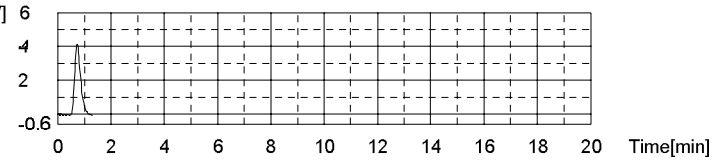
Mean Area 1730
Mean Conc. 51.23mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.586	-0.1574mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 01:14:42 PM

Mean Area 6.586
Mean Conc. -0.1574mg/L



Sample

Sample Name: CCV 10
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:10.46mg/L TC:10.40mg/L IC:-0.06050mg/L

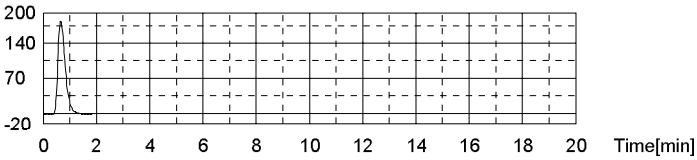
1. Det

Anal.: TC

Approved: March 12, 2008

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	356.8	10.40mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 01:21:58 PM

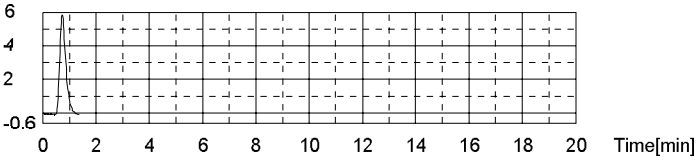
Mean Area 356.8
Mean Conc. 10.40mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.515	-0.06050mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 01:25:59 PM

Mean Area 9.515
Mean Conc. -0.06050mg/L



Sample

Sample Name: TIC 25
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

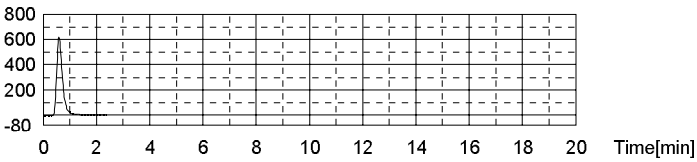
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.789mg/L TC:27.64mg/L IC:25.85mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	936.4	27.64mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 01:33:47 PM

Mean Area 936.4
Mean Conc. 27.64mg/L

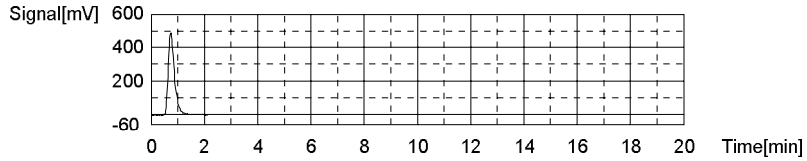


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	793.0	25.85mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 01:38:55 PM

Approved: March 12, 2008

Mean Area 793.0
Mean Conc. 25.85mg/L



Sample

Sample Name: WG265132-01 BLANK
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

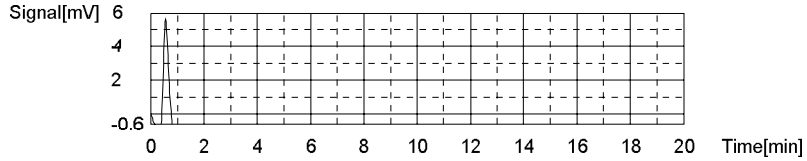
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1387mg/L TC:0.07340mg/L IC:-0.06527mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.404	0.07340mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 01:43:48 PM

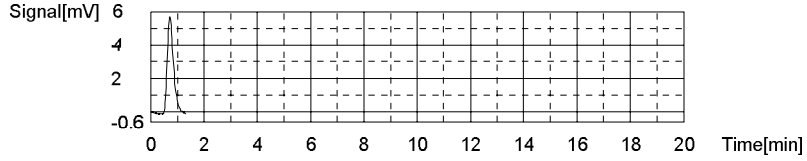
Mean Area 9.404
Mean Conc. 0.07340mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.371	-0.06527mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 01:47:23 PM

Mean Area 9.371
Mean Conc. -0.06527mg/L



Sample

Sample Name: WG265132-02 LCS25
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.61mg/L TC:24.47mg/L IC:-0.1358mg/L

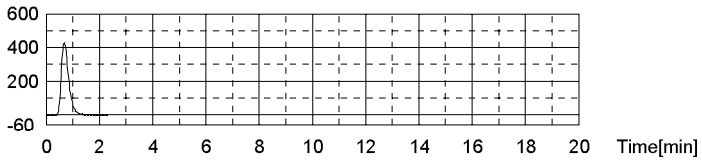
Approved: March 12, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	829.9	24.47mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 01:55:09 PM

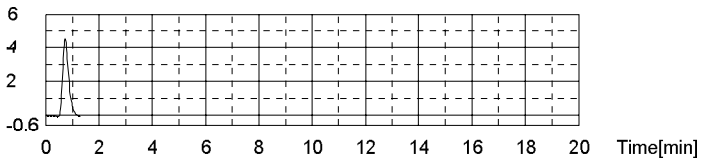
Mean Area 829.9
Mean Conc. 24.47mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.238	-0.1358mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 01:59:09 PM

Mean Area 7.238
Mean Conc. -0.1358mg/L



Sample

Sample Name: WG265132-03 LCSDP
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

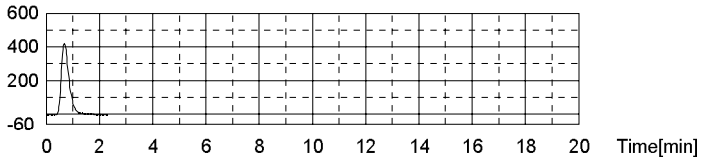
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:25.04mg/L TC:24.90mg/L IC:-0.1420mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	844.4	24.90mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 02:06:50 PM

Mean Area 844.4
Mean Conc. 24.90mg/L

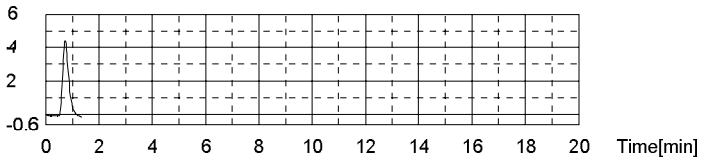


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.051	-0.1420mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 02:10:50 PM

Approved: March 12, 2008

Mean Area 7.051
Mean Conc. -0.1420mg/L



Sample

Sample Name: L08030087-01
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

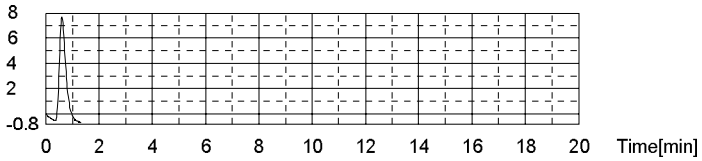
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.3597mg/L TC:0.1985mg/L IC:-0.1612mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	13.61	0.1985mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 02:17:36 PM

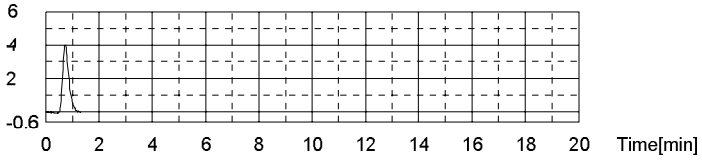
Mean Area 13.61
Mean Conc. 0.1985mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.469	-0.1612mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 02:21:34 PM

Mean Area 6.469
Mean Conc. -0.1612mg/L



Sample

Sample Name: L08030097-01
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.898mg/L TC:8.901mg/L IC:6.004mg/L

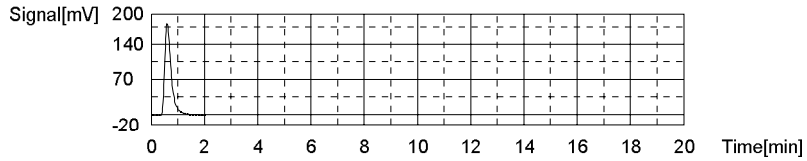
Approved: March 12, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	306.3	8.901mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 02:29:02 PM

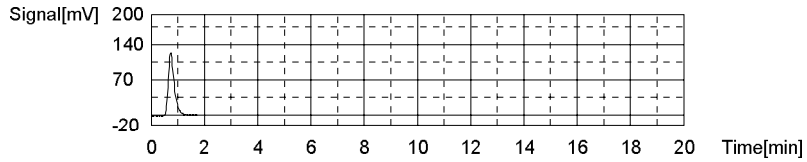
Mean Area 306.3
Mean Conc. 8.901mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	192.9	6.004mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 02:33:33 PM

Mean Area 192.9
Mean Conc. 6.004mg/L



Sample

Sample Name: L08030097-02
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

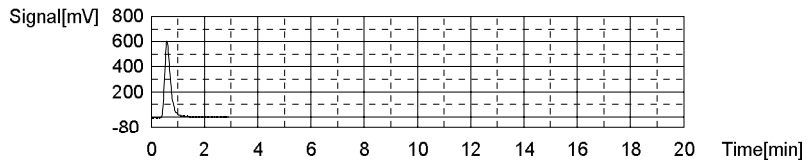
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.810mg/L TC:27.58mg/L IC:21.77mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	934.6	27.58mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 02:41:53 PM

Mean Area 934.6
Mean Conc. 27.58mg/L

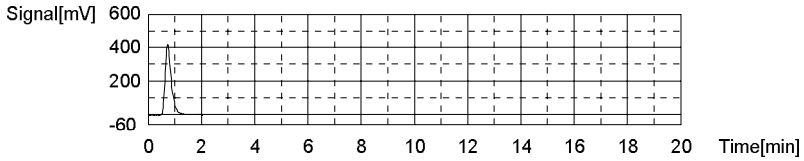


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	669.8	21.77mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 02:46:57 PM

Approved: March 12, 2008

Mean Area 669.8
Mean Conc. 21.77mg/L



Sample

Sample Name: L08030098-01
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

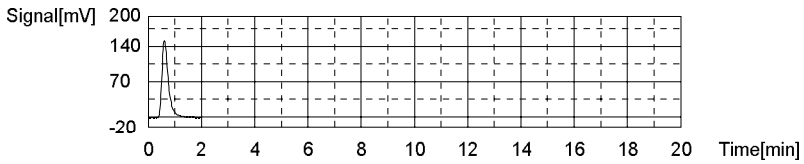
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.034mg/L TC:7.376mg/L IC:3.342mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	255.0	7.376mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 02:54:23 PM

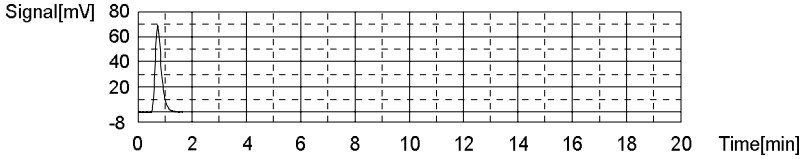
Mean Area 255.0
Mean Conc. 7.376mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	112.4	3.342mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 02:58:49 PM

Mean Area 112.4
Mean Conc. 3.342mg/L



Sample

Sample Name: L08030098-02
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.965mg/L TC:7.260mg/L IC:3.295mg/L

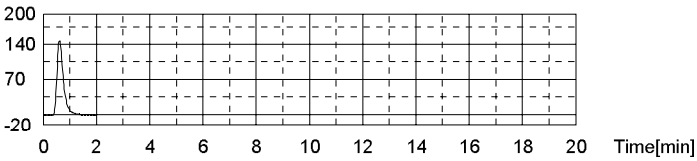
Approved: March 12, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	251.1	7.260mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 03:06:14 PM

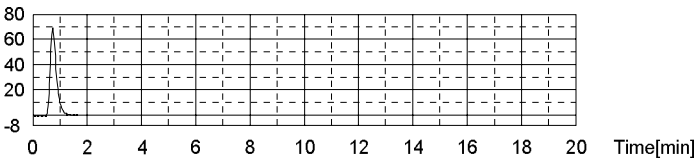
Mean Area 251.1
Mean Conc. 7.260mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	111.0	3.295mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 03:10:38 PM

Mean Area 111.0
Mean Conc. 3.295mg/L



Sample

Sample Name: L08030099-01
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

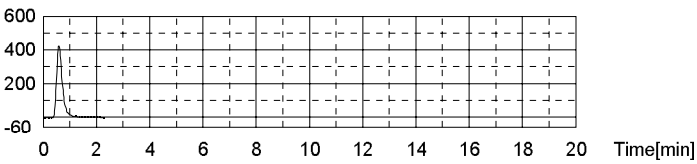
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.523mg/L TC:18.94mg/L IC:16.42mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	643.9	18.94mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 03:18:23 PM

Mean Area 643.9
Mean Conc. 18.94mg/L

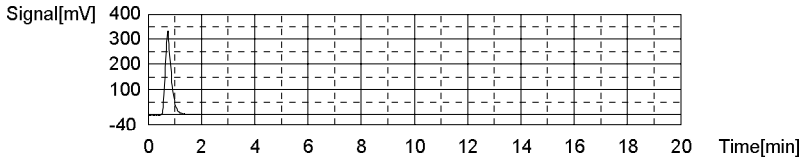


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	507.8	16.42mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 03:23:09 PM

Approved: March 12, 2008

Mean Area 507.8
Mean Conc. 16.42mg/L



Sample

Sample Name: L08030099-02
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

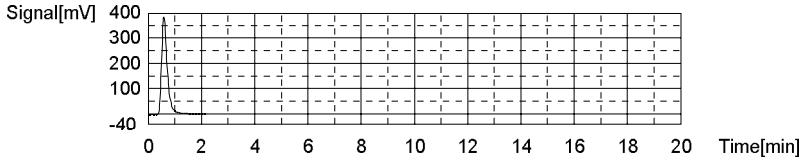
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.950mg/L TC:16.77mg/L IC:14.82mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	570.8	16.77mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 03:30:46 PM

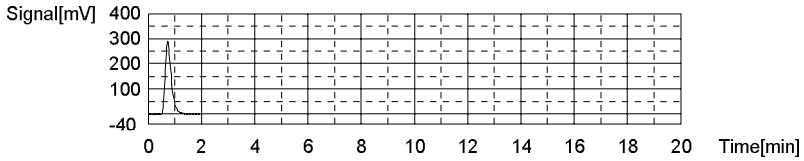
Mean Area 570.8
Mean Conc. 16.77mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	459.4	14.82mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 03:35:36 PM

Mean Area 459.4
Mean Conc. 14.82mg/L



Sample

Sample Name: L08030099-03
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.795mg/L TC:14.02mg/L IC:12.22mg/L

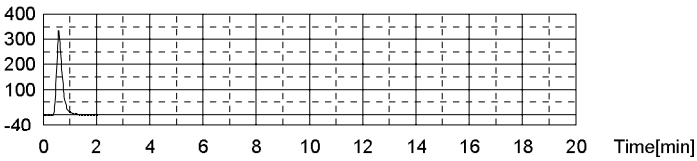
Approved: March 12, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	478.4	14.02mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 03:43:03 PM

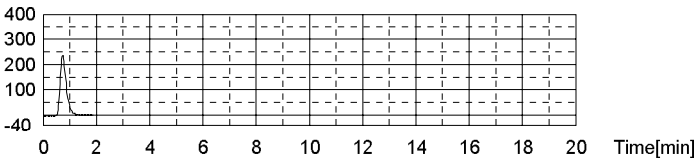
Mean Area 478.4
Mean Conc. 14.02mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	381.0	12.22mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 03:47:45 PM

Mean Area 381.0
Mean Conc. 12.22mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

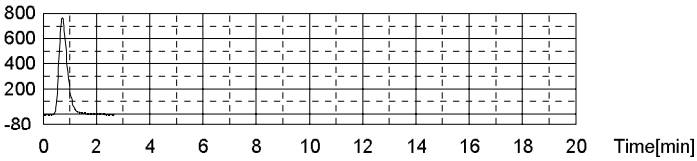
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:48.96mg/L TC:48.85mg/L IC:-0.1057mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1650	48.85mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 03:55:51 PM

Mean Area 1650
Mean Conc. 48.85mg/L

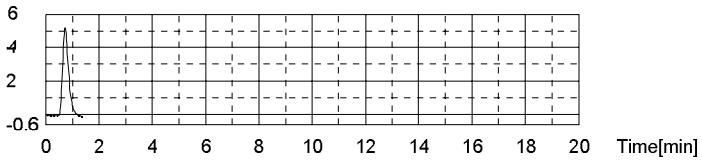


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.149	-0.1057mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 03:59:53 PM

Approved: March 12, 2008

Mean Area 8.149
Mean Conc. -0.1057mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

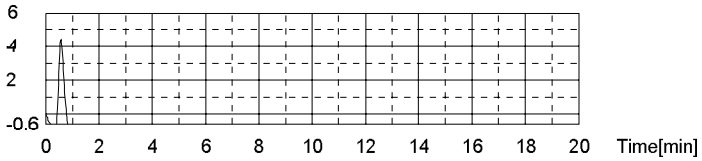
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1438mg/L TC:0.03142mg/L IC:-0.1124mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.992	0.03142mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 04:04:44 PM

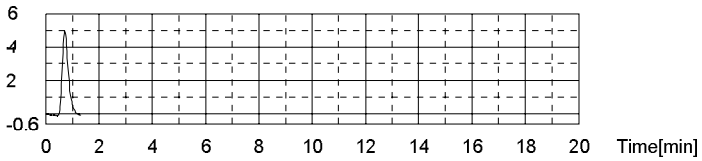
Mean Area 7.992
Mean Conc. 0.03142mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.947	-0.1124mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 04:08:17 PM

Mean Area 7.947
Mean Conc. -0.1124mg/L



Sample

Sample Name: L08030099-04
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.763mg/L TC:13.48mg/L IC:11.72mg/L

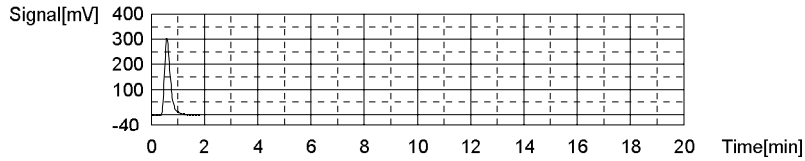
Approved: March 12, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	460.3	13.48mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 04:15:32 PM

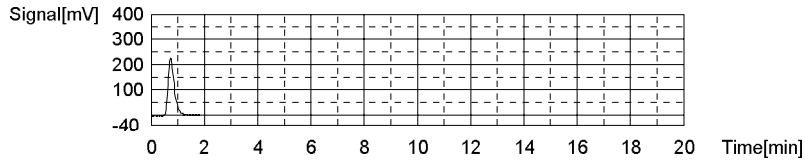
Mean Area 460.3
Mean Conc. 13.48mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	365.7	11.72mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 04:20:11 PM

Mean Area 365.7
Mean Conc. 11.72mg/L



Sample

Sample Name: L08030099-05
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

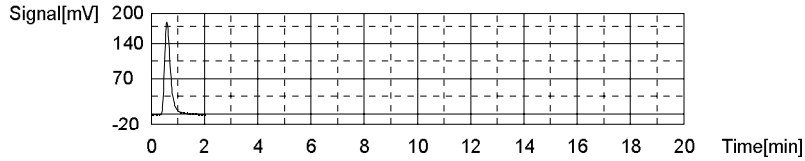
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.055mg/L TC:8.226mg/L IC:7.171mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	283.6	8.226mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 04:27:40 PM

Mean Area 283.6
Mean Conc. 8.226mg/L

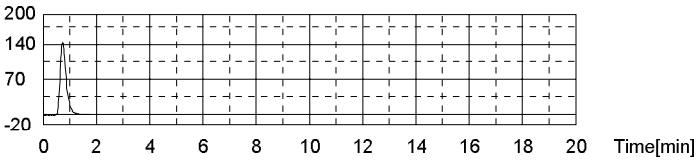


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	228.2	7.171mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 04:32:12 PM

Approved: March 12, 2008

Mean Area 228.2
Mean Conc. 7.171mg/L



Sample

Sample Name: L08030114-04
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

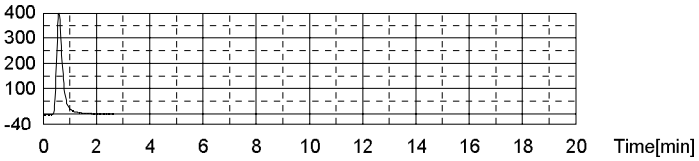
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.780mg/L TC:18.71mg/L IC:15.93mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	636.3	18.71mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 04:40:16 PM

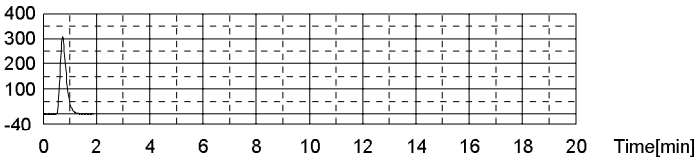
Mean Area 636.3
Mean Conc. 18.71mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	493.2	15.93mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 04:45:03 PM

Mean Area 493.2
Mean Conc. 15.93mg/L



Sample

Sample Name: L08030114-05
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.892mg/L TC:17.45mg/L IC:14.55mg/L

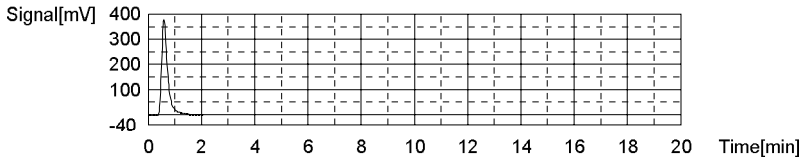
Approved: March 12, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	593.7	17.45mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 04:52:33 PM

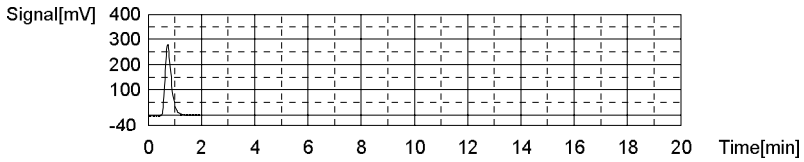
Mean Area 593.7
Mean Conc. 17.45mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	451.5	14.55mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 04:57:20 PM

Mean Area 451.5
Mean Conc. 14.55mg/L



Sample

Sample Name: L08030114-06
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

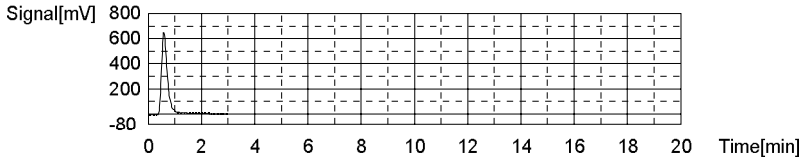
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.374mg/L TC:30.21mg/L IC:27.84mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1023	30.21mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 05:05:44 PM

Mean Area 1023
Mean Conc. 30.21mg/L

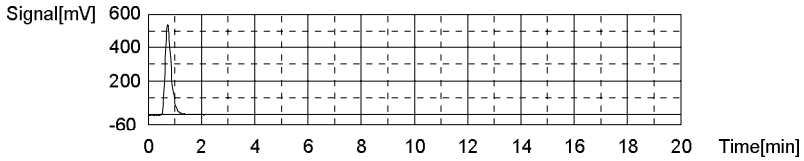


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	853.2	27.84mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 05:10:55 PM

Approved: March 12, 2008

Mean Area 853.2
Mean Conc. 27.84mg/L



Sample

Sample Name: L08030122-01
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

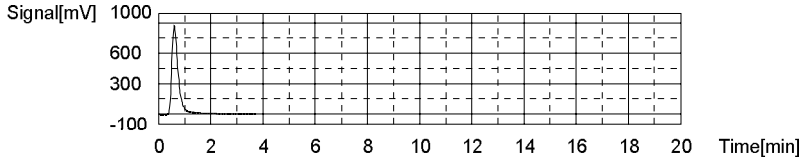
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:11.90mg/L TC:44.99mg/L IC:33.09mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1520	44.99mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 05:23:49 PM

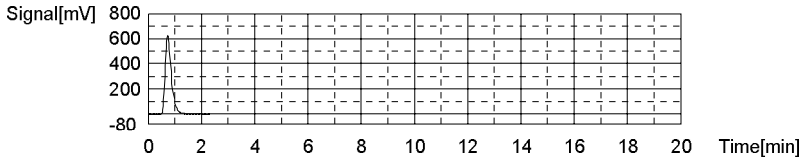
Mean Area 1520
Mean Conc. 44.99mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1012	33.09mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 05:29:06 PM

Mean Area 1012
Mean Conc. 33.09mg/L



Sample

Sample Name: L08030123-01
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.974mg/L TC:10.20mg/L IC:7.224mg/L

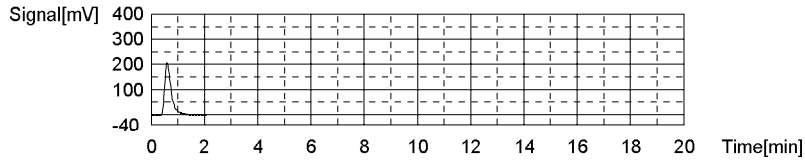
Approved: March 12, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	349.9	10.20mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 05:36:37 PM

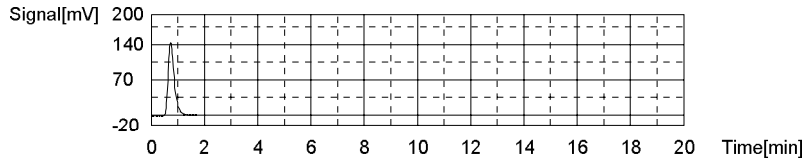
Mean Area 349.9
Mean Conc. 10.20mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	229.8	7.224mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 05:41:09 PM

Mean Area 229.8
Mean Conc. 7.224mg/L



Sample

Sample Name: L08030123-02
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

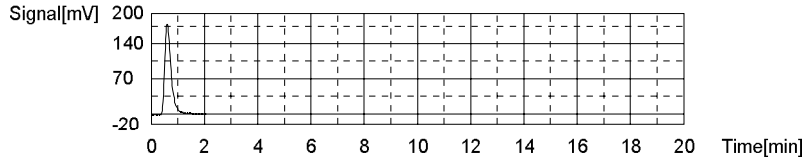
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.933mg/L TC:8.702mg/L IC:5.769mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	299.6	8.702mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 05:48:40 PM

Mean Area 299.6
Mean Conc. 8.702mg/L

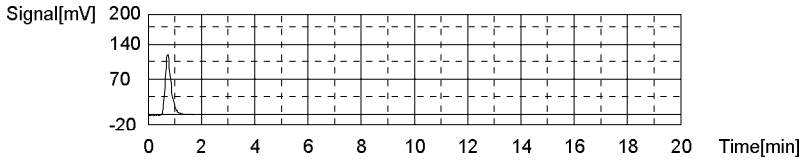


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	185.8	5.769mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 05:53:08 PM

Approved: March 12, 2008

Mean Area 185.8
Mean Conc. 5.769mg/L



Sample

Sample Name: L08030116-01
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

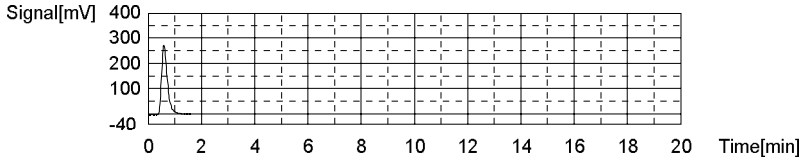
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.037mg/L TC:11.99mg/L IC:10.96mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	410.3	11.99mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 06:00:10 PM

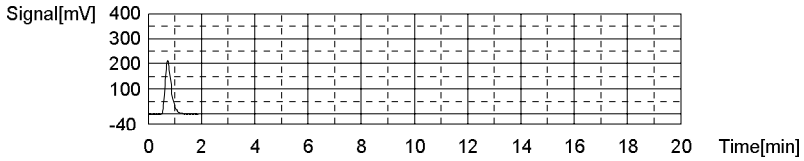
Mean Area 410.3
Mean Conc. 11.99mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	342.7	10.96mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 06:04:50 PM

Mean Area 342.7
Mean Conc. 10.96mg/L



Sample

Sample Name: L08030116-02
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.9035mg/L TC:11.35mg/L IC:10.45mg/L

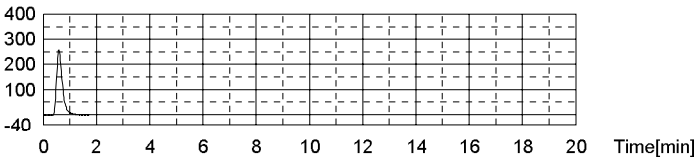
Approved: March 12, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	388.7	11.35mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 06:12:00 PM

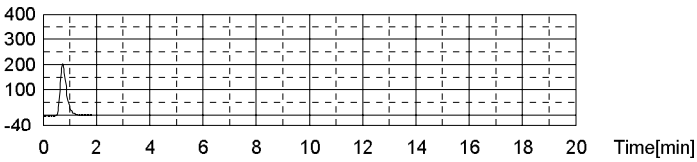
Mean Area 388.7
Mean Conc. 11.35mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	327.3	10.45mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 06:16:38 PM

Mean Area 327.3
Mean Conc. 10.45mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

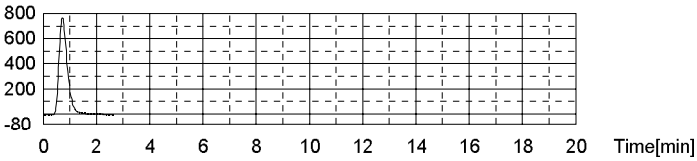
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:49.08mg/L TC:48.97mg/L IC:-0.1094mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1654	48.97mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 06:24:41 PM

Mean Area 1654
Mean Conc. 48.97mg/L

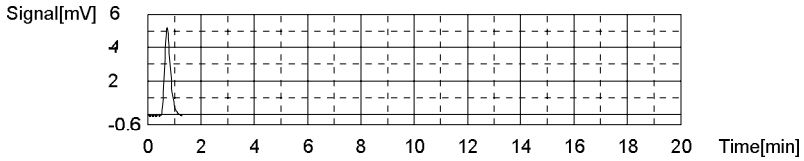


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.037	-0.1094mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 06:28:40 PM

Approved: March 12, 2008

Mean Area 8.037
Mean Conc. -0.1094mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

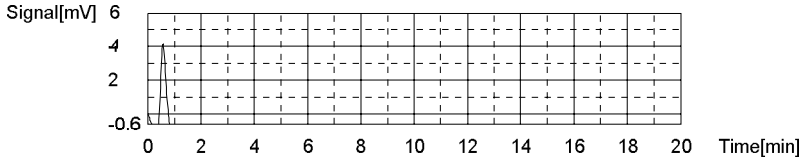
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1381mg/L TC:0.02514mg/L IC:-0.1129mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.781	0.02514mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 06:33:31 PM

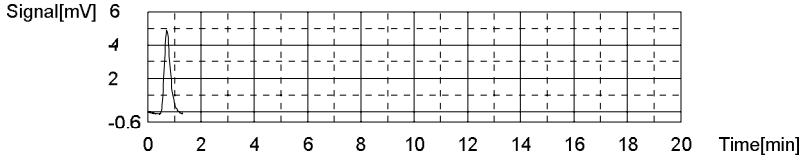
Mean Area 7.781
Mean Conc. 0.02514mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.930	-0.1129mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 06:37:03 PM

Mean Area 7.930
Mean Conc. -0.1129mg/L



Sample

Sample Name: L08030116-03
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.731mg/L TC:14.02mg/L IC:12.29mg/L

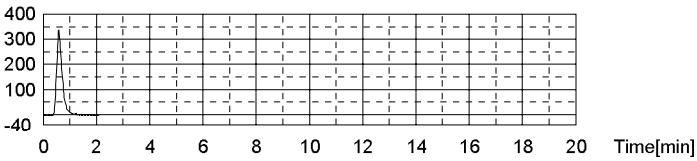
Approved: March 12, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	478.6	14.02mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 06:44:36 PM

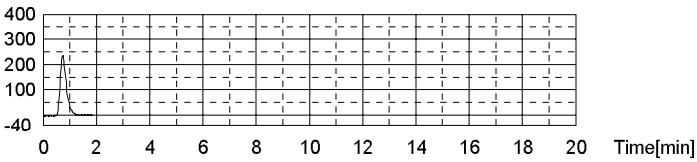
Mean Area 478.6
Mean Conc. 14.02mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	383.1	12.29mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 06:49:20 PM

Mean Area 383.1
Mean Conc. 12.29mg/L



Sample

Sample Name: L08030140-01 (2)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

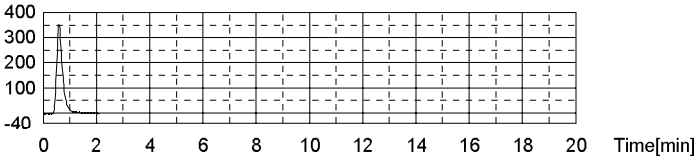
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.123mg/L TC:15.74mg/L IC:12.62mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	536.3	15.74mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 06:56:55 PM

Mean Area 536.3
Mean Conc. 15.74mg/L

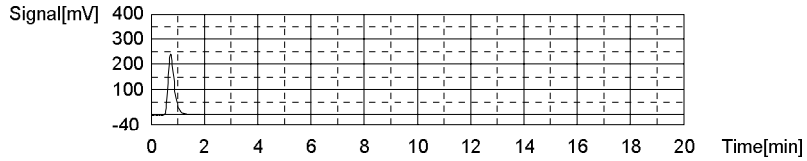


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	392.9	12.62mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 07:01:37 PM

Approved: March 12, 2008

Mean Area 392.9
Mean Conc. 12.62mg/L



Sample

Sample Name: WG265132-05 (2) DUP
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

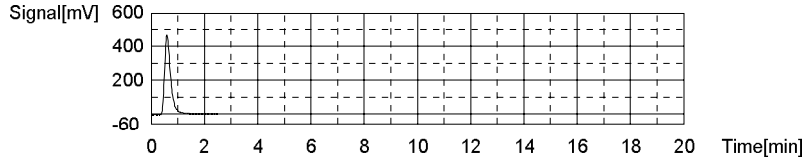
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.291mg/L TC:21.77mg/L IC:18.48mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	739.0	21.77mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 07:09:33 PM

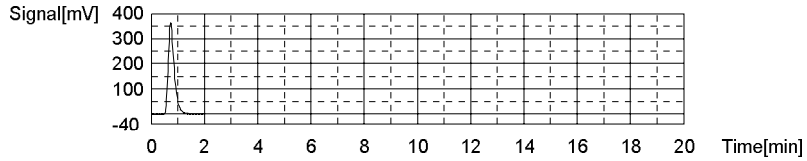
Mean Area 739.0
Mean Conc. 21.77mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	570.1	18.48mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 07:14:30 PM

Mean Area 570.1
Mean Conc. 18.48mg/L



Sample

Sample Name: L08030140-16 (2) MS
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.134mg/L TC:24.66mg/L IC:16.53mg/L

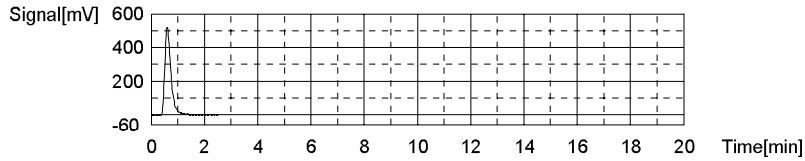
Approved: March 12, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	836.4	24.66mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 07:22:29 PM

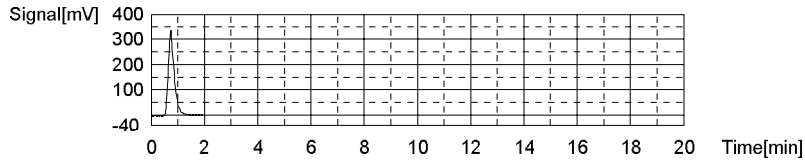
Mean Area 836.4
Mean Conc. 24.66mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	511.2	16.53mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 07:27:22 PM

Mean Area 511.2
Mean Conc. 16.53mg/L



Sample

Sample Name: L08030140-17 (2) MSD
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

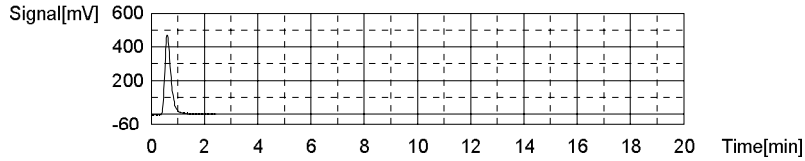
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.628mg/L TC:22.23mg/L IC:13.60mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	754.6	22.23mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 07:35:14 PM

Mean Area 754.6
Mean Conc. 22.23mg/L

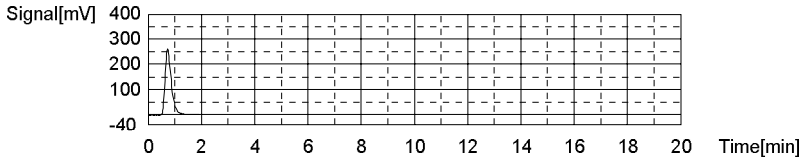


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	422.7	13.60mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 07:40:02 PM

Approved: March 12, 2008

Mean Area 422.7
Mean Conc. 13.60mg/L



Sample

Sample Name: WG265134-01 BLANK
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

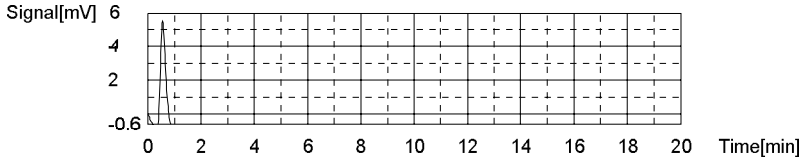
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1496mg/L TC:0.07251mg/L IC:-0.07714mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.374	0.07251mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 07:44:56 PM

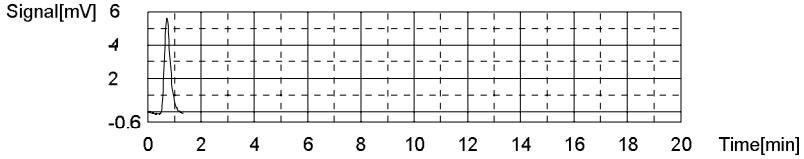
Mean Area 9.374
Mean Conc. 0.07251mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.012	-0.07714mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 07:48:32 PM

Mean Area 9.012
Mean Conc. -0.07714mg/L



Sample

Sample Name: WG265134-02 LCS25
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.61mg/L TC:24.57mg/L IC:-0.03322mg/L

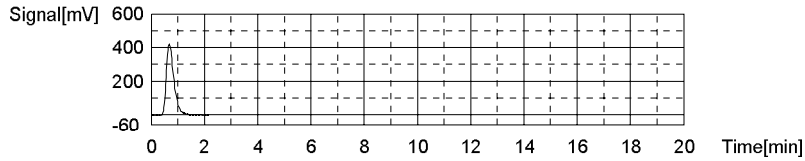
Approved: March 12, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	833.4	24.57mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 07:56:08 PM

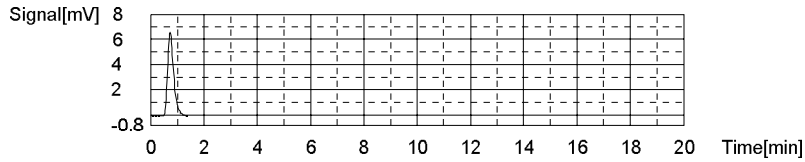
Mean Area 833.4
Mean Conc. 24.57mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.34	-0.03322mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 08:00:11 PM

Mean Area 10.34
Mean Conc. -0.03322mg/L



Sample

Sample Name: WG265134-03 LCSDP
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

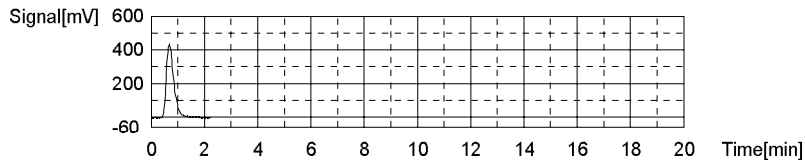
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.92mg/L TC:24.78mg/L IC:-0.1369mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	840.3	24.78mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 08:07:52 PM

Mean Area 840.3
Mean Conc. 24.78mg/L

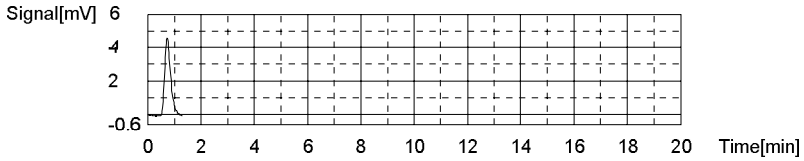


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.204	-0.1369mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 08:11:49 PM

Approved: March 12, 2008

Mean Area 7.204
Mean Conc. -0.1369mg/L



Sample

Sample Name: L08030140-02 (2)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

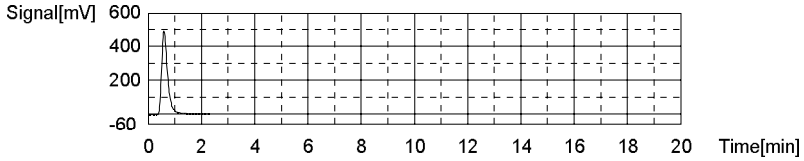
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.564mg/L TC:22.66mg/L IC:19.10mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	769.1	22.66mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 08:19:33 PM

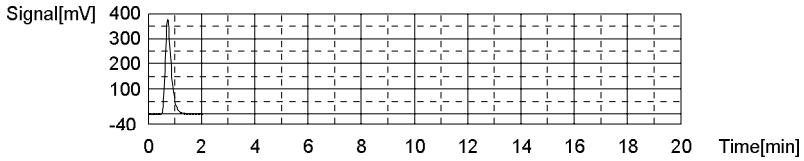
Mean Area 769.1
Mean Conc. 22.66mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	588.9	19.10mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 08:24:28 PM

Mean Area 588.9
Mean Conc. 19.10mg/L



Sample

Sample Name: L08030140-03 (2)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.815mg/L TC:29.91mg/L IC:21.10mg/L

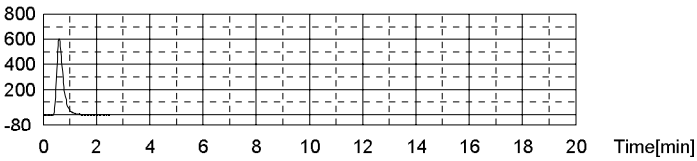
Approved: March 12, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1013	29.91mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 08:32:23 PM

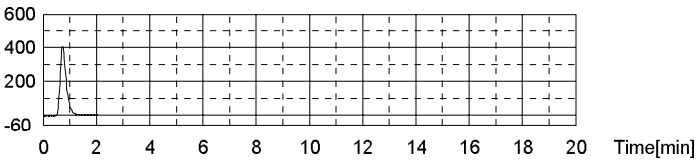
Mean Area 1013
Mean Conc. 29.91mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	649.4	21.10mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 08:37:22 PM

Mean Area 649.4
Mean Conc. 21.10mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

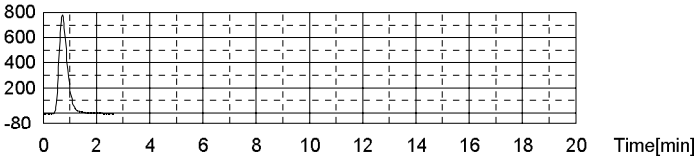
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:49.51mg/L TC:49.45mg/L IC:-0.06586mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1670	49.45mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 08:45:26 PM

Mean Area 1670
Mean Conc. 49.45mg/L

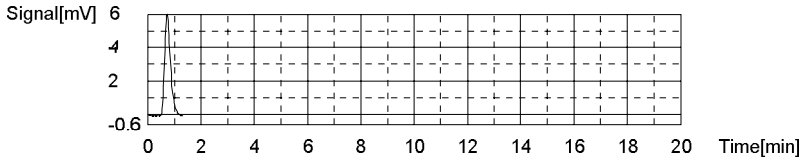


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.353	-0.06586mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 08:49:29 PM

Approved: March 12, 2008

Mean Area 9.353
Mean Conc. -0.06586mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

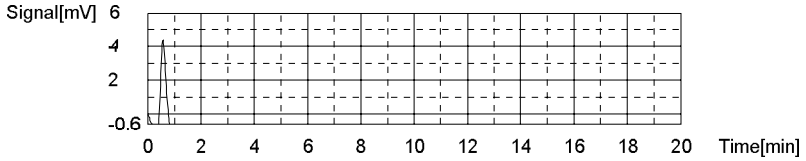
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1392mg/L TC:0.03308mg/L IC:-0.1061mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.048	0.03308mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 08:54:20 PM

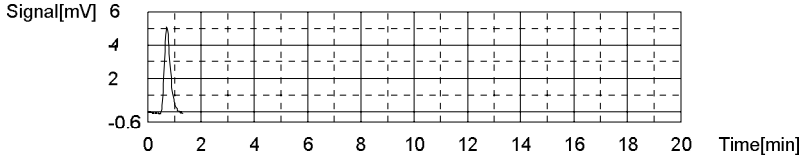
Mean Area 8.048
Mean Conc. 0.03308mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.135	-0.1061mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 08:57:53 PM

Mean Area 8.135
Mean Conc. -0.1061mg/L



Sample

Sample Name: L08030140-04 (4)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:14.95mg/L TC:63.25mg/L IC:48.30mg/L

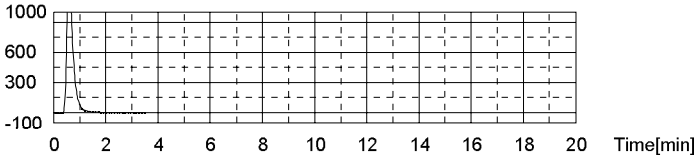
Approved: March 12, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2134	63.25mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 09:06:49 PM

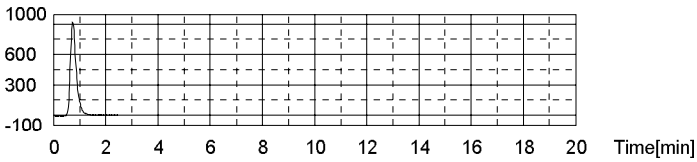
Mean Area 2134
Mean Conc. 63.25mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1472	48.30mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 09:12:23 PM

Mean Area 1472
Mean Conc. 48.30mg/L



Sample

Sample Name: L08030140-05 (4)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

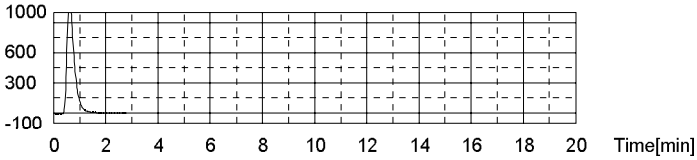
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:29.75mg/L TC:63.93mg/L IC:34.18mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2157	63.93mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 09:20:37 PM

Mean Area 2157
Mean Conc. 63.93mg/L

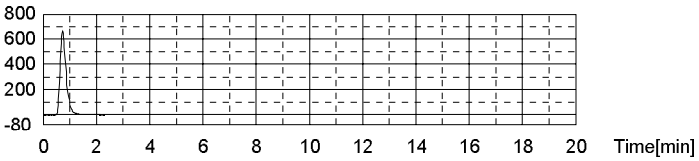


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1045	34.18mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 09:25:57 PM

Approved: March 12, 2008

Mean Area 1045
Mean Conc. 34.18mg/L



Sample

Sample Name: L08030140-06 (10)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

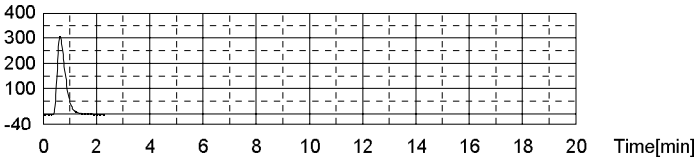
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:12.52mg/L TC:19.09mg/L IC:6.569mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	649.1	19.09mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 09:33:39 PM

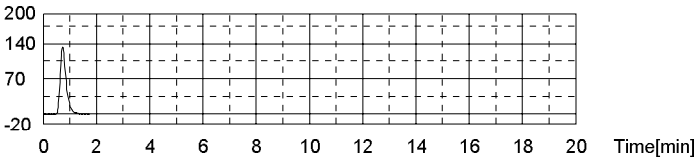
Mean Area 649.1
Mean Conc. 19.09mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	210.0	6.569mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 09:38:14 PM

Mean Area 210.0
Mean Conc. 6.569mg/L



Sample

Sample Name: L08030140-07 (2)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:13.26mg/L TC:26.31mg/L IC:13.05mg/L

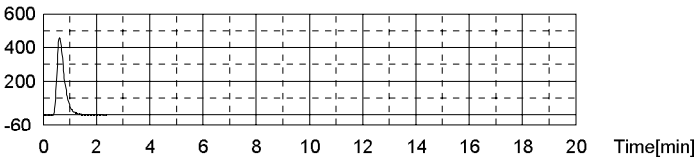
Approved: March 12, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	891.8	26.31mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 09:46:03 PM

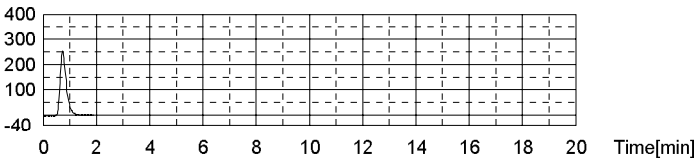
Mean Area 891.8
Mean Conc. 26.31mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	405.9	13.05mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 09:50:48 PM

Mean Area 405.9
Mean Conc. 13.05mg/L



Sample

Sample Name: L08030140-08 (3)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

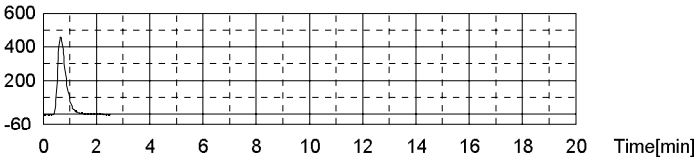
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:22.81mg/L TC:29.02mg/L IC:6.218mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	983.1	29.02mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 09:58:47 PM

Mean Area 983.1
Mean Conc. 29.02mg/L

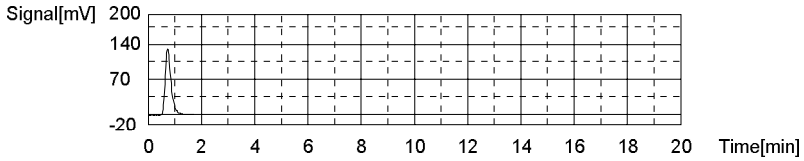


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	199.4	6.218mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 10:03:15 PM

Approved: March 12, 2008

Mean Area 199.4
Mean Conc. 6.218mg/L



Sample

Sample Name: L08030140-09 (4)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

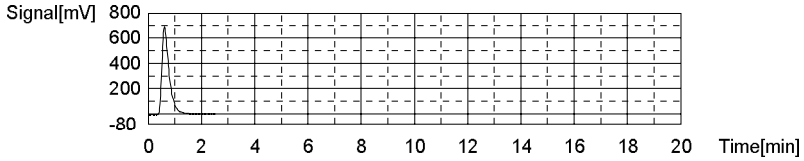
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:17.62mg/L TC:38.48mg/L IC:20.86mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1301	38.48mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 10:11:13 PM

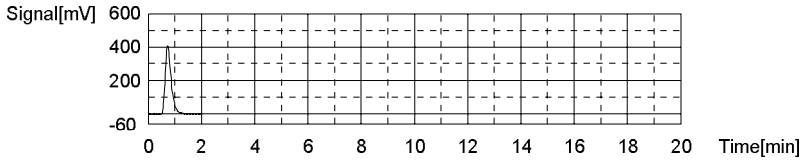
Mean Area 1301
Mean Conc. 38.48mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	642.1	20.86mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 10:16:11 PM

Mean Area 642.1
Mean Conc. 20.86mg/L



Sample

Sample Name: L08030140-10 (5)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.988mg/L TC:10.64mg/L IC:8.656mg/L

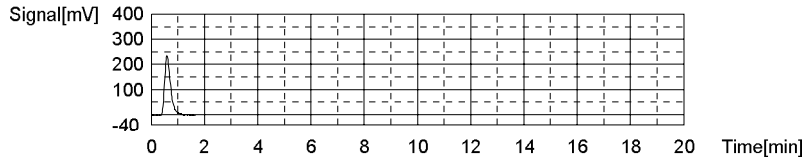
Approved: March 12, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	364.9	10.64mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 10:23:17 PM

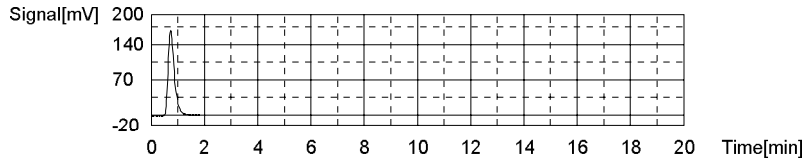
Mean Area 364.9
Mean Conc. 10.64mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	273.1	8.656mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 10:27:54 PM

Mean Area 273.1
Mean Conc. 8.656mg/L



Sample

Sample Name: L08030140-11 (10)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

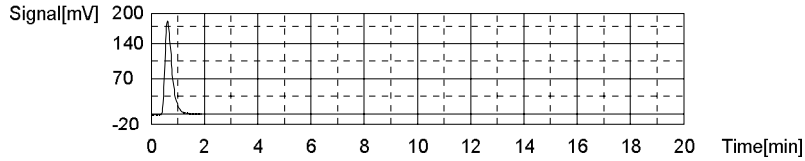
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.400mg/L TC:9.942mg/L IC:4.542mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	341.3	9.942mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 10:35:15 PM

Mean Area 341.3
Mean Conc. 9.942mg/L

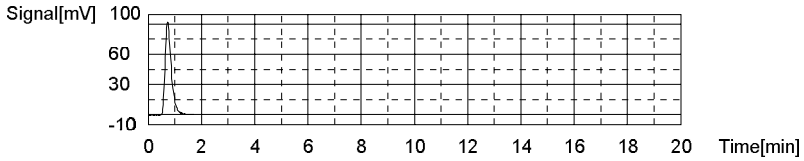


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	148.7	4.542mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 10:39:44 PM

Approved: March 12, 2008

Mean Area 148.7
Mean Conc. 4.542mg/L



Sample

Sample Name: L08030140-12 (2)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

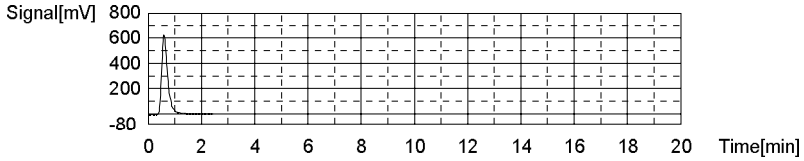
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.557mg/L TC:29.13mg/L IC:23.57mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	986.6	29.13mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 10:47:37 PM

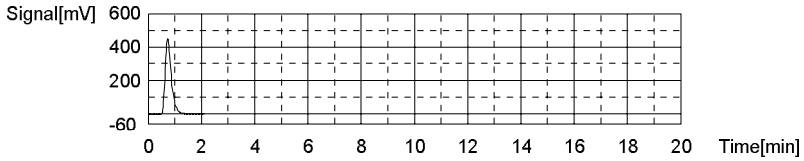
Mean Area 986.6
Mean Conc. 29.13mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	724.2	23.57mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 10:52:42 PM

Mean Area 724.2
Mean Conc. 23.57mg/L



Sample

Sample Name: L08030140-13 (2)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.188mg/L TC:30.00mg/L IC:24.82mg/L

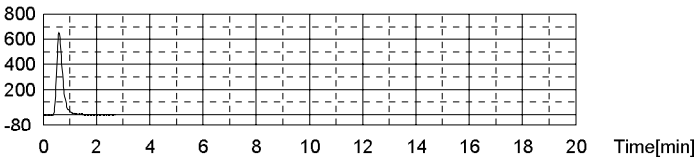
Approved: March 12, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1016	30.00mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 11:00:52 PM

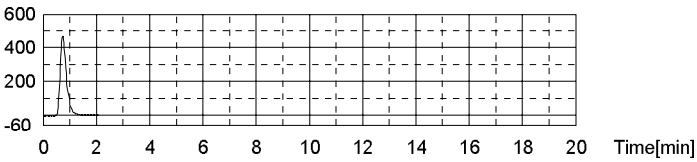
Mean Area 1016
Mean Conc. 30.00mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	761.8	24.82mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 11:05:57 PM

Mean Area 761.8
Mean Conc. 24.82mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

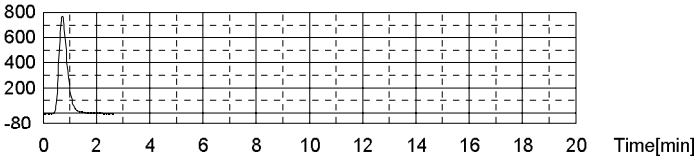
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:49.02mg/L TC:48.97mg/L IC:-0.04767mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1654	48.97mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 11:14:02 PM

Mean Area 1654
Mean Conc. 48.97mg/L

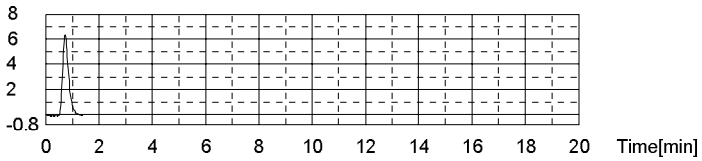


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.903	-0.04767mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 11:18:05 PM

Approved: March 12, 2008

Mean Area 9.903
Mean Conc. -0.04767mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

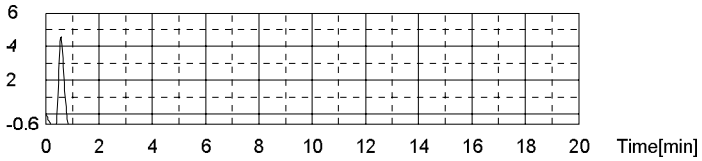
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1358mg/L TC:0.03451mg/L IC:-0.1013mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.096	0.03451mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 11:22:55 PM

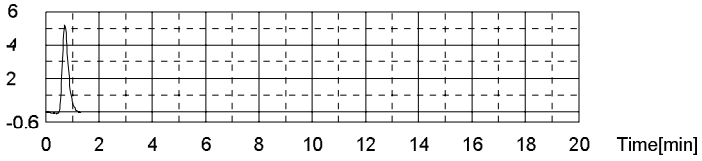
Mean Area 8.096
Mean Conc. 0.03451mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.281	-0.1013mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 11:26:29 PM

Mean Area 8.281
Mean Conc. -0.1013mg/L



Sample

Sample Name: L08030140-14 (4)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.752mg/L TC:22.95mg/L IC:18.20mg/L

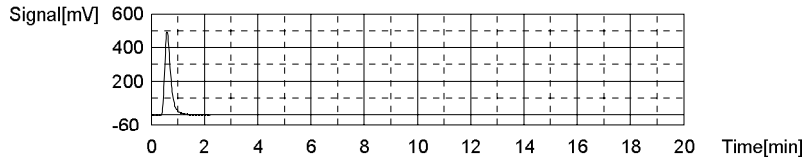
Approved: March 12, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	778.7	22.95mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 11:34:10 PM

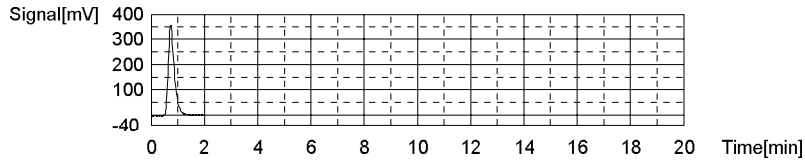
Mean Area 778.7
Mean Conc. 22.95mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	561.6	18.20mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 11:39:05 PM

Mean Area 561.6
Mean Conc. 18.20mg/L



Sample

Sample Name: L08030140-18 (2)
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

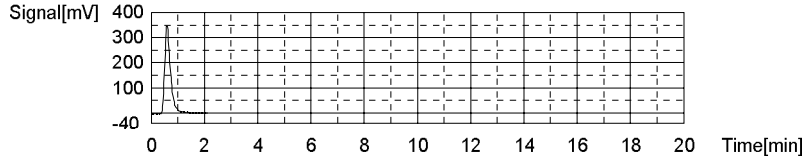
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.274mg/L TC:15.43mg/L IC:12.15mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	525.8	15.43mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 11:46:40 PM

Mean Area 525.8
Mean Conc. 15.43mg/L

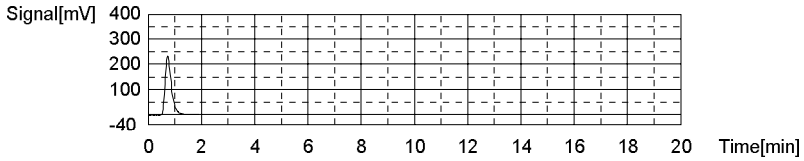


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	378.9	12.15mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/10/2008 11:51:25 PM

Approved: March 12, 2008

Mean Area 378.9
Mean Conc. 12.15mg/L



Sample

Sample Name:
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

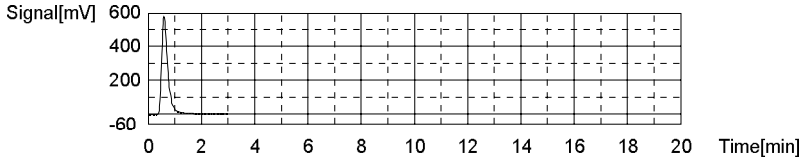
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.662mg/L TC:27.67mg/L IC:23.01mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	937.5	27.67mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/10/2008 11:59:52 PM

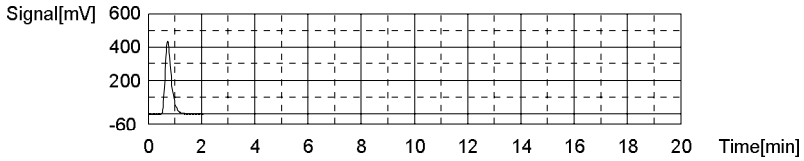
Mean Area 937.5
Mean Conc. 27.67mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	707.1	23.01mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/11/2008 12:04:56 AM

Mean Area 707.1
Mean Conc. 23.01mg/L



Sample

Sample Name:
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:11.11mg/L TC:32.50mg/L IC:21.39mg/L

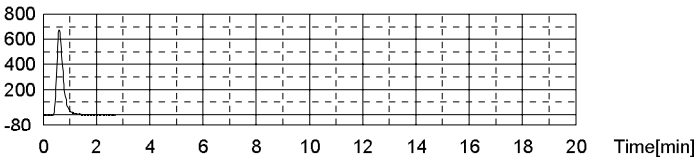
Approved: March 12, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1100	32.50mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/11/2008 12:13:06 AM

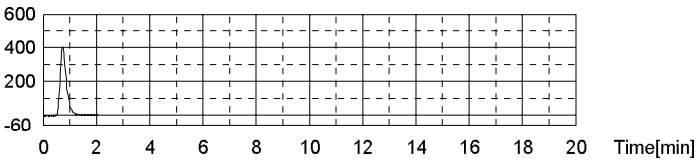
Mean Area 1100
Mean Conc. 32.50mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	658.3	21.39mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/11/2008 12:18:06 AM

Mean Area 658.3
Mean Conc. 21.39mg/L



Sample

Sample Name:
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

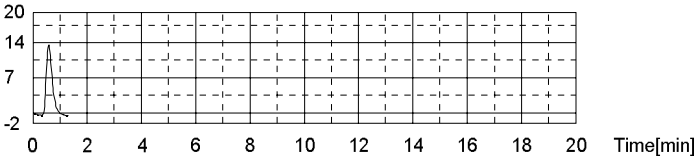
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.4204mg/L TC:0.4354mg/L IC:0.01505mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	21.58	0.4354mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/11/2008 12:24:52 AM

Mean Area 21.58
Mean Conc. 0.4354mg/L

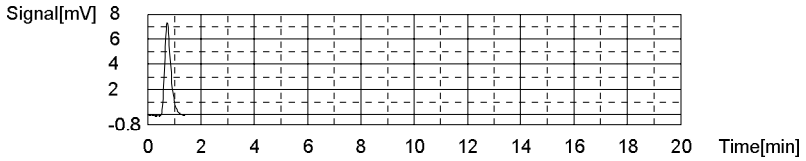


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	11.80	0.01505mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/11/2008 12:28:56 AM

Approved: March 12, 2008

Mean Area 11.80
Mean Conc. 0.01505mg/L



Sample

Sample Name:
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

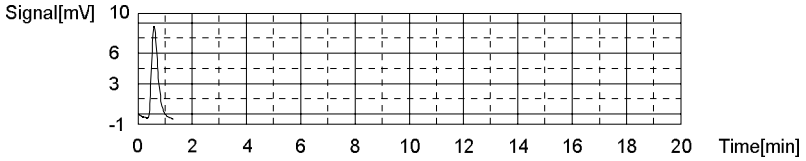
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.3618mg/L TC:0.2383mg/L IC:-0.1235mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	14.95	0.2383mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/11/2008 12:35:42 AM

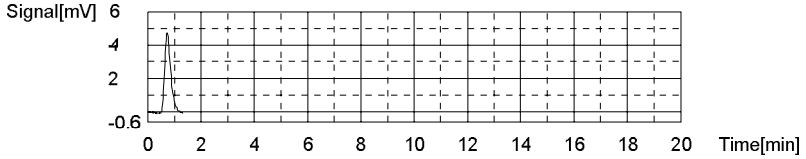
Mean Area 14.95
Mean Conc. 0.2383mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.609	-0.1235mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/11/2008 12:39:44 AM

Mean Area 7.609
Mean Conc. -0.1235mg/L



Sample

Sample Name:
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.3076mg/L TC:0.2071mg/L IC:-0.1005mg/L

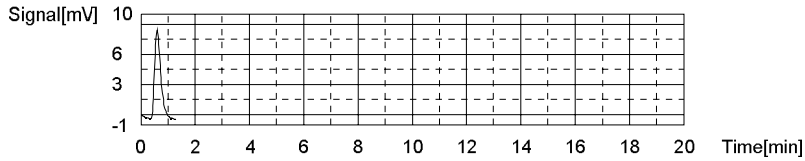
Approved: March 12, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	13.90	0.2071mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/11/2008 12:46:29 AM

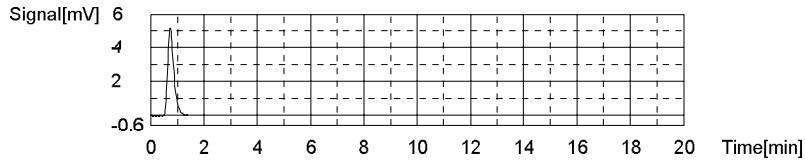
Mean Area 13.90
Mean Conc. 0.2071mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.305	-0.1005mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/11/2008 12:50:29 AM

Mean Area 8.305
Mean Conc. -0.1005mg/L



Sample

Sample Name:
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

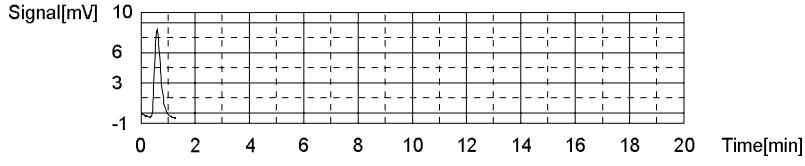
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.3073mg/L TC:0.2047mg/L IC:-0.1026mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	13.82	0.2047mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/11/2008 12:57:14 AM

Mean Area 13.82
Mean Conc. 0.2047mg/L

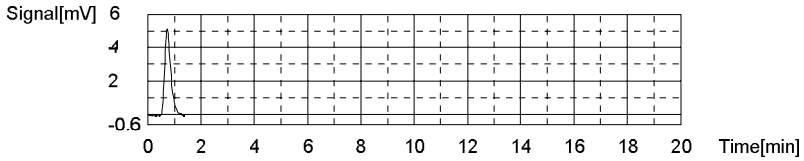


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.243	-0.1026mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/11/2008 01:01:15 AM

Approved: March 12, 2008

Mean Area 8.243
Mean Conc. -0.1026mg/L



Sample

Sample Name:
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

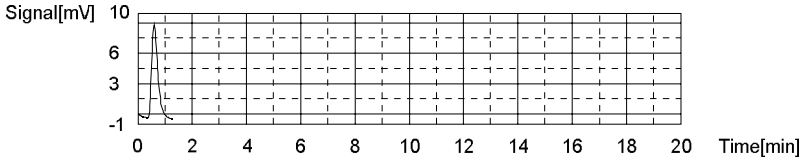
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.3208mg/L TC:0.2276mg/L IC:-0.09317mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	14.59	0.2276mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/11/2008 01:08:00 AM

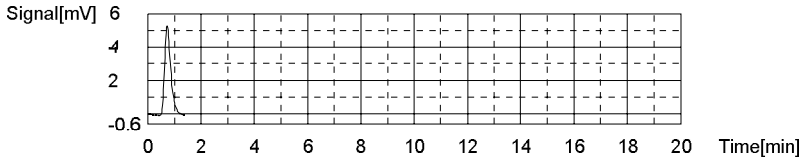
Mean Area 14.59
Mean Conc. 0.2276mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.527	-0.09317mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/11/2008 01:12:00 AM

Mean Area 8.527
Mean Conc. -0.09317mg/L



Sample

Sample Name:
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.145mg/L TC:31.13mg/L IC:28.99mg/L

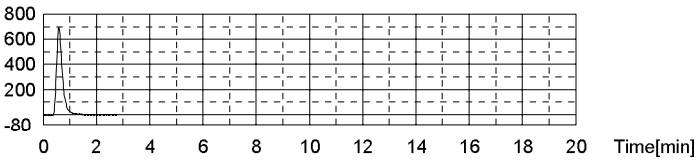
Approved: March 12, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1054	31.13mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/11/2008 01:20:15 AM

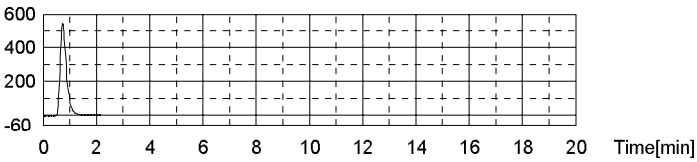
Mean Area 1054
Mean Conc. 31.13mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	888.0	28.99mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/11/2008 01:25:23 AM

Mean Area 888.0
Mean Conc. 28.99mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

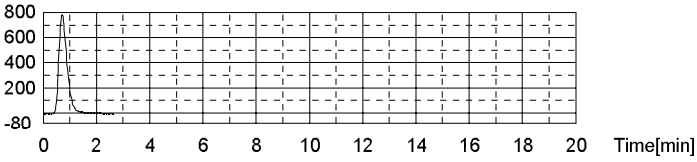
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:49.20mg/L TC:49.12mg/L IC:-0.08094mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1659	49.12mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/11/2008 01:33:28 AM

Mean Area 1659
Mean Conc. 49.12mg/L

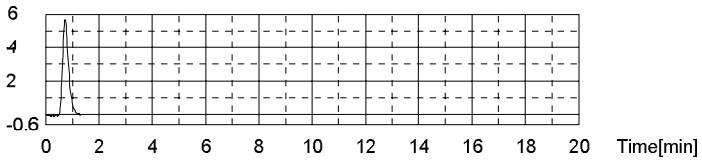


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.897	-0.08094mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/11/2008 01:37:30 AM

Approved: March 12, 2008

Mean Area 8.897
Mean Conc. -0.08094mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-02-29-2008.met
Status Completed
Chk. Result

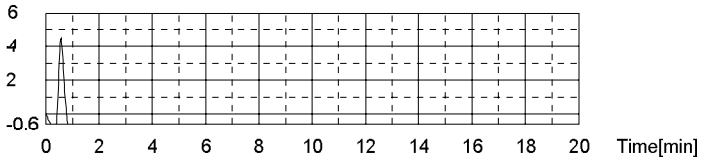
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1355mg/L TC:0.02874mg/L IC:-0.1068mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.902	0.02874mg/L	500uL	1		TCCURVE-02-29-2008.2008_02_29_09_24_2	03/11/2008 01:42:20 AM

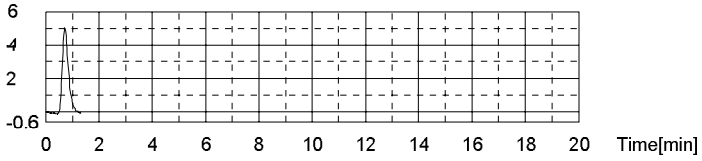
Mean Area 7.902
Mean Conc. 0.02874mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.115	-0.1068mg/L	500uL	1		TICCURVE-02-29-2008.2008_02_29_09_57_0	03/11/2008 01:45:54 AM

Mean Area 8.115
Mean Conc. -0.1068mg/L



Approved: March 12, 2008

3.0 Attachments

Kemron Environmental Services
Analyst Listing
March 18, 2008

AJF – AMANDA J. FICKIESEN	ALB – ANNIE L. BROWN	AML – ANTHONY M. LONG
ASP – AARON S. PETRIE	BRG – BRENDA R. GREGORY	CAA – CASSIE A. AUGENSTEIN
CAF – CHERYL A. FLOWERS	CAH – CHARLES A. HALL	CEB – CHAD E. BARNES
CLC – CHRYS L. CRAWFORD	CLW – CHARISSA L. WINTERS	CMS – CRYSTAL M. STEPHENS
CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL	DDE – DEBRA D. ELLIOTT
DEL – DON E. LIGHTFRITZ	DEV – DAVID E. VANDENBERG	DGB – DOUGLAS G. BUTCHER
DIH – DEANNA I. HESSON	DLB – DAVID L. BUMGARNER	DLP – DOROTHY L. PAYNE
DLR – DIANNA L. RAUCH	DR – DEANNA ROBERTS	DSF – DEBRA S. FREDERICK
ECL – ERIC C. LAWSON	ED – EMILY E. DECKER	ERE – ERIN R. ELDER
FJB – FRANCES J. BOLDEN	HAV – HEMA VILASAGAR	HJR – HOLLY J. REED
JAB – JUANITA A. BECKER	JBK – JEREMY B. KINNEY	JDH – JUSTIN D. HESSON
JKP – JACQUELINE K. PARSONS	JKT – JANE K. THOMPSON	JLK – JUSTEN L. KNOPP
JWR – JOHN W. RICHARDS	JWS – JACK W. SHEAVES	JYH – JI Y. HU
KEB – KATHRYN E. BARNES	KHR – KIM H. RHODES	KJW – KATIE J. WIEFERICH
KRA – KATHY R. ALBERTSON	LKN – LINDA K. NEDEFF	LSB – LESLIE S. BUCINA
MDA – MIKE D. ALBERTSON	MDC – MICHAEL D. COCHRAN	MES – MARY E. SCHILLING
MMB – MAREN M. BEERY	MRT – MICHELLE R. TAYLOR	MSW – MATT S. WILSON
NJB – NATALIE J. BOOTH	NPM – NATHANIEL P. MILLER	RAH – ROY A. HALSTEAD
RB – ROBERT BUCHANAN	REK – ROBERT E. KYER	RLF – RACHEL L. FRYE
RLK – ROBIN L. KLINGER	RWC – RODNEY W. CAMPBELL	SLM – STEPHANIE L. MOSSBURG
SLP – SHERI L. PFALZGRAF	SMH – SHAUNA M. HYDE	TDH – TRICIA D. HUCK
TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS	VC – VICKI COLLIER

KEMRON Environmental Services, Inc.
List of Valid Qualifiers
March 18, 2008

Qualkey: STD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
C	Confirmed by GC/MS
CG	Confluent growth
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
FL	Free Liquid
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit
ND,L	Not detected; sample reporting limit (RL) elevated due to interference
ND,S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria fail. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Undetected; the concentration is below the reported MDL.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

Chain of Custody

NO. 10243

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: KEMRON Address: 156 STARLITE DR. MARIETTA, OH Contact: STEPHANIE MOSSBURG

Project Name: LHAAP Project Location: KARNACK, TX.

Project No.: 117591.0008A105 Project Contact: KAY EVERETT Project Telephone No.: 713-996-4421

Point of Contact: KAY EVERETT Telephone No.: 713-996-4421 Project Manager/Supervisor: PRAVEEN SRIVASTAV

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOA	GASES	TOC	ANIONS				Remarks
1	12WW22-030508	3/5/08	9:50		✓	W	GROUNDWATER, SITE 12	2	2							
2	12WW23-030508	3/5/08	11:30		✓	W	GROUNDWATER, SITE 12	2	2							
3	12WW24-030508	3/5/08	2:40		✓	W	GROUNDWATER, SITE 12	2	2							
4	12WW20-030608	3/6/08	9:20		✓	W	GROUNDWATER, SITE 12	7	2	3	1	1				
5	12WW20-030608-FD	3/6/08	9:20		✓	W	GROUNDWATER, SITE 12	7	2	3	1	1				
6	12WW21-030608	3/6/08	10:50		✓	W	GROUNDWATER, SITE 12	7	2	3	1	1				
7																
8																
9																
10																

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
Scott Bessyer	3/6/08 12:30			
				FedEx Airbill No.:
		Laboratory		Sampler's Signature: Scott Bessyer

TAT: ____ (Standard) ____ Rush Date ____ Seals Intact? ____ Y ____ N Received Good Condition ____ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_1
Rev. 03-19-07

KEMRON Environmental Services

SAMPLE RECEIPT FORM

00115333

156 Starlite Drive
Marietta, OH 45750
(740) 373-4071

Client:	Kemron
Workorder Number:	B 7667
Date Received:	3-7-08
Delivered by:	( ) Fedx (✓) UPS ( ) Client ( ) Courier **Time:** 0915
Opened by:	RCK
IR Temp Gun:	(✓) ( ) G
Logged by:	RCK L 0803014

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
497	2	1Z66V7250197771588	10243	water

Inspection Checklist	**Y**	**N**	**NA**	**Discrepancy ID**
Were shipping coolers sealed?	✓			
Were custody seals intact?	✓			
Were cooler temperatures in range of 0 - 6?	✓			
Was ice present?	✓			
Were COC's received/ information complete/signed and dated? RK	✓	✓		(1)
Were sample containers and labels intact and match COC?	✓			
Were the correct containers and volumes received?	✓			
Were correct preservatives used? (water only)	✓			
Were pH ranges acceptable? (voa's excluded)	✓			
Were VOA samples free of headspace (< 6mm)?	✓			
Were samples received within EPA hold times?	✓			

Discrepancy/Comments/Other Problems

(1) Products/Containers not ~~per~~ on chain. Bottles Logged per B#.

*Rec'd Trips not on chain.

Distribution

Name of KEMRON representative
Client/Company:
Person Contacted:
Date contacted:

Resolution/other comments:

KEMRON Environmental Services, Inc.

Internal Chain of Custody Report

Login: L08030114
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 14-MAR-2008

Samplenum	Container ID	Products
L08030114-06	433641	TOC TIC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-MAR-2008 09:49	BRG	

Samplenum	Container ID	Products
L08030114-04	432340	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:25	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:25	KJW	RLK

Samplenum	Container ID	Products
L08030114-04	432343	TIC TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-MAR-2008 11:22	RLK	
2	ANALYZ	W1	WET	10-MAR-2008 05:59	JBK	RLK
3	STORE	WET	A1	12-MAR-2008 16:31	JKT	JBK

Samplenum	Container ID	Products
L08030114-05	432346	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	L1	07-MAR-2008 11:22	RLK	
2	ANALYZ	L1	SEM	07-MAR-2008 11:59	DSF	RLK
3	STORE	SEM	A2	07-MAR-2008 16:34	JKT	DSF

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L08030114
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 14-MAR-2008

Samplenum	Container ID	Products
L08030114-06	432348	

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:25	KJW	RLK

Comments:Products cancelled.

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:25	KJW	RLK

Comments:Products cancelled.

Samplenum	Container ID	Products
L08030114-05	432345	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:17	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:17	KJW	RLK

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:17	KJW	RLK

Samplenum	Container ID	Products
L08030114-03	432339	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:25	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:25	KJW	RLK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services, Inc.

Internal Chain of Custody Report

Login: L08030114
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 14-MAR-2008

Samplenum	Container ID	Products
L08030114-06	432351	

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-MAR-2008 11:23	RLK	
2	ANALYZ	W1	WET	10-MAR-2008 05:59	JBK	RLK
Comments:Products cancelled.						
3	STORE	WET	A1	12-MAR-2008 16:31	JKT	JBK
Comments:Products cancelled.						

Samplenum	Container ID	Products
L08030114-04	432342	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	L1	07-MAR-2008 11:22	RLK	
2	ANALYZ	L1	SEM	07-MAR-2008 11:59	DSF	RLK
3	STORE	SEM	A2	07-MAR-2008 16:34	JKT	DSF

Samplenum	Container ID	Products
L08030114-05	432344	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:25	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:25	KJW	RLK

Samplenum	Container ID	Products
L08030114-06	432350	

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	L1	07-MAR-2008 11:23	RLK	
2	ANALYZ	L1	SEM	07-MAR-2008 11:59	DSF	RLK
Comments:Products cancelled.						
3	STORE	SEM	A2	07-MAR-2008 16:34	JKT	DSF
Comments:Products cancelled.						

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services, Inc.

Internal Chain of Custody Report

Login: L08030114
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 14-MAR-2008

Samplenum	Container ID	Products
L08030114-06	433640	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-MAR-2008 09:49	BRG	

Samplenum	Container ID	Products
L08030114-05	432347	TIC TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-MAR-2008 11:22	RLK	
2	ANALYZ	W1	WET	10-MAR-2008 05:59	JBK	RLK
3	STORE	WET	A1	12-MAR-2008 16:31	JKT	JBK

Samplenum	Container ID	Products
L08030114-04	432341	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:17	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:17	KJW	RLK

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:17	KJW	RLK

Samplenum	Container ID	Products
L08030114-07	432352	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:32	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:25	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:32	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:25	KJW	RLK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services, Inc.

Internal Chain of Custody Report

Login: L08030114
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 14-MAR-2008

Samplenum	Container ID	Products
L08030114-06	433638	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		12-MAR-2008 09:49	BRG	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		12-MAR-2008 09:49	BRG	

Samplenum	Container ID	Products
L08030114-01	432337	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:25	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:25	KJW	RLK

Samplenum	Container ID	Products
L08030114-02	432338	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:25	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:25	KJW	RLK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

KEMRON Environmental Services, Inc.

Internal Chain of Custody Report

Login: L08030114
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 14-MAR-2008

Samplenum	Container ID	Products
L08030114-06	433639	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-MAR-2008 09:49	BRG	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-MAR-2008 09:49	BRG	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-MAR-2008 09:49	BRG	

Samplenum	Container ID	Products
L08030114-06	432349	

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:17	KJW	RLK

Comments:Products cancelled.

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:17	KJW	RLK

Comments:Products cancelled.

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-MAR-2008 11:22	RLK	
2	ANALYZ	V1	ORG4	10-MAR-2008 05:17	KJW	RLK

Comments:Products cancelled.

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Quick Facts

Microbac®

Look closer. Go further. Do more.

Corporate Information:

Microbac Laboratories, Inc.

Franklin Corporate Center

2000 Corporate Drive, Suite 350

Wexford, PA 15090

Phone: (724) 934-5030

FAX: (724) 934-5088

www.microbac.com

President & CEO: J. Trevor Boyce

Federal Tax ID#: 25-1199-642

DUNS#: 048192892

Incorporated in the State of PA -- May 1, 1969

Employees Corporate-Wide: 467

Facilities Corporate –Wide: 18 Divisions, 28 locations across 15 states

Please note these administrative changes for our Ohio Valley Division laboratory in Marietta, OH (formerly KEMRON Environmental Services, Inc.) , in particular the address, which is a revised routing of remittances on our invoices. All invoices dated April 1, 2008 or later will reflect this change, and will be highlighted with an attention-getting sticker during our transition. Please adjust your records to ensure proper routing of payments.

Microbac®

Microbac Laboratories Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800-373-4071
Fax: 740-373-4835
Email: OVL@microbac.com

158 Starlite Drive, Marietta, OH 45750 ● T:740-373-4071 ● F:740-373-4835 ● http://www.microbac.com

Laboratory Report Number: L08060120

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box bleow at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Debbie Elliott	*Team Leader*	delliott@microbac.com
Kathy Albertson	*Team Chemist/Data Specialist*	kalbertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	smossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	tlong@microbac.com
Brenda Gregory	*Client Services Specialist*	bgregory@microbac.com
Amanda Fickiesen	*Client Services Specialist*	afickiesen@microbac.com
Annie Brown	*Client Services Specialist*	abrown@microbac.com
Katie Barnes	*Team Assistant*	kbarnes@microbac.com
Jacqueline Parsons	*Team Assistant*	jparsons@microbac.com

This report was reviewed on June 16, 2008.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

This report was certified on June 16, 2008.

David Vandenberg - Managing Director

Accrediting authority: Texas Commission on Environmental Quality (Texas) ID:T104704252-07-TX
This report contains a total of 224 pages.

Look closer. Go further. Do more.

Microbac REPORT L08060120
PREPARED FOR Shaw E I, Inc.
WORK ID:

1.0 Introduction 4
2.1 Volatiles Data 24
2.1.1 Volatiles GCMS Data (8260) 25
2.1.1.1 Summary Data 26
2.1.1.2 QC Summary Data 40
2.1.2 RSK 175 71
2.1.2.1 Summary Data 72
2.1.2.2 QC Summary Data 78
2.2 General Chemistry Data 99
2.2.1 Method 9056 100
2.2.1.1 Summary Data 101
2.2.1.2 QC Summary Data 114
2.2.2 Total Organic Carbon Data 141
2.2.2.1 Summary Data 142
2.2.2.2 QC Summary Data 152
2.2.2.3 Raw Data 160
3.0 Attachments 213

1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L08060120

CHAIN OF CUSTODY: The chain of custody number was 10258.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 6 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 10-JUN-08
Stephanie Mossburg

Laboratory Data Package Cover Page

00115345

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna I. Hesson	Conventional Lab Supervisor	June 8, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L08060120
Project Name:	798-LONGHORN
Method:	TOC
Prep Batch Number(s):	WG273154
Reviewer Name:	DEANNA I. HESSON
LRC Date:	June 08, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?	✓				
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	✓				
Were MS/MSD analyzed at the appropriate frequency?	✓				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?	✓				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	EI(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L08060120
Project Name:	798-LONGHORN
Method:	TOC
Prep Batch Number(s):	WG273154
Reviewer Name:	DEANNA I. HESSON
LRC Date:	June 08, 2008

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00115350

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	June 9, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L08060120
Project Name:	798-LONGHORN
Method:	RSK175
Prep Batch Number(s):	273142
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	June 09, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT
ER# - Description
There were no exceptions.

Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00115354

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	June 16, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L08060120
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	273702
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	June 16, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT
ER# - Description
There were no exceptions.

Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00115358

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

MICHAEL D. COCHRAN		Semivolatiles Lab Supervisor	June 12, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L08060120
Project Name:	798-LONGHORN
Method:	300
Prep Batch Number(s):	WG273159
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	June 05, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?	✓				
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?	✓				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(5)
Were MS/MSD RPDs within laboratory QC limits?	✓				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				1
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L08060120
Project Name:	798-LONGHORN
Method:	300
Prep Batch Number(s):	WG273159
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	June 05, 2008

EXCEPTIONS REPORT
ER# - Description
1. Samples -03,-04,-05,-06 were analyzed at a dilution only due to very high pre-run screen reesults for chloride.
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

00115366

L08060120

06/16/08 13:09

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390386(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW22-060308	L08060120-01	8260B	1	05-JUN-08
12WW23-060308	L08060120-02	8260B	1	05-JUN-08
12WW21-060408	L08060120-03	8260B	1	05-JUN-08
12WW24-060408	L08060120-04	8260B	2.5	05-JUN-08
12WW20-060408	L08060120-05	8260B	1	05-JUN-08
12WW20-060408-FD	L08060120-06	8260B	1	05-JUN-08

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115367

Sample Number: **L08060120-01**
Client ID: **12WW22-060308**
Matrix: **Water**
Workgroup Number: **WG273702**
Collect Date: **06/03/2008 09:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **06/12/2008 19:04**
Cal Date: **05/14/2008 17:41**
Run Date: **06/12/2008 19:04**
File ID: **11M51038**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115368

Sample Number: **L08060120-01**
Client ID: **12WW22-060308**
Matrix: **Water**
Workgroup Number: **WG273702**
Collect Date: **06/03/2008 09:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **06/12/2008 19:04**
Cal Date: **05/14/2008 17:41**
Run Date: **06/12/2008 19:04**
File ID: **11M51038**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	101	86	118	
1,2-Dichloroethane-d4	99.8	80	120	
Toluene-d8	106	88	110	
4-Bromofluorobenzene	106	86	115	

U Not detected at or above adjusted sample detection limit

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115369

Sample Number: **L08060120-02**
Client ID: **12WW23-060308**
Matrix: **Water**
Workgroup Number: **WG273702**
Collect Date: **06/03/2008 11:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **06/12/2008 19:38**
Cal Date: **05/14/2008 17:41**
Run Date: **06/12/2008 19:38**
File ID: **11M51039**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115370

Sample Number: **L08060120-02**
Client ID: **12WW23-060308**
Matrix: **Water**
Workgroup Number: **WG273702**
Collect Date: **06/03/2008 11:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **06/12/2008 19:38**
Cal Date: **05/14/2008 17:41**
Run Date: **06/12/2008 19:38**
File ID: **11M51039**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	102	86	118	
1,2-Dichloroethane-d4	100	80	120	
Toluene-d8	107	88	110	
4-Bromofluorobenzene	106	86	115	

U Not detected at or above adjusted sample detection limit

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115371

Sample Number: **L08060120-03**
Client ID: **12WW21-060408**
Matrix: **Water**
Workgroup Number: **WG273702**
Collect Date: **06/04/2008 09:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **06/12/2008 20:12**
Cal Date: **05/14/2008 17:41**
Run Date: **06/12/2008 20:12**
File ID: **11M51040**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4	0.432	J	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Sample Number: L08060120-03
Client ID: 12WW21-060408
Matrix: Water
Workgroup Number: WG273702
Collect Date: 06/04/2008 09:05
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 5030B
Analytical Method: 8260B
Analyst: TMB
Dilution: 1
Units: ug/L

Instrument: HPMS11
Prep Date: 06/12/2008 20:12
Cal Date: 05/14/2008 17:41
Run Date: 06/12/2008 20:12
File ID: 11M51040

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	101	86	118	
1,2-Dichloroethane-d4	101	80	120	
Toluene-d8	106	88	110	
4-Bromofluorobenzene	106	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115373

Sample Number: **L08060120-04**
Client ID: **12WW24-060408**
Matrix: **Water**
Workgroup Number: **WG273702**
Collect Date: **06/04/2008 10:40**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **2.5**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **06/12/2008 21:54**
Cal Date: **05/14/2008 17:41**
Run Date: **06/12/2008 21:54**
File ID: **11M51043**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	25.0	6.25
Benzene	71-43-2	0.624	J	2.50	0.313
Bromobenzene	108-86-1		U	2.50	0.313
Bromochloromethane	74-97-5		U	2.50	0.500
Bromodichloromethane	75-27-4		U	2.50	0.625
Bromoform	75-25-2		U	2.50	1.25
Bromomethane	74-83-9		U	2.50	1.25
2-Butanone	78-93-3		U	25.0	6.25
n-Butylbenzene	104-51-8		U	2.50	0.625
sec-Butylbenzene	135-98-8		U	2.50	0.625
tert-Butylbenzene	98-06-6		U	2.50	0.625
Carbon disulfide	75-15-0		U	2.50	1.25
Carbon tetrachloride	56-23-5		U	2.50	0.625
Chlorobenzene	108-90-7	10.5		2.50	0.313
Chlorodibromomethane	124-48-1		U	2.50	0.625
Chloroethane	75-00-3		U	2.50	1.25
2-Chloroethyl vinyl ether	110-75-8		U	25.0	5.00
Chloroform	67-66-3	0.384	J	2.50	0.313
Chloromethane	74-87-3		U	2.50	0.625
2-Chlorotoluene	95-49-8		U	2.50	0.313
4-Chlorotoluene	106-43-4		U	2.50	0.625
1,2-Dibromo-3-chloropropane	96-12-8		U	12.5	2.50
1,2-Dibromoethane	106-93-4		U	2.50	0.625
Dibromomethane	74-95-3		U	2.50	0.625
1,2-Dichlorobenzene	95-50-1		U	2.50	0.313
1,3-Dichlorobenzene	541-73-1		U	2.50	0.625
1,4-Dichlorobenzene	106-46-7	3.94		2.50	0.313
Dichlorodifluoromethane	75-71-8		U	2.50	0.625
1,1-Dichloroethane	75-34-3	0.681	J	2.50	0.313
1,2-Dichloroethane	107-06-2		U	2.50	0.625
1,1-Dichloroethene	75-35-4		U	2.50	1.25
cis-1,2-Dichloroethene	156-59-2	59.0		2.50	0.625
trans-1,2-Dichloroethene	156-60-5		U	2.50	0.625
1,2-Dichloropropane	78-87-5		U	2.50	0.500
1,3-Dichloropropane	142-28-9		U	2.50	0.500
2,2-Dichloropropane	594-20-7		U	2.50	0.625
cis-1,3-Dichloropropene	10061-01-5		U	2.50	0.625
trans-1,3-Dichloropropene	10061-02-6		U	2.50	1.25
1,1-Dichloropropene	563-58-6		U	2.50	0.625
Ethylbenzene	100-41-4		U	2.50	0.625
2-Hexanone	591-78-6		U	25.0	6.25
Hexachlorobutadiene	87-68-3		U	2.50	0.625
Isopropylbenzene	98-82-8		U	2.50	0.625
p-Isopropyltoluene	99-87-6		U	2.50	0.625
4-Methyl-2-pentanone	108-10-1		U	25.0	6.25
Methylene chloride	75-09-2		U	12.5	0.625
Naphthalene	91-20-3		U	2.50	0.500
n-Propylbenzene	103-65-1		U	2.50	0.313
Styrene	100-42-5		U	2.50	0.313
1,1,1,2-Tetrachloroethane	630-20-6		U	2.50	0.625
1,1,2,2-Tetrachloroethane	79-34-5		U	2.50	0.313
Tetrachloroethene	127-18-4	1.04	J	2.50	0.625
Toluene	108-88-3		U	2.50	0.625
1,2,3-Trichlorobenzene	87-61-6		U	2.50	0.375
1,2,4-Trichlorobenzene	120-82-1		U	2.50	0.500
1,1,1-Trichloroethane	71-55-6		U	2.50	0.625
1,1,2-Trichloroethane	79-00-5		U	2.50	0.625
Trichloroethene	79-01-6	237		2.50	0.625
Trichlorofluoromethane	75-69-4		U	2.50	0.625

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115374

Sample Number: **L08060120-04**
Client ID: **12WW24-060408**
Matrix: **Water**
Workgroup Number: **WG273702**
Collect Date: **06/04/2008 10:40**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **2.5**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **06/12/2008 21:54**
Cal Date: **05/14/2008 17:41**
Run Date: **06/12/2008 21:54**
File ID: **11M51043**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	2.50	1.25
1,2,4-Trimethylbenzene	95-63-6		U	2.50	0.625
1,3,5-Trimethylbenzene	108-67-8		U	2.50	0.625
Vinyl acetate	108-05-4		U	25.0	6.25
Vinyl chloride	75-01-4	1.75	J	2.50	0.625
o-Xylene	95-47-6		U	2.50	0.625
m-,p-Xylene	136777-61-2		U	2.50	1.25

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	103	86	118	
1,2-Dichloroethane-d4	104	80	120	
Toluene-d8	108	88	110	
4-Bromofluorobenzene	107	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115375

Sample Number: **L08060120-05**
Client ID: **12WW20-060408**
Matrix: **Water**
Workgroup Number: **WG273702**
Collect Date: **06/04/2008 13:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **06/12/2008 20:46**
Cal Date: **05/14/2008 17:41**
Run Date: **06/12/2008 20:46**
File ID: **11M51041**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.656	J	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4	0.327	J	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	1.04		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115376

Sample Number: **L08060120-05**
Client ID: **12WW20-060408**
Matrix: **Water**
Workgroup Number: **WG273702**
Collect Date: **06/04/2008 13:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **06/12/2008 20:46**
Cal Date: **05/14/2008 17:41**
Run Date: **06/12/2008 20:46**
File ID: **11M51041**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	103	86	118	
1,2-Dichloroethane-d4	104	80	120	
Toluene-d8	106	88	110	
4-Bromofluorobenzene	107	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115377

Sample Number: **L08060120-06**
Client ID: **12WW20-060408-FD**
Matrix: **Water**
Workgroup Number: **WG273702**
Collect Date: **06/04/2008 13:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **06/12/2008 21:20**
Cal Date: **05/14/2008 17:41**
Run Date: **06/12/2008 21:20**
File ID: **11M51042**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.599	J	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	1.07		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115378

Sample Number: **L08060120-06**
Client ID: **12WW20-060408-FD**
Matrix: **Water**
Workgroup Number: **WG273702**
Collect Date: **06/04/2008 13:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **06/12/2008 21:20**
Cal Date: **05/14/2008 17:41**
Run Date: **06/12/2008 21:20**
File ID: **11M51042**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	102	86	118	
1,2-Dichloroethane-d4	105	80	120	
Toluene-d8	105	88	110	
4-Bromofluorobenzene	106	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a\left(c - y\right)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS11 Dataset: 051408
Analyst1: SMH Analyst2: CMS
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 24217

Internal Standard: STD26275 Surrogate Standard: STD25834
CCV: STD26411 LCS: STD23640 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG271232

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	11M50389	SYSTEM BLANK	NA	1	1		05/14/08 10:44
2	11M50390	WG271232-01 50ng BFB STD 8260	NA	1	1	STD25339	05/14/08 11:36
3	11M50391	0.3ug/L STD 8260	NA	1	1	STD25988	05/14/08 12:00
4	11M50392	WG271232-02 0.3ug/L STD 8260	NA	1	1	STD26411	05/14/08 12:34
5	11M50393	WG271232-03 0.4ug/L STD 8260	NA	1	1	STD26411	05/14/08 13:08
6	11M50394	WG271232-04 1ug/L STD 8260	NA	1	1	STD26411	05/14/08 13:43
7	11M50395	WG271232- 2ug/L STD 8260	NA	1	1	STD26411	05/14/08 14:17
8	11M50396	WG271232-05 5ug/L STD 8260	NA	1	1	STD26411	05/14/08 14:51
9	11M50397	WG271232-06 20ug/L STD 8260	NA	1	1	STD26411	05/14/08 15:25
10	11M50398	WG271232-07 50ug/L STD 8260	NA	1	1	STD26411	05/14/08 15:59
11	11M50399	WG271232-08 100ug/L STD 8260	NA	1	1	STD26411	05/14/08 16:33
12	11M50400	WG271232-09 200ug/L STD 8260	NA	1	1	STD26411	05/14/08 17:07
13	11M50401	WG271232-10 300ug/L STD 8260	NA	1	1	STD26411	05/14/08 17:41
14	11M50402	SYSTEM BLANK	NA	1	1		05/14/08 18:15
15	11M50403	SYSTEM BLANK	NA	1	1		05/14/08 18:49
16	11M50404	SYSTEM BLANK	NA	1	1		05/14/08 19:23
17	11M50405	WG271232-11 20ug/L ALT SRC STD 8260	NA	1	1	STD23640	05/14/08 19:57
18	11M50406	SYSTEM BLANK	NA	1	1		05/14/08 20:31

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X			
File ID: 11M50391				
7				
File ID: 11M50395				
DID NOT USE POINT ON CURVE				

Approved: May 20, 2008

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS11 Dataset: 061208
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 12
Method: 5030B/5035 SOP: PAT01 Rev: 11
Method: 624 SOP: MSV10 Rev: 7
Maintenance Log ID: 24535

Internal Standard: STD26943 Surrogate Standard: STD26707
CCV: STD26920 LCS: STD26922 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG273702

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	11M51021	SYSTEM CHECK	NA	1	1		06/12/08 09:20
2	11M51022	WG273701-01 50ng BFB STD 8260	NA	1	1	STD26772	06/12/08 10:00
3	11M51023	WG273701-02 50ug/L CCV STD 8260	NA	1	1	STD26920	06/12/08 10:35
4	11M51024	WG273702-01 VBLK0612 BLANK STD 826	NA	1	1		06/12/08 11:09
5	11M51025	WG273702-01 VBLK0612 BLANK STD 826	NA	1	1		06/12/08 11:43
6	11M51026	WG273702-02 20ug/L LCS STD 8260	NA	1	1	STD26922	06/12/08 12:17
7	11M51027	WG273702-03 20ug/L LCSDUP STD 8260	NA	1	1	STD26922	06/12/08 12:51
8	11M51028	L08060163-01 B 200X D1 826-SPE1	<2	1	200		06/12/08 13:25
9	11M51029	L08060163-05 B 50X A1 826-SPE1	<2	1	50		06/12/08 13:59
10	11M51030	L08050568-07 B 8260	<2	1	1		06/12/08 14:33
11	11M51031	L08060163-06 B 25X D1 826-SPE1	<2	1	25		06/12/08 15:06
12	11M51032	L08050682-04 B 10X D1 826-SPE	4	1	10		06/12/08 15:40
13	11M51033	L08050682-06 B 10X D1 826-SPE	<2	1	10		06/12/08 16:14
14	11M51034	L08050682-07 B 10X D1 826-SPE	<2	1	10		06/12/08 16:48
15	11M51035	L08050682-05 B 50X D1 826-SPE	<2	1	50		06/12/08 17:22
16	11M51036	L08060119-01 A 826-LOW	<2	1	1		06/12/08 17:56
17	11M51037	L08060119-02 A 826-LOW	<2	1	1		06/12/08 18:30
18	11M51038	L08060120-01 A 826-LOW	<2	1	1		06/12/08 19:04
19	11M51039	L08060120-02 A 826-LOW	<2	1	1		06/12/08 19:38
20	11M51040	L08060120-03 A 826-LOW	<2	1	1		06/12/08 20:12
21	11M51041	L08060120-05 A 826-LOW	<2	1	1		06/12/08 20:46
22	11M51042	L08060120-06 A 826-LOW	<2	1	1		06/12/08 21:20
23	11M51043	L08060120-04 A 2.5X 826-LOW	<2	1	2.5		06/12/08 21:54
24	11M51044	SYSTEM BLANK	NA	1	1		06/12/08 22:28
25	11M51045	WG273702-04 624 BLANK	NA	1	1		06/12/08 23:02
26	11M51046	L08060308-01 A 624-SPE	7	2	1		06/12/08 23:36
27	11M51047	L08060308-02 A 624-SPE	7	2	1		06/13/08 00:10
28	11M51048	SYSTEM BLANK	NA	1	1		06/13/08 00:44

Comments

Seq.	Rerun	Dil.	Reason	Analytes
4	X	1	Carry-over contamination	
File ID: 11M51024				

Approved: June 16, 2008

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument:	HPMS11	Dataset:	061208		
Analyst1:	TMB	Analyst2:	NA		
Method:	8260B	SOP:	MSV01	Rev:	12
Method:	5030B/5035	SOP:	PAT01	Rev:	11
Method:	624	SOP:	MSV10	Rev:	7
Maintenance Log ID:	24535				

Internal Standard: STD26943 Surrogate Standard: STD26707

CCV: STD26920 LCS: STD26922 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA

Workgroups: WG273702

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
dnr.				

Approved: June 16, 2008

Microbac Laboratories Inc.

Data Checklist

Date: 14-MAY-2008
Analyst: SMH
Analyst: CMS
Method: 8260
Instrument: HPMS11
Curve Workgroup: NA
Runlog ID: 22269
Analytical Workgroups: WG271232

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	X
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	X
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	SMH
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the resonableness of the results	X

Primary Reviewer:
20-MAY-2008

Secondary Reviewer:
20-MAY-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAY-20-2008 16:13:02

Microbac Laboratories Inc.

Data Checklist

Date: 12-JUN-2008
Analyst: TMB
Analyst: NA
Method: 8260
Instrument: HPMS11
Curve Workgroup: NA
Runlog ID: 22660
Analytical Workgroups: WG273702

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	NA
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
13-JUN-2008
Tiffany Bailey

Secondary Reviewer:
16-JUN-2008

CHECKLIST1 - Modified 03/05/2008
Generated: JUN-16-2008 08:20:12

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00115387

Analytical Method: 8260B AAB#: WG273702

Login Number: L08060120

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW20-060408-FD	06/04/08	06/05/08	06/12/08	14	8.32	06/12/08	14	8.32	
12WW21-060408	06/04/08	06/05/08	06/12/08	14	8.46	06/12/08	14	8.46	
12WW20-060408	06/04/08	06/05/08	06/12/08	14	8.29	06/12/08	14	8.29	
12WW23-060308	06/03/08	06/05/08	06/12/08	14	9.36	06/12/08	14	9.36	
12WW22-060308	06/03/08	06/05/08	06/12/08	14	9.40	06/12/08	14	9.40	
12WW24-060408	06/04/08	06/05/08	06/12/08	14	8.47	06/12/08	14	8.47	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1119288
Report generated 06/16/2008 10:38

Microbac Laboratories Inc.
SURROGATE STANDARDS

Login Number: L08060120
Instrument Id: HPMS11
Workgroup (AAB#): WG273702

Method: 8260
CAL ID: HPMS11-14-MAY-08
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L08060120-01	1.00	01	99.8	101	106	106
L08060120-02	1.00	01	100	102	106	107
L08060120-03	1.00	01	101	101	106	106
L08060120-04	2.50	DL01	104	103	107	108
L08060120-05	1.00	01	104	103	107	106
L08060120-06	1.00	01	105	102	106	105
WG273702-01	1.00	01	96.4	99.0	106	106
WG273702-02	1.00	01	96.8	100	104	107
WG273702-03	1.00	01	96.4	99.0	106	107
WG273702-04	1.00	01	103	103	107	105

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1119008
Report generated: 06/16/2008 10:38

METHOD BLANK SUMMARY

Login Number: L08060120
Work Group: WG273702
Blank File ID: 11M51025
Blank Sample ID: WG273702-01
Prep Date: 06/12/08 11:43
Instrument ID: HPMS11
Analyzed Date: 06/12/08 11:43
Method: 8260B
Analyst: TMB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG273702-02	11M51026	06/12/08 12:17	01
LCS2	WG273702-03	11M51027	06/12/08 12:51	01
12WW22-060308	L08060120-01	11M51038	06/12/08 19:04	01
12WW23-060308	L08060120-02	11M51039	06/12/08 19:38	01
12WW21-060408	L08060120-03	11M51040	06/12/08 20:12	01
12WW20-060408	L08060120-05	11M51041	06/12/08 20:46	01
12WW20-060408-FD	L08060120-06	11M51042	06/12/08 21:20	01
12WW24-060408	L08060120-04	11M51043	06/12/08 21:54	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1119289
Report generated 06/16/2008 10:38

Login Number:L08060120 Prep Date:06/12/08 11:43 Sample ID:WG273702-01
Instrument ID:HPMS11 Run Date:06/12/08 11:43 Prep Method:5030B
File ID:11M51025 Analyst:TMB Method:8260B
Workgroup (AAB#):WG273702 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS11-14-MAY-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

Report Name:BLANK
PDF ID: 1119290
16-JUN-2008 10:38

Login Number:L08060120 Prep Date:06/12/08 11:43 Sample ID:WG273702-01
Instrument ID:HPMS11 Run Date:06/12/08 11:43 Prep Method:5030B
File ID:11M51025 Analyst:TMB Method:8260B
Workgroup (AAB#):WG273702 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS11-14-MAY-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	99.0	86 - 118	PASS
1,2-Dichloroethane-d4	96.4	80 - 120	PASS
Toluene-d8	106	88 - 110	PASS
4-Bromofluorobenzene	106	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1119290
16-JUN-2008 10:38

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00115392

Login Number:L08060120 Analyst:TMB Prep Method:5030B
Instrument ID:HPMS11 Matrix:Water Method:8260B
Workgroup (AAB#):WG273702 Units:ug/L
QC Key:STD Lot #:STD26922

Sample ID:WG273702-02 LCS File ID:11M51026 Run Date:06/12/2008 12:17
Sample ID:WG273702-03 LCS2 File ID:11M51027 Run Date:06/12/2008 12:51

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	19.4	96.9	20.0	18.0	90.2	7.08	40 - 142	20	
Benzene	20.0	20.3	102	20.0	19.9	99.4	2.35	80 - 121	20	
Bromobenzene	20.0	22.1	111	20.0	21.6	108	2.26	80 - 120	20	
Bromochloromethane	20.0	20.4	102	20.0	19.8	98.9	3.12	65 - 130	20	
Bromodichloromethane	20.0	21.6	108	20.0	21.1	105	2.42	80 - 131	20	
Bromoform	20.0	21.0	105	20.0	19.8	99.2	5.69	70 - 130	20	
Bromomethane	20.0	19.8	98.8	20.0	19.6	98.1	0.739	30 - 145	20	
2-Butanone	20.0	18.8	94.2	20.0	18.5	92.5	1.81	30 - 150	20	
n-Butylbenzene	20.0	22.4	112	20.0	21.7	108	3.28	80 - 131	20	
sec-Butylbenzene	20.0	22.8	114	20.0	22.0	110	3.33	80 - 127	20	
tert-Butylbenzene	20.0	22.5	113	20.0	22.1	110	2.12	80 - 126	20	
Carbon disulfide	20.0	18.7	93.3	20.0	18.4	92.1	1.25	58 - 138	20	
Carbon tetrachloride	20.0	20.6	103	20.0	19.7	98.3	4.54	65 - 140	20	
Chlorobenzene	20.0	20.4	102	20.0	20.0	99.8	2.21	80 - 120	20	
Chlorodibromomethane	20.0	21.2	106	20.0	20.2	101	4.49	60 - 135	20	
Chloroethane	20.0	17.7	88.3	20.0	17.4	87.0	1.49	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	17.3	86.7	20.0	17.1	85.5	1.45	58 - 151	20	
Chloroform	20.0	20.3	101	20.0	19.7	98.3	3.06	80 - 125	20	
Chloromethane	20.0	15.0	74.9	20.0	14.8	73.9	1.32	40 - 125	20	
2-Chlorotoluene	20.0	23.3	117	20.0	22.7	114	2.60	80 - 127	20	
4-Chlorotoluene	20.0	19.9	99.4	20.0	19.1	95.6	3.94	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	18.6	92.9	20.0	17.5	87.3	6.24	50 - 130	20	
1,2-Dibromoethane	20.0	20.7	104	20.0	19.8	98.8	4.66	80 - 125	20	
Dibromomethane	20.0	21.4	107	20.0	20.2	101	5.75	75 - 125	20	
1,2-Dichlorobenzene	20.0	20.7	103	20.0	20.3	101	2.16	80 - 125	20	
1,3-Dichlorobenzene	20.0	20.9	105	20.0	20.2	101	3.62	80 - 120	20	
1,4-Dichlorobenzene	20.0	20.5	103	20.0	19.8	99.2	3.33	80 - 120	20	
Dichlorodifluoromethane	20.0	15.4	76.8	20.0	14.7	73.7	4.14	50 - 133	20	
1,1-Dichloroethane	20.0	20.0	100	20.0	19.6	98.1	2.01	80 - 125	20	
1,2-Dichloroethane	20.0	20.4	102	20.0	19.9	99.4	2.77	80 - 129	20	
1,1-Dichloroethene	20.0	19.9	99.3	20.0	19.5	97.5	1.75	80 - 132	20	
cis-1,2-Dichloroethene	20.0	21.5	108	20.0	21.0	105	2.46	70 - 125	20	
trans-1,2-Dichloroethene	20.0	19.8	99.0	20.0	19.4	96.8	2.23	80 - 127	20	
1,2-Dichloropropane	20.0	20.6	103	20.0	20.3	101	1.33	80 - 120	20	
1,3-Dichloropropane	20.0	20.3	102	20.0	19.6	97.8	3.79	80 - 120	20	
2,2-Dichloropropane	20.0	19.6	98.2	20.0	19.1	95.3	2.96	80 - 133	20	
cis-1,3-Dichloropropene	20.0	20.7	104	20.0	20.1	100	3.11	70 - 130	20	
trans-1,3-Dichloropropene	20.0	19.2	96.1	20.0	18.5	92.6	3.69	80 - 130	20	
1,1-Dichloropropene	20.0	20.2	101	20.0	19.4	97.2	3.72	75 - 130	20	
Ethylbenzene	20.0	21.9	110	20.0	21.3	107	2.67	80 - 122	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1118679
Report generated: 06/16/2008 10:38

Microbac Laboratories Inc.

LABORATORY CONTROL SAMPLE (LCS)

Login Number:L08060120 Analyst:TMB Prep Method:5030B

Instrument ID:HPMS11 Matrix:Water Method:8260B

Workgroup (AAB#):WG273702 Units:ug/L

QC Key:STD Lot #:STD26922

Sample ID:WG273702-02 LCS File ID:11M51026 Run Date:06/12/2008 12:17

Sample ID:WG273702-03 LCS2 File ID:11M51027 Run Date:06/12/2008 12:51

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	16.8	84.1	20.0	16.3	81.7	2.89	55 - 130	20	
Hexachlorobutadiene	20.0	20.7	103	20.0	20.0	100	2.99	72 - 132	20	
Isopropylbenzene	20.0	19.7	98.7	20.0	19.3	96.3	2.53	80 - 122	20	
p-Isopropyltoluene	20.0	21.0	105	20.0	20.3	102	2.96	80 - 122	20	
4-Methyl-2-pentanone	20.0	17.1	85.5	20.0	16.8	84.1	1.59	64 - 140	20	
Methylene chloride	20.0	18.4	92.1	20.0	18.0	89.8	2.54	80 - 123	20	
Naphthalene	20.0	17.8	89.2	20.0	17.3	86.6	2.90	59 - 149	20	
n-Propylbenzene	20.0	22.7	113	20.0	21.8	109	4.20	80 - 129	20	
Styrene	20.0	22.2	111	20.0	21.5	108	3.07	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	22.5	112	20.0	21.4	107	4.75	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	20.0	100	20.0	19.5	97.3	2.96	79 - 125	20	
Tetrachloroethene	20.0	20.6	103	20.0	19.9	99.4	3.38	80 - 124	20	
Toluene	20.0	21.8	109	20.0	21.1	105	3.35	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	17.6	87.8	20.0	17.1	85.6	2.52	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	18.9	94.5	20.0	18.5	92.5	2.06	65 - 135	20	
1,1,1-Trichloroethane	20.0	21.8	109	20.0	21.6	108	1.09	80 - 134	20	
1,1,2-Trichloroethane	20.0	21.1	105	20.0	20.2	101	4.33	80 - 125	20	
Trichloroethene	20.0	21.1	105	20.0	20.7	104	1.66	80 - 122	20	
Trichlorofluoromethane	20.0	18.6	92.9	20.0	18.1	90.4	2.71	62 - 151	20	
1,2,3-Trichloropropane	20.0	20.2	101	20.0	20.4	102	0.631	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	22.5	112	20.0	22.0	110	2.02	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	22.9	115	20.0	22.5	112	2.04	80 - 127	20	
Vinyl acetate	20.0	15.7	78.5	20.0	15.0	74.9	4.70	10 - 150	20	
Vinyl chloride	20.0	20.8	104	20.0	19.8	99.2	4.52	65 - 140	20	
o-Xylene	20.0	22.1	110	20.0	21.5	108	2.61	80 - 122	20	
m-,p-Xylene	40.0	43.6	109	40.0	42.2	105	3.22	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	100	99.0	86 - 118	PASS
1,2-Dichloroethane-d4	96.8	96.4	80 - 120	PASS
Toluene-d8	107	107	88 - 110	PASS
4-Bromofluorobenzene	104	106	86 - 115	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008

PDF File ID: 1118679

Report generated: 06/16/2008 10:38

BFB

Login Number: L08060120 Tune ID: WG271232-01
Instrument: HPMS11 Run Date: 05/14/2008
Analyst: SMH Run Time: 11:36
Workgroup: WG271232 File ID: 11M50390
Cal ID: HPMS11-14-MAY-08

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	21.4	13983	PASS
75.0	95.0	30.0	60.0	52.3	34080	PASS
95.0	95.0	100	100	100	65200	PASS
96.0	95.0	5.00	9.00	7.10	4630	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	59.1	38562	PASS
175	174	5.00	9.00	7.34	2830	PASS
176	174	95.0	101	96.7	37296	PASS
177	176	5.00	9.00	6.52	2430	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG271232-02	STD	01	05/14/2008 12:34	
WG271232-03	STD	01	05/14/2008 13:08	
WG271232-04	STD	01	05/14/2008 13:43	
WG271232-05	STD	01	05/14/2008 14:51	
WG271232-06	STD	01	05/14/2008 15:25	
WG271232-07	STD-CCV	01	05/14/2008 15:59	
WG271232-08	STD	01	05/14/2008 16:33	
WG271232-09	STD	01	05/14/2008 17:07	
WG271232-10	STD	01	05/14/2008 17:41	
WG271232-11	SSCV	01	05/14/2008 19:57	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1119293
Report generated 06/16/2008 10:38

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L08060120
Instrument: HPMS11
Analyst: TMB
Workgroup: WG273701

Tune ID: WG273701-01
Run Date: 06/12/2008
Run Time: 10:00
File ID: 11M51022
Cal ID: HPMS11-14-MAY-08

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	21.1	9877	PASS
75.0	95.0	30.0	60.0	51.2	23962	PASS
95.0	95.0	100	100	100	46824	PASS
96.0	95.0	5.00	9.00	7.28	3409	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	59.4	27821	PASS
175	174	5.00	9.00	7.37	2050	PASS
176	174	95.0	101	96.3	26794	PASS
177	176	5.00	9.00	6.49	1740	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG273701-02	CCV	01	06/12/2008 10:35	
WG273702-01	BLANK	01	06/12/2008 11:43	
WG273702-02	LCS	01	06/12/2008 12:17	
WG273702-03	LCS2	01	06/12/2008 12:51	
L08060120-01	12WW22-060308	01	06/12/2008 19:04	
L08060120-02	12WW23-060308	01	06/12/2008 19:38	
L08060120-03	12WW21-060408	01	06/12/2008 20:12	
L08060120-05	12WW20-060408	01	06/12/2008 20:46	
L08060120-06	12WW20-060408-FD	01	06/12/2008 21:20	
L08060120-04	12WW24-060408	DL01	06/12/2008 21:54	
WG273702-04	BLANK2	01	06/12/2008 23:02	*

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1119293
Report generated 06/16/2008 10:38

Login Number: L08060120 **Instrument ID:** HPMS11
Analytical Method: 8260B **Initial Calibration Date:** 14-MAY-08 17:41
ICAL Workgroup: WG271232 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.3626	13.5		
1,2-Dichloropropane	CCC	0.2098	7.72		
Chloroform	CCC	0.4138	4.02		
Ethylbenzene	CCC	0.4365	7.47		
Toluene	CCC	1.300	9.19		
Vinyl Chloride	CCC	0.2063	12.2		
1,1,2,2-Tetrachloroethane	SPCC	0.4984	6.03		
1,1-Dichloroethane	SPCC	0.4355	10.0		
Bromoform	SPCC	0.1206	14.0		
Chlorobenzene	SPCC	0.7812	8.18		
Chloromethane	SPCC	0.2571	12.9		
1,1,1,2-Tetrachloroethane		0.2305	6.11		
1,1,1-Trichloroethane		0.3390	11.2		
1,1,2-Trichloroethane		0.2119	3.29		
1,1-Dichloropropene		0.3218	4.96		
1,2,3-Trichlorobenzene		0.6916	10.9		
1,2,3-Trichloropropane		0.1467	6.58		
1,2,4-Trichlorobenzene		0.7823	5.95		
1,2,4-Trimethylbenzene		2.498	10.4		
1,2-Dibromo-3-Chloropropane		0.1019	11.3		
1,2-Dibromoethane		0.1994	7.68		
1,2-Dichlorobenzene		1.079	7.91		
1,2-Dichloroethane		0.3011	4.84		
1,3,5-Trimethylbenzene		2.329	14.9		
1,3-Dichlorobenzene		1.206	3.96		
1,3-Dichloropropane		0.4284	2.84		
1,4-Dichlorobenzene		1.225	5.75		
2,2-Dichloropropane		0.3774	1.29		
2-Butanone		0.05815	5.45		
2-Chloroethyl Vinyl Ether		0.1022	10.3		
2-Chlorotoluene		2.529	5.44		
2-Hexanone		0.1291	11.6		
4-Chlorotoluene		2.313	4.56		
4-Methyl-2-Pentanone		0.04915	12.9		
Acetone		0.04342	6.45		
Benzene		0.8659	6.12		
Bromobenzene		0.5519	8.74		
Bromochloromethane		0.09298	2.15		
Bromodichloromethane		0.2819	6.24		
Bromomethane		0.1501	23.0		1.00
Carbon Disulfide		0.6469	13.5		
Carbon Tetrachloride		0.2610	14.2		
Chloroethane		0.1833	15.1		1.00
Dibromochloromethane		0.2214	7.57		
Dibromomethane		0.09809	6.12		

INT_CAL - Modified 03/06/2008
PDF File ID: 1119291
Report generated 06/16/2008 10:38

Login Number: L08060120 **Instrument ID:** HPMS11
Analytical Method: 8260B **Initial Calibration Date:** 14-MAY-08 17:41
ICAL Workgroup: WG271232 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Dichlorodifluoromethane		0.3423	12.8		
Hexachlorobutadiene		0.3648	7.92		
Isopropylbenzene		1.350	8.37		
Methylene Chloride		0.2329	14.9		
Naphthalene		1.540	6.24		
Styrene		0.8796	11.1		
Tetrachloroethene		0.1877	16.5		1.00
Trichloroethene		0.1540	13.7		
Trichlorofluoromethane		0.4221	15.0		
Vinyl Acetate		0.2406	14.2		
cis-1,2-Dichloroethene		0.2144	12.9		
cis-1,3-Dichloropropene		0.3219	13.5		
m-,p-Xylene		0.5465	7.04		
n-Butylbenzene		2.725	12.7		
n-Propylbenzene		3.689	14.0		
o-Xylene		0.5136	10.9		
p-Isopropyltoluene		2.416	6.66		
sec-Butylbenzene		3.021	14.8		
tert-Butylbenzene		0.4052	14.3		
trans-1,2-Dichloroethene		0.2114	10.4		
trans-1,3-Dichloropropene		0.4808	7.23		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 1119291
Report generated 06/16/2008 10:38

Login Number: L08060120 **Instrument ID:** HPMS11
Analytical Method: 8260B **Initial Calibration Date:** 14-MAY-08 17:41
Column ID: F

Analyte	WG271232-02			WG271232-03			WG271232-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	3459.00000	0.2561	1.00	12007.0000	0.3512
1,2-Dichloropropane	NA	NA	NA	0.400	2343.00000	0.1734	1.00	7278.00000	0.2129
Chloroform	0.300	4054.00000	0.3967	0.400	5139.00000	0.3804	1.00	14350.0000	0.4197
Ethylbenzene	NA	NA	NA	0.400	3110.00000	0.3831	1.00	9246.00000	0.4503
Toluene	NA	NA	NA	0.400	8646.00000	1.065	1.00	25583.0000	1.246
Vinyl Chloride	NA	NA	NA	0.400	3334.00000	0.2468	1.00	6050.00000	0.1770
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	1923.00000	0.4903	1.00	4330.00000	0.4390
1,1-Dichloroethane	NA	NA	NA	0.400	4554.00000	0.3371	1.00	15128.0000	0.4425
Bromoform	NA	NA	NA	NA	NA	NA	1.00	1843.00000	0.08980
Chlorobenzene	NA	NA	NA	0.400	7298.00000	0.8991	1.00	16402.0000	0.7988
Chloromethane	NA	NA	NA	0.400	3039.00000	0.2250	1.00	7460.00000	0.2182
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	1725.00000	0.2125	1.00	4773.00000	0.2325
1,1,1-Trichloroethane	NA	NA	NA	0.400	3470.00000	0.2569	1.00	11245.0000	0.3289
1,1,2-Trichloroethane	NA	NA	NA	0.400	1657.00000	0.2041	1.00	4155.00000	0.2024
1,1-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	9891.00000	0.2893
1,2,3-Trichlorobenzene	0.300	2116.00000	0.7264	0.400	3336.00000	0.8505	1.00	6422.00000	0.6512
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	1265.00000	0.1283
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	3394.00000	0.8653	1.00	7852.00000	0.7962
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	7870.00000	2.006	1.00	22748.0000	2.307
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	1.00	782.000000	0.07930
1,2-Dibromoethane	NA	NA	NA	0.400	1441.00000	0.1775	1.00	3642.00000	0.1774
1,2-Dichlorobenzene	0.300	2662.00000	0.9138	0.400	4754.00000	1.212	1.00	10613.0000	1.076
1,2-Dichloroethane	NA	NA	NA	0.400	3719.00000	0.2753	1.00	10320.0000	0.3018
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	6781.00000	1.729	1.00	19072.0000	1.934
1,3-Dichlorobenzene	NA	NA	NA	0.400	4981.00000	1.270	1.00	11543.0000	1.170
1,3-Dichloropropane	NA	NA	NA	0.400	3440.00000	0.4238	1.00	8380.00000	0.4081
1,4-Dichlorobenzene	0.300	3397.00000	1.166	0.400	5210.00000	1.328	1.00	12576.0000	1.275
2,2-Dichloropropane	NA	NA	NA	NA	NA	NA	1.00	12857.0000	0.3760
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	NA	NA	NA	0.400	9550.00000	2.435	1.00	24791.0000	2.514
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	8299.00000	2.116	1.00	22294.0000	2.261
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	10127.0000	0.7497	1.00	30583.0000	0.8945
Bromobenzene	0.300	1309.00000	0.4494	0.400	2022.00000	0.5155	1.00	5563.00000	0.5641
Bromochloromethane	NA	NA	NA	NA	NA	NA	1.00	3158.00000	0.09240
Bromodichloromethane	NA	NA	NA	0.400	3429.00000	0.2538	1.00	9045.00000	0.2645
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	2882.00000	0.08430
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	16106.0000	0.4711
Carbon Tetrachloride	NA	NA	NA	0.400	2418.00000	0.1790	1.00	8870.00000	0.2594

INT_CAL - Modified 03/06/2008
PDF File ID: 1119291
Report generated 06/16/2008 10:38

Login Number: L08060120 **Instrument ID:** HPMS11
Analytical Method: 8260B **Initial Calibration Date:** 14-MAY-08 17:41
Column ID: F

Analyte	WG271232-05			WG271232-06			WG271232-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	5.00	68523.0000	0.3805	20.0	289302.000	0.3829	50.0	756463.000	0.3885
1,2-Dichloropropane	5.00	39320.0000	0.2184	20.0	161180.000	0.2133	50.0	420762.000	0.2161
Chloroform	5.00	76745.0000	0.4262	20.0	316662.000	0.4191	50.0	818728.000	0.4205
Ethylbenzene	5.00	50815.0000	0.4632	20.0	213867.000	0.4673	50.0	547917.000	0.4541
Toluene	5.00	152706.000	1.392	20.0	639415.000	1.397	50.0	1660592.00	1.376
Vinyl Chloride	5.00	41983.0000	0.2331	20.0	154860.000	0.2049	50.0	393697.000	0.2022
1,1,2,2-Tetrachloroethane	5.00	27449.0000	0.5204	20.0	109553.000	0.4864	50.0	308239.000	0.5131
1,1-Dichloroethane	5.00	82209.0000	0.4565	20.0	341238.000	0.4516	50.0	881333.000	0.4527
Bromoform	5.00	12456.0000	0.1136	20.0	56631.0000	0.1237	50.0	160176.000	0.1328
Chlorobenzene	5.00	87504.0000	0.7977	20.0	356330.000	0.7786	50.0	921770.000	0.7640
Chloromethane	5.00	50840.0000	0.2823	20.0	186711.000	0.2471	50.0	473623.000	0.2433
1,1,1,2-Tetrachloroethane	5.00	26686.0000	0.2433	20.0	111290.000	0.2432	50.0	290031.000	0.2404
1,1,1-Trichloroethane	5.00	65822.0000	0.3655	20.0	267290.000	0.3537	50.0	688589.000	0.3537
1,1,2-Trichloroethane	5.00	24378.0000	0.2222	20.0	97767.0000	0.2136	50.0	260795.000	0.2162
1,1-Dichloropropene	5.00	58876.0000	0.3270	20.0	247283.000	0.3272	50.0	640446.000	0.3290
1,2,3-Trichlorobenzene	5.00	38222.0000	0.7246	20.0	150813.000	0.6695	50.0	394177.000	0.6561
1,2,3-Trichloropropane	5.00	7673.00000	0.1455	20.0	33128.0000	0.1471	50.0	91405.0000	0.1521
1,2,4-Trichlorobenzene	5.00	42531.0000	0.8063	20.0	174212.000	0.7734	50.0	457596.000	0.7617
1,2,4-Trimethylbenzene	5.00	143770.000	2.726	20.0	605315.000	2.687	50.0	1584785.00	2.638
1,2-Dibromo-3-Chloropropane	5.00	5461.00000	0.1035	20.0	23137.0000	0.1027	50.0	64061.0000	0.1066
1,2-Dibromoethane	5.00	22504.0000	0.2051	20.0	93450.0000	0.2042	50.0	255839.000	0.2120
1,2-Dichlorobenzene	5.00	60052.0000	1.139	20.0	247598.000	1.099	50.0	647565.000	1.078
1,2-Dichloroethane	5.00	58007.0000	0.3221	20.0	230996.000	0.3057	50.0	595622.000	0.3059
1,3,5-Trimethylbenzene	5.00	132316.000	2.509	20.0	578142.000	2.567	50.0	1540519.00	2.564
1,3-Dichlorobenzene	5.00	66499.0000	1.261	20.0	275700.000	1.224	50.0	716695.000	1.193
1,3-Dichloropropane	5.00	48517.0000	0.4423	20.0	200825.000	0.4388	50.0	524169.000	0.4345
1,4-Dichlorobenzene	5.00	68689.0000	1.302	20.0	274443.000	1.218	50.0	720587.000	1.200
2,2-Dichloropropane	5.00	68154.0000	0.3785	20.0	282495.000	0.3738	50.0	721341.000	0.3705
2-Butanone	5.00	9983.00000	0.05540	20.0	40489.0000	0.05360	50.0	112417.000	0.05770
2-Chloroethyl Vinyl Ether	5.00	15138.0000	0.08410	20.0	71984.0000	0.09530	50.0	204225.000	0.1049
2-Chlorotoluene	5.00	140897.000	2.671	20.0	596954.000	2.650	50.0	1560540.00	2.598
2-Hexanone	5.00	11199.0000	0.1021	20.0	55229.0000	0.1207	50.0	162871.000	0.1350
4-Chlorotoluene	5.00	128150.000	2.430	20.0	533875.000	2.370	50.0	1422767.00	2.368
4-Methyl-2-Pentanone	5.00	7008.00000	0.03890	20.0	33388.0000	0.04420	50.0	96966.0000	0.04980
Acetone	5.00	8325.00000	0.04620	20.0	32485.0000	0.04300	50.0	87490.0000	0.04490
Benzene	5.00	161704.000	0.8980	20.0	668055.000	0.8841	50.0	1720331.00	0.8836
Bromobenzene	5.00	31616.0000	0.5994	20.0	131009.000	0.5816	50.0	348817.000	0.5806
Bromochloromethane	5.00	17324.0000	0.09620	20.0	70257.0000	0.09300	50.0	179744.000	0.09230
Bromodichloromethane	5.00	50317.0000	0.2794	20.0	213867.000	0.2830	50.0	569641.000	0.2926
Bromomethane	5.00	26355.0000	0.1464	20.0	113414.000	0.1501	50.0	337927.000	0.1736
Carbon Disulfide	5.00	126583.000	0.7030	20.0	511647.000	0.6771	50.0	1349080.00	0.6929
Carbon Tetrachloride	5.00	51381.0000	0.2853	20.0	209885.000	0.2778	50.0	537617.000	0.2761

INT_CAL - Modified 03/06/2008
PDF File ID: 1119291
Report generated 06/16/2008 10:38

Login Number: L08060120
Analytical Method: 8260B
Instrument ID: HPMS11
Initial Calibration Date: 14-MAY-08 17:41
Column ID: F

Analyte	WG271232-08			WG271232-09			WG271232-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	100	1527675.00	0.3912	200	3066667.00	0.3875	NA	NA	NA
1,2-Dichloropropane	100	853757.000	0.2186	200	1709378.00	0.2160	NA	NA	NA
Chloroform	100	1677465.00	0.4296	200	3308016.00	0.4180	NA	NA	NA
Ethylbenzene	100	1093707.00	0.4377	200	2085685.00	0.3995	NA	NA	NA
Toluene	100	3381181.00	1.353	200	6623169.00	1.269	NA	NA	NA
Vinyl Chloride	100	747720.000	0.1915	200	1492351.00	0.1886	NA	NA	NA
1,1,2,2-Tetrachloroethane	100	656005.000	0.5260	200	1290264.00	0.5135	NA	NA	NA
1,1-Dichloroethane	100	1793396.00	0.4593	200	3551775.00	0.4488	NA	NA	NA
Bromoform	100	334538.000	0.1339	200	677065.000	0.1297	NA	NA	NA
Chlorobenzene	100	1842478.00	0.7374	200	3616978.00	0.6929	NA	NA	NA
Chloromethane	100	1065955.00	0.2730	200	2461556.00	0.3111	NA	NA	NA
1,1,1,2-Tetrachloroethane	100	579737.000	0.2320	200	1093976.00	0.2096	NA	NA	NA
1,1,1-Trichloroethane	100	1395754.00	0.3574	200	2825624.00	0.3571	NA	NA	NA
1,1,2-Trichloroethane	100	537111.000	0.2150	200	1096713.00	0.2101	NA	NA	NA
1,1-Dichloropropene	100	1290089.00	0.3304	200	2594405.00	0.3279	NA	NA	NA
1,2,3-Trichlorobenzene	100	804519.000	0.6451	200	1530149.00	0.6090	NA	NA	NA
1,2,3-Trichloropropane	100	191540.000	0.1536	200	385880.000	0.1536	NA	NA	NA
1,2,4-Trichlorobenzene	100	941252.000	0.7548	200	1804721.00	0.7183	NA	NA	NA
1,2,4-Trimethylbenzene	100	3278882.00	2.629	200	6259235.00	2.491	NA	NA	NA
1,2-Dibromo-3-Chloropropane	100	136915.000	0.1098	200	275243.000	0.1095	NA	NA	NA
1,2-Dibromoethane	100	530199.000	0.2122	200	1083245.00	0.2075	NA	NA	NA
1,2-Dichlorobenzene	100	1346627.00	1.080	200	2598556.00	1.034	NA	NA	NA
1,2-Dichloroethane	100	1193436.00	0.3056	200	2303895.00	0.2911	NA	NA	NA
1,3,5-Trimethylbenzene	100	3183146.00	2.553	200	6153139.00	2.449	NA	NA	NA
1,3-Dichlorobenzene	100	1476264.00	1.184	200	2864939.00	1.140	NA	NA	NA
1,3-Dichloropropane	100	1082108.00	0.4331	200	2184858.00	0.4185	NA	NA	NA
1,4-Dichlorobenzene	100	1480282.00	1.187	200	2826995.00	1.125	NA	NA	NA
2,2-Dichloropropane	100	1492258.00	0.3822	200	3031623.00	0.3831	NA	NA	NA
2-Butanone	100	240650.000	0.06160	200	481148.000	0.06080	300	719726.000	0.05980
2-Chloroethyl Vinyl Ether	100	430208.000	0.1102	200	883124.000	0.1116	300	1285426.00	0.1068
2-Chlorotoluene	100	3191074.00	2.559	200	5719622.00	2.276	NA	NA	NA
2-Hexanone	100	351915.000	0.1408	200	722228.000	0.1384	300	1042732.00	0.1376
4-Chlorotoluene	100	2959514.00	2.373	200	5715317.00	2.275	NA	NA	NA
4-Methyl-2-Pentanone	100	209293.000	0.05360	200	436803.000	0.05520	300	639844.000	0.05320
Acetone	100	173953.000	0.04450	200	345749.000	0.04370	300	459247.000	0.03820
Benzene	100	3489715.00	0.8937	200	6789874.00	0.8580	NA	NA	NA
Bromobenzene	100	710912.000	0.5701	200	1392201.00	0.5541	NA	NA	NA
Bromochloromethane	100	366505.000	0.09390	200	713370.000	0.09010	NA	NA	NA
Bromodichloromethane	100	1168532.00	0.2993	200	2377706.00	0.3005	NA	NA	NA
Bromomethane	100	672760.000	0.1723	200	1375977.00	0.1739	NA	NA	NA
Carbon Disulfide	100	2659504.00	0.6811	200	5190692.00	0.6559	NA	NA	NA
Carbon Tetrachloride	100	1055410.00	0.2703	200	2206093.00	0.2788	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1119291
Report generated 06/16/2008 10:38

Login Number: L08060120
Analytical Method: 8260B
Instrument ID: HPMS11
Initial Calibration Date: 14-MAY-08 17:41
Column ID: F

Analyte	WG271232-02			WG271232-03			WG271232-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	4387.00000	0.1283
Dibromochloromethane	NA	NA	NA	0.400	1675.00000	0.2064	1.00	3957.00000	0.1927
Dibromomethane	NA	NA	NA	0.400	1160.00000	0.08590	1.00	3261.00000	0.09540
Dichlorodifluoromethane	NA	NA	NA	0.400	4047.00000	0.2996	1.00	9173.00000	0.2683
Hexachlorobutadiene	NA	NA	NA	0.400	1180.00000	0.3008	1.00	3688.00000	0.3739
Isopropylbenzene	NA	NA	NA	NA	NA	NA	1.00	23210.0000	1.130
Methylene Chloride	NA	NA	NA	0.400	4035.00000	0.2987	1.00	9013.00000	0.2636
Naphthalene	NA	NA	NA	0.400	6775.00000	1.727	1.00	14575.0000	1.478
Styrene	NA	NA	NA	NA	NA	NA	1.00	14158.0000	0.6895
Tetrachloroethene	NA	NA	NA	0.400	969.000000	0.1194	1.00	4088.00000	0.1991
Trichloroethene	NA	NA	NA	0.400	1474.00000	0.1091	1.00	4958.00000	0.1450
Trichlorofluoromethane	NA	NA	NA	0.400	4413.00000	0.3267	1.00	11453.0000	0.3350
Vinyl Acetate	NA	NA	NA	NA	NA	NA	1.00	8712.00000	0.2548
cis-1,2-Dichloroethene	NA	NA	NA	0.400	2104.00000	0.1558	1.00	6971.00000	0.2039
cis-1,3-Dichloropropene	NA	NA	NA	0.400	3495.00000	0.2587	1.00	9132.00000	0.2671
m-,p-Xylene	NA	NA	NA	0.800	8290.00000	0.5107	2.00	23083.0000	0.5621
n-Butylbenzene	NA	NA	NA	0.400	8099.00000	2.065	1.00	23911.0000	2.425
n-Propylbenzene	NA	NA	NA	0.400	10590.0000	2.700	1.00	32154.0000	3.260
o-Xylene	NA	NA	NA	0.400	3559.00000	0.4385	1.00	8877.00000	0.4323
p-Isopropyltoluene	NA	NA	NA	NA	NA	NA	1.00	20755.0000	2.105
sec-Butylbenzene	NA	NA	NA	0.400	8499.00000	2.167	1.00	26027.0000	2.639
tert-Butylbenzene	NA	NA	NA	0.400	1103.00000	0.2812	1.00	3935.00000	0.3990
trans-1,2-Dichloroethene	NA	NA	NA	0.400	2192.00000	0.1623	1.00	7321.00000	0.2141
trans-1,3-Dichloropropene	NA	NA	NA	0.400	3477.00000	0.4284	1.00	8938.00000	0.4353

INT_CAL - Modified 03/06/2008
PDF File ID: 1119291
Report generated 06/16/2008 10:38

Login Number: L08060120
Analytical Method: 8260B
Instrument ID: HPMS11
Initial Calibration Date: 14-MAY-08 17:41
Column ID: F

Analyte	WG271232-05			WG271232-06			WG271232-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	5.00	37063.0000	0.2058	20.0	144762.000	0.1916	50.0	379732.000	0.1950
Dibromochloromethane	5.00	23978.0000	0.2186	20.0	103688.000	0.2266	50.0	286710.000	0.2376
Dibromomethane	5.00	18714.0000	0.1039	20.0	76385.0000	0.1011	50.0	194990.000	0.1002
Dichlorodifluoromethane	5.00	71936.0000	0.3995	20.0	264784.000	0.3504	50.0	700907.000	0.3600
Hexachlorobutadiene	5.00	20440.0000	0.3875	20.0	84497.0000	0.3751	50.0	222397.000	0.3702
Isopropylbenzene	5.00	150508.000	1.372	20.0	650745.000	1.422	50.0	1715051.00	1.422
Methylene Chloride	5.00	40153.0000	0.2230	20.0	158614.000	0.2099	50.0	415183.000	0.2133
Naphthalene	5.00	84047.0000	1.593	20.0	344052.000	1.527	50.0	910231.000	1.515
Styrene	5.00	97121.0000	0.8854	20.0	428407.000	0.9362	50.0	1146299.00	0.9501
Tetrachloroethene	5.00	22940.0000	0.2091	20.0	93458.0000	0.2042	50.0	241240.000	0.1999
Trichloroethene	5.00	29760.0000	0.1653	20.0	122956.000	0.1627	50.0	320196.000	0.1645
Trichlorofluoromethane	5.00	85784.0000	0.4764	20.0	335338.000	0.4438	50.0	886006.000	0.4551
Vinyl Acetate	5.00	46391.0000	0.2576	20.0	181145.000	0.2397	50.0	514361.000	0.2642
cis-1,2-Dichloroethene	5.00	41183.0000	0.2287	20.0	171875.000	0.2275	50.0	446374.000	0.2293
cis-1,3-Dichloropropene	5.00	56845.0000	0.3157	20.0	255573.000	0.3382	50.0	681786.000	0.3502
m-,p-Xylene	10.0	129636.000	0.5909	40.0	529229.000	0.5782	100	1355328.00	0.5617
n-Butylbenzene	5.00	153121.000	2.903	20.0	661778.000	2.938	50.0	1764831.00	2.938
n-Propylbenzene	5.00	212827.000	4.035	20.0	911140.000	4.045	50.0	2406711.00	4.006
o-Xylene	5.00	59445.0000	0.5419	20.0	257836.000	0.5634	50.0	672319.000	0.5572
p-Isopropyltoluene	5.00	129225.000	2.450	20.0	570294.000	2.532	50.0	1510376.00	2.514
sec-Butylbenzene	5.00	172288.000	3.266	20.0	749565.000	3.328	50.0	1978707.00	3.294
tert-Butylbenzene	5.00	23868.0000	0.4525	20.0	99764.0000	0.4429	50.0	259798.000	0.4324
trans-1,2-Dichloroethene	5.00	40159.0000	0.2230	20.0	163184.000	0.2160	50.0	431428.000	0.2216
trans-1,3-Dichloropropene	5.00	53526.0000	0.4879	20.0	226755.000	0.4955	50.0	619417.000	0.5134

INT_CAL - Modified 03/06/2008
PDF File ID: 1119291
Report generated 06/16/2008 10:38

Login Number: L08060120
Analytical Method: 8260B
Instrument ID: HPMS11
Initial Calibration Date: 14-MAY-08 17:41
Column ID: F

Analyte	WG271232-08			WG271232-09			WG271232-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	100	747956.000	0.1915	200	1481929.00	0.1873	NA	NA	NA
Dibromochloromethane	100	592278.000	0.2370	200	1206809.00	0.2312	NA	NA	NA
Dibromomethane	100	396371.000	0.1015	200	780480.000	0.09860	NA	NA	NA
Dichlorodifluoromethane	100	1413784.00	0.3621	200	2817109.00	0.3560	NA	NA	NA
Hexachlorobutadiene	100	470923.000	0.3776	200	926478.000	0.3687	NA	NA	NA
Isopropylbenzene	100	3542583.00	1.418	200	6963755.00	1.334	NA	NA	NA
Methylene Chloride	100	836540.000	0.2142	200	1643955.00	0.2077	NA	NA	NA
Naphthalene	100	1880344.00	1.508	200	3595868.00	1.431	NA	NA	NA
Styrene	100	2344131.00	0.9382	200	4585045.00	0.8783	NA	NA	NA
Tetrachloroethene	100	489915.000	0.1961	200	972933.000	0.1864	NA	NA	NA
Trichloroethene	100	648687.000	0.1661	200	1310416.00	0.1656	NA	NA	NA
Trichlorofluoromethane	100	1798956.00	0.4607	200	3616032.00	0.4570	NA	NA	NA
Vinyl Acetate	100	994936.000	0.2548	200	1366861.00	0.1727	NA	NA	NA
cis-1,2-Dichloroethene	100	910906.000	0.2333	200	1761739.00	0.2226	NA	NA	NA
cis-1,3-Dichloropropene	100	1411331.00	0.3614	200	2863753.00	0.3619	NA	NA	NA
m-,p-Xylene	200	2694787.00	0.5393	400	5038723.00	0.4826	NA	NA	NA
n-Butylbenzene	100	3696578.00	2.964	200	7144733.00	2.844	NA	NA	NA
n-Propylbenzene	100	4960515.00	3.978	200	9542063.00	3.798	NA	NA	NA
o-Xylene	100	1372777.00	0.5494	200	2675285.00	0.5125	NA	NA	NA
p-Isopropyltoluene	100	3121110.00	2.503	200	6007622.00	2.391	NA	NA	NA
sec-Butylbenzene	100	4089244.00	3.279	200	7967693.00	3.171	NA	NA	NA
tert-Butylbenzene	100	529682.000	0.4247	200	1014708.00	0.4039	NA	NA	NA
trans-1,2-Dichloroethene	100	880601.000	0.2255	200	1722083.00	0.2176	NA	NA	NA
trans-1,3-Dichloropropene	100	1276912.00	0.5111	200	2580602.00	0.4943	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1119291
Report generated 06/16/2008 10:38

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L08060120 Run Date: 05/14/2008 Sample ID: WG271232-11
Instrument ID: HPMS11 Run Time: 19:57 Method: 8260B
File ID: 11M50405 Analyst: SMH QC Key: STD
ICal Workgroup: WG271232 Cal ID: HPMS11 - 14-MAY-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	21.3	ug/L	0.440	6.40	30	
1,1-Dichloroethene	CCC	20.0	21.9	ug/L	0.398	9.60	30	
1,2-Dichloropropane	CCC	20.0	21.5	ug/L	0.225	7.30	30	
Ethylbenzene	CCC	20.0	23.0	ug/L	0.502	15.1	30	
Toluene	CCC	20.0	22.6	ug/L	1.47	12.8	30	
Vinyl Chloride	CCC	20.0	21.1	ug/L	0.217	5.40	30	
Bromoform	SPCC	20.0	21.0	ug/L	0.126	4.80	30	
Chlorobenzene	SPCC	20.0	21.0	ug/L	0.822	5.20	30	
Chloromethane	SPCC	20.0	19.8	ug/L	0.255	0.900	30	
1,1-Dichloroethane	SPCC	20.0	21.5	ug/L	0.468	7.40	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	21.8	ug/L	0.543	9.00	30	
Acetone		20.0	21.9	ug/L	0.0475	9.30	30	
Benzene		20.0	21.7	ug/L	0.940	8.50	30	
Bromobenzene		20.0	22.9	ug/L	0.632	14.6	30	
Bromochloromethane		20.0	21.5	ug/L	0.0998	7.30	30	
Bromodichloromethane		20.0	22.1	ug/L	0.312	10.6	30	
Bromomethane		20.0	20.0	ug/L	0.165	0.100	30	
2-Butanone		20.0	21.2	ug/L	0.0616	5.90	30	
n-Butylbenzene		20.0	22.9	ug/L	3.12	14.7	30	
sec-Butylbenzene		20.0	23.4	ug/L	3.53	17.0	30	
tert-Butylbenzene		20.0	23.4	ug/L	0.475	17.2	30	
Carbon Disulfide		20.0	20.2	ug/L	0.655	1.20	30	
Carbon Tetrachloride		20.0	22.2	ug/L	0.290	11.2	30	
Dibromochloromethane		20.0	21.4	ug/L	0.237	6.80	30	
Chloroethane		20.0	20.7	ug/L	0.201	3.30	30	
2-Chloroethyl Vinyl Ether		20.0	19.1	ug/L	0.0976	4.50	30	
2-Chlorotoluene		20.0	22.2	ug/L	2.81	11.1	30	
4-Chlorotoluene		20.0	21.8	ug/L	2.52	8.90	30	
1,2-Dibromo-3-Chloropropane		20.0	21.1	ug/L	0.108	5.70	30	
1,2-Dibromoethane		20.0	22.2	ug/L	0.221	11.0	30	
Dibromomethane		20.0	21.9	ug/L	0.108	9.60	30	
1,2-Dichlorobenzene		20.0	21.6	ug/L	1.17	8.10	30	
1,3-Dichlorobenzene		20.0	21.2	ug/L	1.28	5.90	30	
1,4-Dichlorobenzene		20.0	20.9	ug/L	1.28	4.70	30	
Dichlorodifluoromethane		20.0	25.3	ug/L	0.432	26.3	30	
1,2-Dichloroethane		20.0	20.7	ug/L	0.312	3.50	30	
cis-1,2-Dichloroethene		20.0	23.0	ug/L	0.246	14.9	30	
trans-1,2-Dichloroethene		20.0	21.8	ug/L	0.230	8.80	30	
1,3-Dichloropropane		20.0	21.6	ug/L	0.463	8.10	30	
2,2-Dichloropropane		20.0	18.9	ug/L	0.357	5.50	30	
cis-1,3-Dichloropropene		20.0	21.2	ug/L	0.341	5.90	30	
trans-1,3-Dichloropropene		20.0	19.4	ug/L	0.467	2.90	30	

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1119292
Report generated 06/16/2008 10:38

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L08060120 Run Date: 05/14/2008 Sample ID: WG271232-11
Instrument ID: HPMS11 Run Time: 19:57 Method: 8260B
File ID: 11M50405 Analyst: SMH QC Key: STD
ICal Workgroup: WG271232 Cal ID: HPMS11 - 14-MAY-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	20.9	ug/L	0.337	4.60	30	
2-Hexanone		20.0	19.6	ug/L	0.127	1.90	30	
Hexachlorobutadiene		20.0	22.6	ug/L	0.413	13.2	30	
Isopropylbenzene		20.0	20.8	ug/L	1.40	4.00	30	
p-Isopropyltoluene		20.0	21.6	ug/L	2.60	7.80	30	
4-Methyl-2-Pentanone		20.0	19.7	ug/L	0.0485	1.30	30	
Methylene Chloride		20.0	19.2	ug/L	0.223	4.10	30	
Naphthalene		20.0	20.9	ug/L	1.61	4.40	30	
n-Propylbenzene		20.0	23.1	ug/L	4.27	15.7	30	
Styrene		20.0	23.2	ug/L	1.02	15.9	30	
1,1,1,2-Tetrachloroethane		20.0	22.2	ug/L	0.256	11.1	30	
Tetrachloroethene		20.0	21.2	ug/L	0.215	6.00	30	
1,2,3-Trichlorobenzene		20.0	20.8	ug/L	0.718	3.80	30	
1,2,4-Trichlorobenzene		20.0	21.0	ug/L	0.821	4.90	30	
1,1,1-Trichloroethane		20.0	21.8	ug/L	0.369	8.80	30	
1,1,2-Trichloroethane		20.0	21.5	ug/L	0.228	7.30	30	
Trichloroethene		20.0	22.1	ug/L	0.170	10.5	30	
Trichlorofluoromethane		20.0	22.0	ug/L	0.464	9.90	30	
1,2,3-Trichloropropane		20.0	21.8	ug/L	0.160	9.10	30	
1,2,4-Trimethylbenzene		20.0	23.0	ug/L	2.87	15.0	30	
1,3,5-Trimethylbenzene		20.0	23.5	ug/L	2.74	17.6	30	
Vinyl Acetate		20.0	24.0	ug/L	0.289	20.2	40	
o-Xylene		20.0	23.1	ug/L	0.594	15.6	30	
m-,p-Xylene		40.0	44.9	ug/L	0.613	12.2	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1119292
Report generated 06/16/2008 10:38

Login Number: L08060120 Run Date: 06/12/2008 Sample ID: WG273701-02
Instrument ID: HPMS11 Run Time: 10:35 Method: 8260B
File ID: 11M51023 Analyst: TMB QC Key: STD
Workgroup (AAB#): WG273702 Cal ID: HPMS11 - 14-MAY-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	51.0	ug/L	0.422	1.92	20	
1,1-Dichloroethene	CCC	50.0	55.4	ug/L	0.402	10.7	20	
1,2-Dichloropropane	CCC	50.0	52.3	ug/L	0.219	4.59	20	
Ethylbenzene	CCC	50.0	53.5	ug/L	0.468	7.10	20	
Toluene	CCC	50.0	55.1	ug/L	1.43	10.1	20	
Vinyl Chloride	CCC	50.0	45.0	ug/L	0.186	9.96	20	
Bromoform	SPCC	50.0	52.0	ug/L	0.125	3.94	40	
Chlorobenzene	SPCC	50.0	49.9	ug/L	0.780	0.209	40	
Chloromethane	SPCC	50.0	47.0	ug/L	0.242	5.99	40	
1,1-Dichloroethane	SPCC	50.0	52.4	ug/L	0.457	4.86	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	48.4	ug/L	0.482	3.24	40	
Acetone		50.0	45.6	ug/L	0.0396	8.72	40	
Benzene		50.0	51.6	ug/L	0.894	3.27	40	
Bromobenzene		50.0	55.4	ug/L	0.612	10.9	40	
Bromochloromethane		50.0	50.4	ug/L	0.0938	0.882	40	
Bromodichloromethane		50.0	51.6	ug/L	0.291	3.21	40	
Bromomethane		50.0	51.4	ug/L	0.175	2.83	40	
2-Butanone		50.0	41.4	ug/L	0.0481	17.2	40	
n-Butylbenzene		50.0	57.5	ug/L	3.13	15.0	40	
sec-Butylbenzene		50.0	58.3	ug/L	3.52	16.6	40	
tert-Butylbenzene		50.0	57.9	ug/L	0.469	15.8	40	
Carbon Disulfide		50.0	56.5	ug/L	0.731	13.0	40	
Carbon Tetrachloride		50.0	51.7	ug/L	0.270	3.37	40	
Dibromochloromethane		50.0	51.9	ug/L	0.230	3.70	40	
Chloroethane		50.0	48.2	ug/L	0.187	3.67	40	
2-Chloroethyl Vinyl Ether		50.0	43.9	ug/L	0.0896	12.3	40	
2-Chlorotoluene		50.0	57.6	ug/L	2.91	15.2	40	
4-Chlorotoluene		50.0	51.7	ug/L	2.39	3.49	40	
1,2-Dibromo-3-Chloropropane		50.0	43.8	ug/L	0.0893	12.4	40	
1,2-Dibromoethane		50.0	49.7	ug/L	0.198	0.507	40	
Dibromomethane		50.0	49.4	ug/L	0.0969	1.24	40	
1,2-Dichlorobenzene		50.0	50.6	ug/L	1.09	1.21	40	
1,3-Dichlorobenzene		50.0	51.8	ug/L	1.25	3.56	40	
1,4-Dichlorobenzene		50.0	51.0	ug/L	1.25	1.92	40	
Dichlorodifluoromethane		50.0	38.0	ug/L	0.260	23.9	40	
1,2-Dichloroethane		50.0	48.7	ug/L	0.293	2.58	40	
cis-1,2-Dichloroethene		50.0	54.3	ug/L	0.233	8.62	40	
trans-1,2-Dichloroethene		50.0	54.0	ug/L	0.228	7.95	40	
1,3-Dichloropropane		50.0	48.4	ug/L	0.415	3.25	40	
2,2-Dichloropropane		50.0	52.2	ug/L	0.394	4.31	40	
cis-1,3-Dichloropropene		50.0	53.3	ug/L	0.343	6.64	40	
trans-1,3-Dichloropropene		50.0	52.7	ug/L	0.507	5.38	40	

CCV - Modified 03/05/2008
PDF File ID: 1119294
Report generated 06/16/2008 10:38

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L08060120 Run Date: 06/12/2008 Sample ID: WG273701-02

Instrument ID: HPMS11 Run Time: 10:35 Method: 8260B

File ID: 11M51023 Analyst: TMB QC Key: STD

Workgroup (AAB#): WG273702 Cal ID: HPMS11 - 14-MAY-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	53.7	ug/L	0.345	7.30	40	
2-Hexanone		50.0	41.2	ug/L	0.106	17.6	40	
Hexachlorobutadiene		50.0	51.5	ug/L	0.376	2.99	40	
Isopropylbenzene		50.0	56.3	ug/L	1.52	12.5	40	
p-Isopropyltoluene		50.0	55.6	ug/L	2.69	11.2	40	
4-Methyl-2-Pentanone		50.0	41.5	ug/L	0.0408	17.0	40	
Methylene Chloride		50.0	45.9	ug/L	0.214	8.20	40	
Naphthalene		50.0	41.0	ug/L	1.26	18.0	40	
n-Propylbenzene		50.0	58.6	ug/L	4.32	17.2	40	
Styrene		50.0	55.3	ug/L	0.973	10.6	40	
1,1,1,2-Tetrachloroethane		50.0	53.4	ug/L	0.246	6.71	40	
Tetrachloroethene		50.0	52.5	ug/L	0.211	5.04	40	
1,2,3-Trichlorobenzene		50.0	40.1	ug/L	0.555	19.8	40	
1,2,4-Trichlorobenzene		50.0	45.0	ug/L	0.705	9.91	40	
1,1,1-Trichloroethane		50.0	55.6	ug/L	0.377	11.1	40	
1,1,2-Trichloroethane		50.0	48.7	ug/L	0.206	2.66	40	
Trichloroethene		50.0	54.1	ug/L	0.167	8.18	40	
Trichlorofluoromethane		50.0	48.7	ug/L	0.411	2.63	40	
1,2,3-Trichloropropane		50.0	47.5	ug/L	0.139	5.09	40	
1,2,4-Trimethylbenzene		50.0	56.8	ug/L	2.84	13.5	40	
1,3,5-Trimethylbenzene		50.0	59.7	ug/L	2.78	19.5	40	
Vinyl Acetate		50.0	58.9	ug/L	0.284	17.8	40	
o-Xylene		50.0	55.9	ug/L	0.574	11.8	40	
m-,p-Xylene		100	107	ug/L	0.583	6.60	40	
1,2-Dichloroethene		100	108	ug/L	0.231	8.28	40	
Xylenes		150	162	ug/L	0.578	8.33	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1119294
Report generated 06/16/2008 10:38

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY

(COMPARED TO CCV)

Login Number:L08060120

Instrument ID:HPMS11

Workgroup (AAB#):WG273702

CCV Number:WG273701-02

CAL ID: HPMS11-14-MAY-08

Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG273701-02	NA	NA	245264	517348	853082
Upper Limit	NA	NA	490528	1034696	1706164
Lower Limit	NA	NA	122632	258674	426541
L08060120-01	1.00	01	186911	389688	656556
L08060120-02	1.00	01	184837	380523	643145
L08060120-03	1.00	01	177214	374032	629116
L08060120-04	2.50	DL01	168303	354571	605361
L08060120-05	1.00	01	172067	366219	613745
L08060120-06	1.00	01	169872	359210	603034
WG273702-01	1.00	01	204311	428084	717266
WG273702-02	1.00	01	223510	456405	750347
WG273702-03	1.00	01	225284	462009	755448
WG273702-04	1.00	01	161445	341896	577799

IS-1 - 1,4-Dichlorobenzene-d4

IS-2 - Chlorobenzene-d5

IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008

PDF File ID: 1119295

Report generated 06/16/2008 10:38

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number:L08060120 CCV Number:WG273701-02

Instrument ID:HPMS11 CAL ID: HPMS11-14-MAY-08

Workgroup (AAB#):WG273702 Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG273701-02	NA	NA	16.53	13.73	10.11
Upper Limit	NA	NA	17.03	14.23	10.61
Lower Limit	NA	NA	16.03	13.23	9.61
L08060120-01	1.00	01	16.533	13.731	10.112
L08060120-02	1.00	01	16.533	13.731	10.112
L08060120-03	1.00	01	16.533	13.731	10.112
L08060120-04	2.50	DL01	16.533	13.731	10.112
L08060120-05	1.00	01	16.533	13.731	10.112
L08060120-06	1.00	01	16.533	13.731	10.112
WG273702-01	1.00	01	16.533	13.731	10.112
WG273702-02	1.00	01	16.533	13.731	10.102
WG273702-03	1.00	01	16.533	13.731	10.102
WG273702-04	1.00	01	16.533	13.731	10.112

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1119296
Report generated 06/16/2008 10:38

2.1.2 RSK 175

2.1.2.1 Summary Data

LABORATORY REPORT

L08060120

06/16/08 13:09

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390386(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW21-060408	L08060120-03	RSK175	1	05-JUN-08
12WW24-060408	L08060120-04	RSK175	1	05-JUN-08
12WW20-060408	L08060120-05	RSK175	1	05-JUN-08
12WW20-060408-FD	L08060120-06	RSK175	1	05-JUN-08

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115413

Sample Number:	L08060120-03	PrePrep Method:	NONE	Instrument:	HP16
Client ID:	12WW21-060408	Prep Method:	5021	Prep Date:	06/05/2008 17:24
Matrix:	Water	Analytical Method:	RSK175	Cal Date:	02/08/2008 14:22
Workgroup Number:	WG273142	Analyst:	NPM	Run Date:	06/05/2008 17:24
Collect Date:	06/04/2008 09:05	Dilution:	1	File ID:	16G13332
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	14.8		0.500	0.250
ethene	74-85-1		U	0.500	0.250
ethane	74-84-0		U	0.500	0.250

U Not detected at or above adjusted sample detection limit

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115414

Sample Number: **L08060120-04**
Client ID: **12WW24-060408**
Matrix: **Water**
Workgroup Number: **WG273142**
Collect Date: **06/04/2008 10:40**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **NPM**
Dilution: **1**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **06/05/2008 17:45**
Cal Date: **02/08/2008 14:22**
Run Date: **06/05/2008 17:45**
File ID: **16G13333**

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	1.56		0.500	0.250
ethene	74-85-1		U	0.500	0.250
ethane	74-84-0		U	0.500	0.250

U Not detected at or above adjusted sample detection limit

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115415

Sample Number:	L08060120-05	PrePrep Method:	NONE	Instrument:	HP16
Client ID:	12WW20-060408	Prep Method:	5021	Prep Date:	06/05/2008 18:06
Matrix:	Water	Analytical Method:	RSK175	Cal Date:	02/08/2008 14:22
Workgroup Number:	WG273142	Analyst:	NPM	Run Date:	06/05/2008 18:06
Collect Date:	06/04/2008 13:45	Dilution:	1	File ID:	16G13334
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	6.74		0.500	0.250
ethene	74-85-1		U	0.500	0.250
ethane	74-84-0		U	0.500	0.250

U Not detected at or above adjusted sample detection limit

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115416

Sample Number: **L08060120-06**
Client ID: **12WW20-060408-FD**
Matrix: **Water**
Workgroup Number: **WG273142**
Collect Date: **06/04/2008 13:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5021**
Analytical Method: **RSK175**
Analyst: **NPM**
Dilution: **1**
Units: **ug/L**

Instrument: **HP16**
Prep Date: **06/05/2008 18:26**
Cal Date: **02/08/2008 14:22**
Run Date: **06/05/2008 18:26**
File ID: **16G13335**

Analyte	CAS. Number	Result	Qual	PQL	SDL
methane	74-82-8	5.34		0.500	0.250
ethene	74-85-1		U	0.500	0.250
ethane	74-84-0		U	0.500	0.250

U Not detected at or above adjusted sample detection limit

2.1.2.2 QC Summary Data

KEMRON Environmental Services
Data Checklist

Date: 08-FEB-2008
Analyst: FJB
Analyst: NPM
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 20686
Analytical Workgroups: WG262719

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	SMH
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
13-FEB-2008

Secondary Reviewer:
25-FEB-2008

Generated: FEB-25-2008 08:53:39

KEMRON Environmental Services
Data Checklist

Date: 09-FEB-2008
Analyst: FJB
Analyst: NPM
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 20689
Analytical Workgroups: WG262719

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	SMH
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
13-FEB-2008

Secondary Reviewer:
25-FEB-2008

Generated: FEB-25-2008 08:57:31

Microbac Laboratories Inc.

Data Checklist

Date: 05-JUN-2008
Analyst: NPM
Analyst: NA
Method: RSK175
Instrument: HP16
Curve Workgroup: NA
Runlog ID: 22564
Analytical Workgroups: WG273142

System Performance Check	NA
BFB	NA
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	NA
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	NA
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Excel Spreadsheets	X
Case Narrative	X
Narrative Summary	NA
Results Reporting/Data Qualifiers	X
Client Data Package Assembly	X
Check for Completeness	X
Primary Reviewer	NPM
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
06-JUN-2008

Secondary Reviewer:
09-JUN-2008

CHECKLIST1 - Modified 03/05/2008
Generated: JUN-09-2008 10:08:08

RSK-175 - Example Calculation for Methane

ICAL Plot - Linear Regression (y = ax)

1.0 Calculate the Regression Constant (a)

Where:
ICAL_x = the ICAL concentration = x
ICAL_r = the ICAL response (area) = y

ICAL_x	ICAL_r	[ICAL_r}^2	[ICAL-x][ICAL-r]
0.1	21538	463885444	2153.8
1	77578	6018346084	77578
10	665937	4.43472E+11	6659370
20	1376031	1.89346E+12	27520620
50	3424931	1.17302E+13	171246550
100	6927945	4.79964E+13	692794500
200	14533928	2.11235E+14	2906785600
300	21776507	4.74216E+14	6532952100
		7.47521E+14	10338038472
		a:	**72307.84758**

2.0 Calculate the concentration in extract, x:

Where:
y = response of methane from quant report = **37493410**
x = y/a = 37493410/72307 = 518.52

3.0 Calculate the concentration in sample, Cs:

Cs = x (MW/Tf) (HS/S) (DF)

Where:

x = Concentration in extract	**518.5247695**	umol/mol
MW = molecular weight of analyte	**16.04**	ug/umol
TF = temperature factor = (22.45)(313/273)	**25.68**	L/mol
HS = headspace volume	**0.015**	L
S = sample volume remaining after headspace removal	**0.00547**	L
DF = dilution factor	**10**	
Cs = calculated sample concentration	**8881.427692**	ug/L

RSK-175 - Example Calculation for Carbon Dioxide

ICAL Plot - Quadratic Regression (y = Ax^2 + Bx +C)

Ax^2 + Bx + (C - y) = 0

Step 1 - Calculate the concentration in extract, x:

Data from quadratic regression plot:		
Value of A from plot:	**0.916**	
Value of B from plot:	**1540**	
Value of C from plot:	**0**	
Response for carbon dioxide from quantitation report (y):	**8763828**	
Value of C - y	**-8763828**	
Solving for x using the quadratic formula:		
Root 1 - Computed x1:	**2364.716284**	umol/mol
Root 2 - Computed x2:	**-4045.938991**	

Step 2 - Calculate the concentration in sample, Cs:

Cs = x (MW/Tf) (HS/S) (DF)

Where:

x = Concentration in extract :	**2364.716284**	umol/mol
MW = molecular weight of analyte:	**44**	ug/umol
TF = temperature factor = (22.45)(313/273):	**25.68**	L/mol
HS = initial headspace volume (extraction log):	**0.015**	L
S = final volume (extraction log):	**0.00547**	L
DF = dilution factor:	**1**	
Cs = calculated sample concentration:	**11110.6798**	ug/L

Note: Temperature = 40 C = 313 K

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 020808
Analyst1: FJB Analyst2: NPM
Method: RSK175 SOP: RSK01 Rev: 7
Method: 5021 SOP: RSK01 Rev: 7

Maintenance Log ID: 18711

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: STD18652

Column 1 ID: RTQPLOT Column 2 ID: RTQPLOT
Workgroups: WG262719

Comments: NO REANALYSIS REQUIRED. WG262719-09 SSCV WILL BE REPORTED FROM DATA FILE 020908.

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G11463	50umol/mol STD	NA	1	1	STD23589	02/08/08 10:31
2	16G11464	WG262719-01 0.1umol/mol STD	NA	1	1	STD23589	02/08/08 11:31
3	16G11465	WG262719-02 1umol/mol STD	NA	1	1	STD23589	02/08/08 11:52
4	16G11466	WG262719-03 10umol/mol STD	NA	1	1	STD23589	02/08/08 12:36
5	16G11467	WG262719-04 20umol/mol STD	NA	1	1	STD23589	02/08/08 12:57
6	16G11468	WG262719-05 50umol/mol STD	NA	1	1	STD23589	02/08/08 13:18
7	16G11469	WG262719-06 100umol/mol STD	NA	1	1	STD23589	02/08/08 13:39
8	16G11470	WG262719-07 200umol/mol STD	NA	1	1	STD23589	02/08/08 14:00
9	16G11471	WG262719-08 300umol/mol STD	NA	1	1	STD23589	02/08/08 14:22

Approved: February 25, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HP16 Dataset: 020908
Analyst1: FJB Analyst2: NPM
Method: RSK175 SOP: RSK01 Rev: 7
Method: 5021 SOP: RSK01 Rev: 7

Maintenance Log ID: 18711

Internal Standard: NA Surrogate Standard: NA
CCV: STD18652 LCS: STD18652 MS/MSD: STD18652

Column 1 ID: RTQPLOT Column 2 ID: RTQPLOT
Workgroups: WG262719

Comments: NO REANALYSIS REQUIRED. REPORT WG262719-09 SSCV FOR CURVE RUN ON 2/08/08 (DATA FILE 020808).

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G11472	WG262776-01 50umol/mol STD	NA	1	1	STD23589	02/09/08 12:08
2	16G11473	WG2627 BLANK	NA	1	1		02/09/08 12:30
3	16G11474	WG262719-09 20umol/mol STD ALT SRCE	NA	1	1	STD23589	02/09/08 12:51
4	16G11475	WG262776-02 50umol/mol STD	NA	1	1	STD23589	02/09/08 13:13
5	16G11476	WG262719-09 20umol/mol STD ALT SRCE	NA	1	1	STD23589	02/09/08 13:33
6	16G11477	WG262776-03 50umol/mol STD	NA	1	1	STD23589	02/09/08 14:03

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X			
File ID: 16G11474				
	DNR			

Approved: February 25, 2008

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HP16 Dataset: 060508
Analyst1: NPM Analyst2: NA
Method: RSK175 SOP: RSK01 Rev: 7
Method: 5021 SOP: RSK01 Rev: 7

Maintenance Log ID: 24450

Internal Standard: NA Surrogate Standard: NA
CCV: STD23589 LCS: STD23589 MS/MSD: STD23589

Column 1 ID: RTQPLOT Column 2 ID: RTQPLOT
Workgroups: WG273142

Comments: NO REANALYSIS REQUIRED.

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	16G13321	WG273138-01 50umol/mol STD	NA	1	1	STD23589	06/05/08 13:04
2	16G13322	WG273142-01 BLANK	NA	1	1		06/05/08 13:34
3	16G13323	WG273142-02 20umol/mol STD	NA	1	1	STD23589	06/05/08 13:55
4	16G13324	WG273142-03 20umol/mol STD	NA	1	1	STD23589	06/05/08 14:15
5	16G13325	L08060075-01 A	7	1	1		06/05/08 15:00
6	16G13326	L08060075-03 A	7	1	1		06/05/08 15:20
7	16G13327	L08060075-05 A	7	1	1		06/05/08 15:41
8	16G13328	WG273138-02 50umol/mol STD	NA	1	1	STD23589	06/05/08 16:02
9	16G13329	L08060114-01 A	7	1	1		06/05/08 16:22
10	16G13330	L08060114-03 A	7	1	1		06/05/08 16:43
11	16G13331	L08060114-05 A	7	1	1		06/05/08 17:04
12	16G13332	L08060120-03 A	7	1	1		06/05/08 17:24
13	16G13333	L08060120-04 A	7	1	1		06/05/08 17:45
14	16G13334	L08060120-05 A	7	1	1		06/05/08 18:06
15	16G13335	L08060120-06 A	7	1	1		06/05/08 18:26
16	16G13336	WG273138-03 50umol/mol STD	NA	1	1	STD23589	06/05/08 18:47

Approved: June 09, 2008

Page: 1

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00115426

Analytical Method:RSK175 AAB#:WG273142

Login Number:L08060120

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW20-060408	06/04/08	06/05/08	06/05/08	14	1.18	06/05/08	14	1.18	
12WW20-060408-FD	06/04/08	06/05/08	06/05/08	14	1.20	06/05/08	14	1.20	
12WW24-060408	06/04/08	06/05/08	06/05/08	14	1.30	06/05/08	14	1.30	
12WW21-060408	06/04/08	06/05/08	06/05/08	14	1.35	06/05/08	14	1.35	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1113241
Report generated 06/09/2008 10:54

METHOD BLANK SUMMARY

Login Number: L08060120
Work Group: WG273142
Blank File ID: 16G13322
Blank Sample ID: WG273142-01
Prep Date: 06/05/08 13:34
Instrument ID: HP16
Analyzed Date: 06/05/08 13:34
Method: RSK175
Analyst: NPM

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG273142-02	16G13323	06/05/08 13:55	01
LCS2	WG273142-03	16G13324	06/05/08 14:15	01
12WW21-060408	L08060120-03	16G13332	06/05/08 17:24	01
12WW24-060408	L08060120-04	16G13333	06/05/08 17:45	01
12WW20-060408	L08060120-05	16G13334	06/05/08 18:06	01
12WW20-060408-FD	L08060120-06	16G13335	06/05/08 18:26	01

Report Name: BLANK_SUMMARY
PDF File ID: 1112687
Report generated 06/09/2008 10:54

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L08060120 Prep Date:06/05/08 13:34 Sample ID:WG273142-01
Instrument ID:HP16 Run Date:06/05/08 13:34 Prep Method:5021
File ID:16G13322 Analyst:NPM Method:RSK175
Workgroup (AAB#):WG273142 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HP16-08-FEB-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
methane	0.250	0.500	0.250	1	U
ethene	0.250	0.500	0.250	1	U
ethane	0.250	0.500	0.250	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1112688
09-JUN-2008 10:54

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00115429

Login Number: L08060120 Analyst: NPM Prep Method: 5021
Instrument ID: HP16 Matrix: Water Method: RSK175
Workgroup (AAB#): WG273142 Units: ug/L
QC Key: STD Lot #: STD23589

Sample ID: WG273142-02 LCS File ID: 16G13323 Run Date: 06/05/2008 13:55
Sample ID: WG273142-03 LCS2 File ID: 16G13324 Run Date: 06/05/2008 14:15

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
methane	34.3	34.2	100	34.3	26.4	77.0	26.0	56 - 140	40	
ethene	59.9	67.2	112	59.9	52.5	87.7	24.6	56 - 140	40	
ethane	64.2	68.9	107	64.2	52.9	82.4	26.4	56 - 137	40	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1112689
Report generated: 06/09/2008 10:54

Login Number:L08060120
Instrument ID:HP16
Analytical Method:RSK175
Initial Calibration Date:08-FEB-08 14:22
ICAL Workgroup:WG262719
Column ID:F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
ethane		48060	14.4		
ethene		44450	13.6		
methane		29580	27.6		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 1113242
Report generated 06/09/2008 10:54

Login Number: L08060120
Analytical Method: RSK175
Instrument ID: HP16
Initial Calibration Date: 08-FEB-08 14:22
Column ID: F

Analyte	WG262719-01			WG262719-02			WG262719-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
ethane	0.100	3749.00000	37490	1.00	59307.0000	59310	10.0	454918.000	45490
ethene	0.100	3445.00000	34450	1.00	52620.0000	52620	10.0	428814.000	42880
methane	0.100	4809.00000	48090	1.00	33134.0000	33130	10.0	246067.000	24610

INT_CAL - Modified 03/06/2008
PDF File ID: 1113242
Report generated 06/09/2008 10:54

Login Number: L08060120
Analytical Method: RSK175
Instrument ID: HP16
Initial Calibration Date: 08-FEB-08 14:22
Column ID: F

Analyte	WG262719-04			WG262719-05			WG262719-06		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
ethane	20.0	820110.000	41010	50.0	2359132.00	47180	100	4942823.00	49430
ethene	20.0	752665.000	37630	50.0	2204223.00	44080	100	4676849.00	46770
methane	20.0	442942.000	22150	50.0	1271453.00	25430	100	2669261.00	26690

INT_CAL - Modified 03/06/2008
PDF File ID: 1113242
Report generated 06/09/2008 10:54

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L08060120
Analytical Method: RSK175
Instrument ID: HP16
Initial Calibration Date: 08-FEB-08 14:22
Column ID: F

Analyte	WG262719-07			WG262719-08		
	CONC	RESP	RF	CONC	RESP	RF
ethane	200	10668095.0	53340	300	15362942.0	51210
ethene	200	9914033.00	49570	300	14274959.0	47580
methane	200	5784964.00	28920	300	8291692.00	27640

INT_CAL - Modified 03/06/2008
PDF File ID: 1113242
Report generated 06/09/2008 10:54

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L08060120 Run Date: 02/09/2008 Sample ID: WG262719-09
Instrument ID: HP16 Run Time: 13:33 Method: RSK175
File ID: 16G11476 Analyst: FJB QC Key: STD
ICal Workgroup: WG262719 Cal ID: HP16 - 08-FEB-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
methane		34.3	32.6	ug/L	26500	4.80	30	
ethene		59.9	62.4	ug/L	46300	4.20	30	
ethane		64.2	65.9	ug/L	49300	2.60	30	

* Exceeds %D Limit

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1113243
Report generated 06/09/2008 10:54

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115435

Login Number: L08060120 Run Date: 06/05/2008 Sample ID: WG273138-01

Instrument ID: HP16 Run Time: 13:04 Method: RSK175

File ID: 16G13321 Analyst: NPM QC Key: STD

Workgroup (AAB#): WG273142 Cal ID: HP16 - 08-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	79.5	ug/L	25900	7.16	25	
ethene		150	159	ug/L	47100	6.03	25	
ethane		160	161	ug/L	48100	0.139	25	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1113244

Report generated 06/09/2008 10:54

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115436

Login Number: L08060120 Run Date: 06/05/2008 Sample ID: WG273138-02

Instrument ID: HP16 Run Time: 16:02 Method: RSK175

File ID: 16G13328 Analyst: NPM QC Key: STD

Workgroup (AAB#): WG273142 Cal ID: HP16 - 08-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	66.2	ug/L	21600	22.7	25	
ethene		150	131	ug/L	39000	12.2	25	
ethane		160	133	ug/L	39800	17.2	25	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1113244

Report generated 06/09/2008 10:54

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115437

Login Number: L08060120 Run Date: 06/05/2008 Sample ID: WG273138-03

Instrument ID: HP16 Run Time: 18:47 Method: RSK175

File ID: 16G13336 Analyst: NPM QC Key: STD

Workgroup (AAB#): WG273142 Cal ID: HP16 - 08-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
methane		85.6	82.8	ug/L	27000	3.28	25	
ethene		150	162	ug/L	48200	8.40	25	
ethane		160	167	ug/L	50100	4.28	25	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1113244

Report generated 06/09/2008 10:54

2.2 General Chemistry Data

2.2.1 Method 9056

2.2.1.1 Summary Data

LABORATORY REPORT

00115441

L08060120

06/16/08 13:09

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390386(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW21-060408	L08060120-03	300.0	200	05-JUN-08
12WW21-060408	L08060120-03	300.0	10	05-JUN-08
12WW24-060408	L08060120-04	300.0	4	05-JUN-08
12WW24-060408	L08060120-04	300.0	40	05-JUN-08
12WW24-060408	L08060120-04	300.0	2	05-JUN-08
12WW20-060408	L08060120-05	300.0	4	05-JUN-08
12WW20-060408	L08060120-05	300.0	40	05-JUN-08
12WW20-060408	L08060120-05	300.0	2	05-JUN-08
12WW20-060408-FD	L08060120-06	300.0	2	05-JUN-08
12WW20-060408-FD	L08060120-06	300.0	40	05-JUN-08
12WW20-060408-FD	L08060120-06	300.0	4	05-JUN-08

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115442

Sample Number: **L08060120-03**
Client ID: **12WW21-060408**
Matrix: **Water**
Workgroup Number: **WG273159**
Collect Date: **06/04/2008 09:05**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **ADC**
Dilution: **200**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **06/05/2008 18:52**
Cal Date: **05/28/2008 11:08**
Run Date: **06/05/2008 18:52**
File ID: **I20605081852.23**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	1530		40.0	20.0
Nitrate	14797-55-8		U	120	20.0
Nitrite	14797-65-0		U	80.0	20.0
Sulfate	14808-79-8	428		200	100

U Not detected at or above adjusted sample detection limit

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115443

Sample Number: **L08060120-03**
Client ID: **12WW21-060408**
Matrix: **Water**
Workgroup Number: **WG273159**
Collect Date: **06/04/2008 09:05**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **ADC**
Dilution: **10**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **06/05/2008 15:23**
Cal Date: **05/28/2008 11:08**
Run Date: **06/05/2008 15:23**
File ID: **I20605081523.11**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	1270	I	2.00	1.00
Nitrate	14797-55-8		U	6.00	1.00
Nitrite	14797-65-0		U	4.00	1.00
Sulfate	14808-79-8	411		10.0	5.00

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115444

Sample Number: **L08060120-04**
Client ID: **12WW24-060408**
Matrix: **Water**
Workgroup Number: **WG273159**
Collect Date: **06/04/2008 10:40**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **ADC**
Dilution: **4**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **06/05/2008 19:09**
Cal Date: **05/28/2008 11:08**
Run Date: **06/05/2008 19:09**
File ID: **I20605081909.24**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	299	I	0.800	0.400
Nitrate	14797-55-8		U	2.40	0.400
Nitrite	14797-65-0		U	1.60	0.400
Sulfate	14808-79-8	168		4.00	2.00

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115445

Sample Number: **L08060120-04**
Client ID: **12WW24-060408**
Matrix: **Water**
Workgroup Number: **WG273159**
Collect Date: **06/04/2008 10:40**
Sample Tag: **DL03**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **ADC**
Dilution: **40**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **06/05/2008 20:37**
Cal Date: **05/28/2008 11:08**
Run Date: **06/05/2008 20:37**
File ID: **I20605082037.29**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	313		8.00	4.00
Nitrate	14797-55-8		U	24.0	4.00
Nitrite	14797-65-0		U	16.0	4.00
Sulfate	14808-79-8	164		40.0	20.0

U Not detected at or above adjusted sample detection limit

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115446

Sample Number:	L08060120-04	PrePrep Method:	NONE	Instrument:	IC2
Client ID:	12WW24-060408	Prep Method:	300.0	Prep Date:	06/05/2008 15:40
Matrix:	Water	Analytical Method:	300.0	Cal Date:	05/28/2008 11:08
Workgroup Number:	WG273159	Analyst:	ADC	Run Date:	06/05/2008 15:40
Collect Date:	06/04/2008 10:40	Dilution:	2	File ID:	I20605081540.12
Sample Tag:	DL01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	260	I	0.400	0.200
Nitrate	14797-55-8	0.210	J	1.20	0.200
Nitrite	14797-65-0		U	0.800	0.200
Sulfate	14808-79-8	165	I	2.00	1.00

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Sample Number: L08060120-05
Client ID: 12WW20-060408
Matrix: Water
Workgroup Number: WG273159
Collect Date: 06/04/2008 13:45
Sample Tag: DL02

PrePrep Method: NONE
Prep Method: 300.0
Analytical Method: 300.0
Analyst: ADC
Dilution: 4
Units: mg/L

Instrument: IC2
Prep Date: 06/05/2008 19:27
Cal Date: 05/28/2008 11:08
Run Date: 06/05/2008 19:27
File ID: I20605081927.25

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	256	I	0.800	0.400
Nitrate	14797-55-8		U	2.40	0.400
Nitrite	14797-65-0		U	1.60	0.400
Sulfate	14808-79-8	133		4.00	2.00

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115448

Sample Number: **L08060120-05**
Client ID: **12WW20-060408**
Matrix: **Water**
Workgroup Number: **WG273159**
Collect Date: **06/04/2008 13:45**
Sample Tag: **DL03**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **ADC**
Dilution: **40**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **06/05/2008 20:54**
Cal Date: **05/28/2008 11:08**
Run Date: **06/05/2008 20:54**
File ID: **I20605082054.30**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	261		8.00	4.00
Nitrate	14797-55-8		U	24.0	4.00
Nitrite	14797-65-0		U	16.0	4.00
Sulfate	14808-79-8	131		40.0	20.0

U Not detected at or above adjusted sample detection limit

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115449

Sample Number: **L08060120-05**
Client ID: **12WW20-060408**
Matrix: **Water**
Workgroup Number: **WG273159**
Collect Date: **06/04/2008 13:45**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **ADC**
Dilution: **2**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **06/05/2008 15:58**
Cal Date: **05/28/2008 11:08**
Run Date: **06/05/2008 15:58**
File ID: **I20605081558.13**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	227	I	0.400	0.200
Nitrate	14797-55-8		U	1.20	0.200
Nitrite	14797-65-0		U	0.800	0.200
Sulfate	14808-79-8	131	I	2.00	1.00

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115450

Sample Number: **L08060120-06**
Client ID: **12WW20-060408-FD**
Matrix: **Water**
Workgroup Number: **WG273159**
Collect Date: **06/04/2008 13:45**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **ADC**
Dilution: **2**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **06/05/2008 16:15**
Cal Date: **05/28/2008 11:08**
Run Date: **06/05/2008 16:15**
File ID: **I20605081615.14**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	227	I	0.400	0.200
Nitrate	14797-55-8		U	1.20	0.200
Nitrite	14797-65-0		U	0.800	0.200
Sulfate	14808-79-8	131	I	2.00	1.00

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115451

Sample Number: **L08060120-06**
Client ID: **12WW20-060408-FD**
Matrix: **Water**
Workgroup Number: **WG273159**
Collect Date: **06/04/2008 13:45**
Sample Tag: **DL03**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **ADC**
Dilution: **40**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **06/05/2008 21:11**
Cal Date: **05/28/2008 11:08**
Run Date: **06/05/2008 21:11**
File ID: **I20605082111.31**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	262		8.00	4.00
Nitrate	14797-55-8		U	24.0	4.00
Nitrite	14797-65-0		U	16.0	4.00
Sulfate	14808-79-8	134		40.0	20.0

U Not detected at or above adjusted sample detection limit

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115452

Sample Number: **L08060120-06**
Client ID: **12WW20-060408-FD**
Matrix: **Water**
Workgroup Number: **WG273159**
Collect Date: **06/04/2008 13:45**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **300.0**
Analytical Method: **300.0**
Analyst: **ADC**
Dilution: **4**
Units: **mg/L**

Instrument: **IC2**
Prep Date: **06/05/2008 19:44**
Cal Date: **05/28/2008 11:08**
Run Date: **06/05/2008 19:44**
File ID: **I20605081944.26**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Chloride	16887-00-6	257	I	0.800	0.400
Nitrate	14797-55-8		U	2.40	0.400
Nitrite	14797-65-0		U	1.60	0.400
Sulfate	14808-79-8	133		4.00	2.00

U Not detected at or above adjusted sample detection limit
I Semiquantitative result (out of instrument calibration range)

2.2.1.2 QC Summary Data

The concentrations (ppm) of the calibration standards and the resulting area counts are used to determine the equation of a linear or quadratic plot.
The slope and y-intercept of that line are used to calculate the quantity of the analyzed unkown samples.
Amount(ppm) = [(slope)(area count of unknown) + y-intercept](dilution)
(The slope is the amt/area also identified as the CF or calibration factor)

Microbac Laboratories Inc.

Instrument Run Log

Instrument: IC2 Dataset: 052808 CURVE IC2.SEQ
Analyst1: ADC Analyst2: NA
Method: 9056/300 SOP: IC1 Rev: 7

Maintenance Log ID: 24333

Column 1 ID: AS14A-4MM Column 2 ID: NA
Workgroups: WG272434
Internal STD: NA Surrogate STD: NA Calibration STD STD24336
Comments: THIS IS A 300/9056 CALIBRATION CURVE

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I20528080941.01	WG272434-01 STD \#1	1	1		05/28/08 09:41
2	I20528080959.02	WG272434-02 STD \#2	1	1		05/28/08 09:59
3	I20528081016.03	WG272434-03 STD \#3	1	1		05/28/08 10:16
4	I20528081034.04	WG272434-04 STD \#4	1	1		05/28/08 10:34
5	I20528081051.05	WG272434-05 STD \#5	1	1		05/28/08 10:51
6	I20528081108.06	WG272434-06 STD \#6	1	1		05/28/08 11:08
7	I20528081126.07	WG272434-07 ALT STD	1	1		05/28/08 11:26
8	I20528081143.08	ELUENT	1	1		05/28/08 11:43
9	I20528081201.09	DI WATER	1	1		05/28/08 12:01

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Approved: 03-JUN-08

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: IC2 Dataset: 060508 IC2.SEQ
Analyst1: ADC Analyst2: NA
Method: 9056/300 SOP: IC1 Rev: 8

Maintenance Log ID: 24494

Column 1 ID: AS14A-4MM Column 2 ID: NA
Workgroups:

Internal STD: NA Surrogate STD: NA Calibration STD STD24336

Comments: Samples 0120 03-06 were analyzed at a dilution only due to a high chloride screen.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
2	I20605081229.01	ELUENT	1	1		06/05/08 12:29
3	I20605081246.02	DI WATER	1	1		06/05/08 12:46
4	I20605081304.03	WG273160-01 ANION CCV	1	1		06/05/08 13:04
5	I20605081321.04	WG273160-02 ANION CCB	1	1		06/05/08 13:21
6	I20605081339.05	WG273159-01 ANION BLANK	1	1		06/05/08 13:39
7	I20605081356.06	WG273159-02 ANION LCS	1	1		06/05/08 13:56
8	I20605081413.07	L08060110-01 (SO4) REF	2	1		06/05/08 14:13
9	I20605081431.08	L08060114-01 (CL,NO3,N02)	1	1		06/05/08 14:31
10	I20605081448.09	L08060114-03 (CL,NO3,N02)	1	1		06/05/08 14:48
11	I20605081506.10	L08060114-05 (CL,NO3,N02)	1	1		06/05/08 15:06
12	I20605081523.11	L08060120-03 (CL, NO3,NO2,SO4) 1/10	1	10		06/05/08 15:23
13	I20605081540.12	L08060120-04 (CL, NO3,NO2,SO4) 1/2	1	2		06/05/08 15:40
14	I20605081558.13	L08060120-05 RS (CL, NO3,NO2,SO4) 1/2	1	2		06/05/08 15:58
15	I20605081615.14	L08060120-06 DS (CL, NO3,NO2,SO4) 1/2	1	2		06/05/08 16:15
16	I20605081633.15	WG273160-03 ANION CCV	1	1		06/05/08 16:33
17	I20605081650.16	WG273160-04 ANION CCB	1	1		06/05/08 16:50
18	I20605081708.17	WG273159-04 DUP 110-01	2	1		06/05/08 17:08
19	I20605081725.18	WG273159-05 MS 110-01	2	1		06/05/08 17:25
20	I20605081742.19	WG273159-06 MSD 110-01	2	1		06/05/08 17:42
21	I20605081800.20	L08060114-01 (RR CL) 1/5	1	5		06/05/08 18:00
22	I20605081817.21	L08060114-03 (RR CL) 1/4	1	4		06/05/08 18:17
23	I20605081835.22	L08060114-05 (RR CL) 1/2	1	2		06/05/08 18:35
24	I20605081852.23	L08060120-03 (CL) 1/200	1	200		06/05/08 18:52
25	I20605081909.24	L08060120-04 (CL,SO4) 1/4	1	4		06/05/08 19:09
26	I20605081927.25	L08060120-05 RS (CL,SO4) 1/4	1	4		06/05/08 19:27
27	I20605081944.26	L08060120-06 DS (CL,SO4) 1/4	1	4		06/05/08 19:44
28	I20605082002.27	WG273160-05 ANION CCV	1	1		06/05/08 20:02
29	I20605082019.28	WG273160-06 ANION CCB	1	1		06/05/08 20:19
30	I20605082037.29	L08060120-04 (CL) 1/40	1	40		06/05/08 20:37
31	I20605082054.30	L08060120-05 RS (CL) 1/40	1	40		06/05/08 20:54
32	I20605082111.31	L08060120-06 DS (CL) 1/40	1	40		06/05/08 21:11
33	I20605082129.32	WG273160-07 ANION CCV	1	1		06/05/08 21:29
34	I20605082146.33	WG273160-08 ANION CCB	1	1		06/05/08 21:46
1	I20605082204.34	END	1	1		06/05/08 22:04

Page: 1 Approved: 12-JUN-08

Microbac Laboratories Inc.

Instrument Run Log

Instrument: IC2 Dataset: 060508 IC2.SEQ

Analyst1: ADC Analyst2: NA

Method: 9056/300 SOP: IC1 Rev: 8

Maintenance Log ID: 24494

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups:

Internal STD: NA Surrogate STD: NA STD24336

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Approved: 12-JUN-08

Microbac Laboratories Inc.

Data Checklist

Date: 28-MAY-2008
Analyst: ADC
Analyst: DSF
Method: 300/9056
Instrument: IC2
Curve Workgroup: NA
Runlog ID: 22412
Analytical Workgroups: THIS IS A 300/9056 CALIBRATION CURVE

ANALYTICAL	
System Performance Check	
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	X
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	NA
% D/% Drift	NA
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	NA
TCL hits	NA
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	NA
Recoveries	NA
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Samples	NA
TCL hits	NA
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	NA
Project/client specific requirements	NA
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	DSF
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	ECL

Primary Reviewer:
28-MAY-2008
Debra S. Frederick

Secondary Reviewer:
03-JUN-2008
Eric C. Zimmerman

CHECKLIST1 - Modified 03/05/2008
Generated: JUN-03-2008 13:46:52

Microbac Laboratories Inc.

Data Checklist

Date: 05-JUN-2008
Analyst: ADC
Analyst: NA
Method: 300/9056
Instrument: IC2
Curve Workgroup: NA
Runlog ID: 22618
Analytical Workgroups: L0806-0110/-0114/-0120

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	X
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	X
Check for completeness	X
Primary Reviewer	ADC
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
11-JUN-2008

Secondary Reviewer:
12-JUN-2008

CHECKLIST1 - Modified 03/05/2008
Generated: JUN-12-2008 08:31:13

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00115460

Analytical Method:300.0 AAB#:WG273159

Login Number:L08060120

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW20-060408-FD	06/04/08	06/05/08	06/05/08	28	1.31	06/05/08	28	1.31	
12WW24-060408	06/04/08	06/05/08	06/05/08	28	1.35	06/05/08	28	1.35	
12WW21-060408	06/04/08	06/05/08	06/05/08	28	1.26	06/05/08	28	1.26	
12WW24-060408	06/04/08	06/05/08	06/05/08	28	1.21	06/05/08	28	1.21	
12WW20-060408-FD	06/04/08	06/05/08	06/05/08	28	1.25	06/05/08	28	1.25	
12WW20-060408	06/04/08	06/05/08	06/05/08	28	1.09	06/05/08	28	1.09	
12WW20-060408	06/04/08	06/05/08	06/05/08	28	1.30	06/05/08	28	1.30	
12WW21-060408	06/04/08	06/05/08	06/05/08	28	1.41	06/05/08	28	1.41	
12WW24-060408	06/04/08	06/05/08	06/05/08	28	1.41	06/05/08	28	1.41	
12WW20-060408	06/04/08	06/05/08	06/05/08	28	1.24	06/05/08	28	1.24	
12WW20-060408-FD	06/04/08	06/05/08	06/05/08	28	1.10	06/05/08	28	1.10	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1115754
Report generated 06/12/2008 08:56

METHOD BLANK SUMMARY

Login Number: L08060120 | Work Group: WG273159
Blank File ID: I20605081339.05 | Blank Sample ID: WG273159-01
Prep Date: 06/05/08 13:39 | Instrument ID: IC2
Analyzed Date: 06/05/08 13:39 | Method: 300.0
Analyst: ADC

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG273159-02	I20605081356.06	06/05/08 13:56	01
12WW21-060408	L08060120-03	I20605081523.11	06/05/08 15:23	DL01
12WW24-060408	L08060120-04	I20605081540.12	06/05/08 15:40	DL01
12WW20-060408	L08060120-05	I20605081558.13	06/05/08 15:58	DL01
12WW20-060408-FD	L08060120-06	I20605081615.14	06/05/08 16:15	DL01
DUP	WG273159-04	I20605081708.17	06/05/08 17:08	01
12WW21-060408	L08060120-03	I20605081852.23	06/05/08 18:52	DL02
12WW24-060408	L08060120-04	I20605081909.24	06/05/08 19:09	DL02
12WW20-060408	L08060120-05	I20605081927.25	06/05/08 19:27	DL02
12WW20-060408-FD	L08060120-06	I20605081944.26	06/05/08 19:44	DL02
12WW24-060408	L08060120-04	I20605082037.29	06/05/08 20:37	DL03
12WW20-060408	L08060120-05	I20605082054.30	06/05/08 20:54	DL03
12WW20-060408-FD	L08060120-06	I20605082111.31	06/05/08 21:11	DL03

Report Name: BLANK_SUMMARY
PDF File ID: 1115755
Report generated 06/12/2008 08:56

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L08060120 Prep Date:06/05/08 13:39 Sample ID:WG273159-01
Instrument ID:IC2 Run Date:06/05/08 13:39 Prep Method:300.0
File ID:I20605081339.05 Analyst:ADC Method:300.0
Workgroup (AAB#):WG273159 Matrix:Water Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID:IC2-28-MAY-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0.100	1	U
Nitrate	0.100	0.600	0.100	1	U
Nitrite	0.100	0.400	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1115756
12-JUN-2008 08:56

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00115463

Login Number: L08060120 Run Date: 06/05/2008 Sample ID: WG273159-02
Instrument ID: IC2 Run Time: 13:56 Prep Method: 300.0
File ID: I20605081356.06 Analyst: ADC Method: 300.0
Workgroup (AAB#): WG273159 Matrix: Water Units: mg/L
QC Key: STD Lot#: STD24336 Cal ID: IC2 - 28-MAY-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Chloride	6.00	5.99	99.8	90 - 110	
Nitrate	4.07	4.11	101	90 - 110	
Nitrite	3.65	3.70	101	90 - 110	
Sulfate	30.0	30.5	102	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 1115757
Report generated: 06/12/2008 08:56

Microbac Laboratories Inc.
DUPLICATE REPORT

Login Number: L08060120 Worknum: WG273159
Instrument ID: IC2 Method: 300.0
Sample ID: L08060120-05 File ID: I20605081558.13 Dil: 2 Matrix: Water
Duplicate ID: L08060120-06 File ID: I20605081615.14 Dil: 2 Units: mg/L

Analyte	Sample	Duplicate	RPD	RPD Limit	Q
Chloride	227	227	0.314	20	
Nitrate	ND	ND	0	20	
Nitrite	ND	ND	0	20	
Sulfate	131	131	0.293	20	

DUP - Modified 03/05/2008
PDF File ID: 1115780
Report generated: 06/11/2008 12:47

Microbac Laboratories Inc.
DUPLICATE REPORT

Login Number: L08060120 Worknum: WG273159
Instrument ID: IC2 Method: 300.0
Sample ID: L08060120-05 File ID: I20605081927.25 Dil: 4 Matrix: Water
Duplicate ID: L08060120-06 File ID: I20605081944.26 Dil: 4 Units: mg/L

Analyte	Sample	Duplicate	RPD	RPD Limit	Q
Chloride	256	257	0.310	20	
Nitrate	ND	ND	0	20	
Nitrite	ND	ND	0	20	
Sulfate	133	133	0.271	20	

DUP - Modified 03/05/2008
PDF File ID: 1115780
Report generated: 06/11/2008 12:47

Microbac Laboratories Inc.
DUPLICATE REPORT

Login Number: L08060120 Worknum: WG273159
Instrument ID: IC2 Method: 300.0
Sample ID: L08060120-05 File ID: I20605082054.30 Dil: 40 Matrix: Water
Duplicate ID: L08060120-06 File ID: I20605082111.31 Dil: 40 Units: mg/L

Analyte	Sample	Duplicate	RPD	RPD Limit	Q
Chloride	261	262	0.184	20	
Nitrate	ND	ND	0	20	
Nitrite	ND	ND	0	20	
Sulfate	131	134	2.27	20	

DUP - Modified 03/05/2008
PDF File ID: 1115780
Report generated: 06/11/2008 12:47

Loginnum:L08060120 Cal ID:IC2- Worknum:WG273159
Instrument ID:IC2 Contract #:DACA56-94-D-0020 Method:300.0
Parent ID:WG273159-03 File ID:I20605081413.07 Dil:1 Matrix:WATER
Sample ID:WG273159-05 MS File ID:I20605081725.18 Dil:1 Units:mg/L
Sample ID:WG273159-06 MSD File ID:I20605081742.19 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Chloride	12.1	6.00	17.3	86.9	6.00	15.9	63.4	8.48	90 - 110	20	*
Nitrate	0.596	4.07	4.78	103	4.07	4.75	102	0.630	90 - 110	20	
Nitrite	ND	3.65	3.78	104	3.65	3.79	104	0.106	90 - 110	20	
Sulfate	12.2	30.0	42.6	102	30.0	42.4	101	0.463	90 - 110	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008
PDF File ID: 1115758
Report generated 06/12/2008 08:56

Login Number:L08060120
Analytical Method:300.0
ICAL Workgroup:WG272434

Instrument ID:IC2
Initial Calibration Date:28-MAY-08 11:08
Column ID:F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Chloride		8.758	4.65		
Nitrate		3.773	7.57		
Nitrite		4.406	5.39		
Sulfate		11.39	6.18		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

This method always uses quadratic calibration model (R^2)

INT_CAL - Modified 03/06/2008
PDF File ID: 1116599
Report generated 06/12/2008 08:56

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L08060120
Analytical Method: 300.0

Instrument ID: IC2
Initial Calibration Date: 28-MAY-08 11:08
Column ID: F

Analyte	WG272434-01			WG272434-02			WG272434-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloride	0.200	0.0220000000	9.091	2.00	0.214000000	9.346	4.00	0.452000000	8.850
Nitrate	0.136	0.0310000000	4.371	1.36	0.355000000	3.818	2.71	0.724000000	3.744
Nitrite	0.122	0.0260000000	4.685	1.22	0.266000000	4.578	2.44	0.547000000	4.453
Sulfate	1.00	0.0800000000	12.50	10.0	0.849000000	11.78	20.0	1.73500000	11.53

INT_CAL - Modified 03/06/2008
PDF File ID: 1116599
Report generated 06/12/2008 08:56

Login Number: L08060120
Analytical Method: 300.0
Instrument ID: IC2
Initial Calibration Date: 28-MAY-08 11:08
Column ID: F

Analyte	WG272434-04			WG272434-05			WG272434-06		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloride	6.00	0.713000000	8.415	8.00	0.934000000	8.565	12.0	1.44900000	8.282
Nitrate	4.07	1.12600000	3.611	5.42	1.52400000	3.557	8.13	2.30000000	3.536
Nitrite	3.65	0.829000000	4.407	4.87	1.13600000	4.288	7.31	1.81400000	4.028
Sulfate	30.0	2.69100000	11.15	40.0	3.66300000	10.92	60.0	5.73400000	10.46

INT_CAL - Modified 03/06/2008
PDF File ID: 1116599
Report generated 06/12/2008 08:56

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L08060120 Run Date: 05/28/2008 Sample ID: WG272434-07
Instrument ID: IC2 Run Time: 11:26 Method: 300.0
File ID: I20528081126.07 Analyst: DSF QC Key: STD
ICal Workgroup: WG272434 Cal ID: IC2 - 28-MAY-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloride		6.00	6.08	mg/L	8.49	1.40	10	
Nitrate		4.07	3.94	mg/L	3.62	3.00	10	
Nitrite		3.65	3.84	mg/L	4.16	5.10	10	
Sulfate		30.0	30.6	mg/L	10.9	2.00	10	

* Exceeds %D Limit

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1116600
Report generated 06/12/2008 08:56

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00115472

Login Number: L08060120 Run Date: 06/05/2008 Sample ID: WG273160-02
Instrument ID: IC2 Run Time: 13:21 Method: 300.0
File ID: I20605081321.04 Analyst: ADC Units: mg/L
Workgroup (AAB#): WG273159 Cal ID: IC2 -
Matrix: WATER

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1115761
Report generated 06/12/2008 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

00115473

Login Number: L08060120 Run Date: 06/05/2008 Sample ID: WG273160-04

Instrument ID: IC2 Run Time: 16:50 Method: 300.0

File ID: I20605081650.16 Analyst: ADC Units: mg/L

Workgroup (AAB#): WG273159 Cal ID: IC2 -

Matrix: WATER

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1115761
Report generated 06/12/2008 08:56

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00115474

Login Number:L08060120 Run Date:06/05/2008 Sample ID:WG273160-06
Instrument ID:IC2 Run Time:20:19 Method:300.0
File ID:I20605082019.28 Analyst:ADC Units:mg/L
Workgroup (AAB#):WG273159 Cal ID: IC2 -
Matrix:WATER

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1115761
Report generated 06/12/2008 08:56

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00115475

Login Number:L08060120 Run Date:06/05/2008 Sample ID:WG273160-08
Instrument ID:IC2 Run Time:21:46 Method:300.0
File ID:I20605082146.33 Analyst:ADC Units:mg/L
Workgroup (AAB#):WG273159 Cal ID: IC2 -
Matrix:WATER

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0		U
Nitrate	0.100	0.600	0		U
Nitrite	0.100	0.400	0		U
Sulfate	0.500	1.00	0		U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1115761
Report generated 06/12/2008 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115476

Login Number: L08060120 Run Date: 06/05/2008 Sample ID: WG273160-01

Instrument ID: IC2 Run Time: 13:04 Method: 300.0

File ID: I20605081304.03 Analyst: ADC QC Key: STD

Workgroup (AAB#): WG273159 Cal ID: IC2 - 28-MAY-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	6.01	mg/L	8.60	0.200	10	
Nitrate		4.07	4.10	mg/L	3.48	0.831	10	
Nitrite		3.65	3.70	mg/L	4.33	1.33	10	
Sulfate		30.0	30.4	mg/L	11.0	1.32	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1115760

Report generated 06/12/2008 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115477

Login Number: L08060120 Run Date: 06/05/2008 Sample ID: WG273160-03

Instrument ID: IC2 Run Time: 16:33 Method: 300.0

File ID: I20605081633.15 Analyst: ADC QC Key: STD

Workgroup (AAB#): WG273159 Cal ID: IC2 - 28-MAY-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	6.06	mg/L	8.52	1.02	10	
Nitrate		4.07	4.10	mg/L	3.48	0.930	10	
Nitrite		3.65	3.70	mg/L	4.32	1.39	10	
Sulfate		30.0	30.4	mg/L	11.0	1.35	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1115760

Report generated 06/12/2008 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115478

Login Number: L08060120 Run Date: 06/05/2008 Sample ID: WG273160-05

Instrument ID: IC2 Run Time: 20:02 Method: 300.0

File ID: I20605082002.27 Analyst: ADC QC Key: STD

Workgroup (AAB#): WG273159 Cal ID: IC2 - 28-MAY-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	6.00	mg/L	8.61	0.0333	10	
Nitrate		4.07	4.09	mg/L	3.49	0.512	10	
Nitrite		3.65	3.72	mg/L	4.30	1.88	10	
Sulfate		30.0	30.5	mg/L	11.0	1.81	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1115760

Report generated 06/12/2008 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115479

Login Number: L08060120 Run Date: 06/05/2008 Sample ID: WG273160-07

Instrument ID: IC2 Run Time: 21:29 Method: 300.0

File ID: I20605082129.32 Analyst: ADC QC Key: STD

Workgroup (AAB#): WG273159 Cal ID: IC2 - 28-MAY-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		6.00	6.01	mg/L	8.60	0.150	10	
Nitrate		4.07	4.10	mg/L	3.48	0.757	10	
Nitrite		3.65	3.72	mg/L	4.31	1.77	10	
Sulfate		30.0	30.6	mg/L	10.9	2.04	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1115760

Report generated 06/12/2008 08:56

2.2.2 Total Organic Carbon Data

2.2.2.1 Summary Data

LABORATORY REPORT

00115482

L08060120

06/16/08 13:09

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390386(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW21-060408	L08060120-03	415.1	1	05-JUN-08
12WW21-060408	L08060120-03	415.1	1	05-JUN-08
12WW24-060408	L08060120-04	415.1	3	05-JUN-08
12WW24-060408	L08060120-04	415.1	3	05-JUN-08
12WW20-060408	L08060120-05	415.1	1	05-JUN-08
12WW20-060408	L08060120-05	415.1	1	05-JUN-08
12WW20-060408-FD	L08060120-06	415.1	1	05-JUN-08
12WW20-060408-FD	L08060120-06	415.1	1	05-JUN-08

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115483

Sample Number:	L08060120-03	PrePrep Method:	NONE	Instrument:	TOC-VWP
Client ID:	12WW21-060408	Prep Method:	415.1	Prep Date:	06/06/2008 13:53
Matrix:	Water	Analytical Method:	415.1	Cal Date:	04/04/2008 12:37
Workgroup Number:	WG273154	Analyst:	DIH	Run Date:	06/06/2008 13:53
Collect Date:	06/04/2008 09:05	Dilution:	1	File ID:	TC06-06-2008.12
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Inorganic Carbon		30.3		1.00	0.500

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115484

Sample Number: **L08060120-03**
Client ID: **12WW21-060408**
Matrix: **Water**
Workgroup Number: **WG273154**
Collect Date: **06/04/2008 09:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **06/06/2008 13:53**
Cal Date: **04/04/2008 12:37**
Run Date: **06/06/2008 13:53**
File ID: **TC06-06-2008.12**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Organic Carbon		5.90		1.00	0.500

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115485

Sample Number: **L08060120-04**
Client ID: **12WW24-060408**
Matrix: **Water**
Workgroup Number: **WG273154**
Collect Date: **06/04/2008 10:40**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **3**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **06/07/2008 00:01**
Cal Date: **04/04/2008 12:37**
Run Date: **06/07/2008 00:01**
File ID: **TC06-06-2008.62**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Inorganic Carbon		23.3		3.00	1.50

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115486

Sample Number: **L08060120-04**
Client ID: **12WW24-060408**
Matrix: **Water**
Workgroup Number: **WG273154**
Collect Date: **06/04/2008 10:40**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **3**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **06/07/2008 00:01**
Cal Date: **04/04/2008 12:37**
Run Date: **06/07/2008 00:01**
File ID: **TC06-06-2008.62**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Organic Carbon		13.2		3.00	1.50

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115487

Sample Number: **L08060120-05**
Client ID: **12WW20-060408**
Matrix: **Water**
Workgroup Number: **WG273154**
Collect Date: **06/04/2008 13:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **06/06/2008 14:22**
Cal Date: **04/04/2008 12:37**
Run Date: **06/06/2008 14:22**
File ID: **TC06-06-2008.14**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Organic Carbon		5.40		1.00	0.500

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115488

Sample Number: **L08060120-05**
Client ID: **12WW20-060408**
Matrix: **Water**
Workgroup Number: **WG273154**
Collect Date: **06/04/2008 13:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **06/06/2008 14:22**
Cal Date: **04/04/2008 12:37**
Run Date: **06/06/2008 14:22**
File ID: **TC06-06-2008.14**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Inorganic Carbon		30.0		1.00	0.500

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115489

Sample Number: **L08060120-06**
Client ID: **12WW20-060408-FD**
Matrix: **Water**
Workgroup Number: **WG273154**
Collect Date: **06/04/2008 13:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **06/06/2008 14:55**
Cal Date: **04/04/2008 12:37**
Run Date: **06/06/2008 14:55**
File ID: **TC06-06-2008.17**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Inorganic Carbon		24.8		1.00	0.500

Report Number: **L08060120**
Report Date : **June 16, 2008**

00115490

Sample Number:	L08060120-06	PrePrep Method:	NONE	Instrument:	TOC-VWP
Client ID:	12WW20-060408-FD	Prep Method:	415.1	Prep Date:	06/06/2008 14:55
Matrix:	Water	Analytical Method:	415.1	Cal Date:	04/04/2008 12:37
Workgroup Number:	WG273154	Analyst:	DIH	Run Date:	06/06/2008 14:55
Collect Date:	06/04/2008 13:45	Dilution:	1	File ID:	TC06-06-2008.17
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Total Organic Carbon		3.96		1.00	0.500

2.2.2.2 QC Summary Data

Total Organic Carbon Example Calculations
(Direct Readout Parameter)

(Readout)/(dilution) = mg/L

where:

Readout = direct readout from the instrument
dilution = dilution in decimal form (ex. 1/5 dilution = 0.2)

Microbac Laboratories Inc.

Data Checklist

Date: 06-JUN-2008
Analyst: DIH
Analyst: NA
Method: TOC
Instrument: TOC
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG273155 WG273154

Calibration/Linearity	4/4/2008
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DIH
Secondary Reviewer	
Comments	

Primary Reviewer:
08-JUN-2008

Secondary Reviewer:

CHECKLIST1 - Modified 03/05/2008
Generated: JUN-08-2008 09:10:16

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00115494

Analytical Method:415.1 AAB#:WG273154

Login Number:L08060120

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW24-060408	06/04/08	06/05/08	06/07/08	28	2.56	06/07/08	28	2.56	
12WW20-060408-FD	06/04/08	06/05/08	06/06/08	28	2.05	06/06/08	28	2.05	
12WW20-060408	06/04/08	06/05/08	06/06/08	28	2.03	06/06/08	28	2.03	
12WW21-060408	06/04/08	06/05/08	06/06/08	28	2.20	06/06/08	28	2.20	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1112813
Report generated 06/08/2008 09:07

METHOD BLANK SUMMARY

Login Number: L08060120
Work Group: WG273154
Blank File ID: TC06-06-2008.04
Blank Sample ID: WG273154-01
Prep Date: 06/06/08 12:08
Instrument ID: TOC-VWP
Analyzed Date: 06/06/08 12:08
Method: 415.1
Analyst: DIH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG273154-02	TC06-06-2008.05	06/06/08 12:19	01
LCS2	WG273154-03	TC06-06-2008.06	06/06/08 12:31	01
12WW21-060408	L08060120-03	TC06-06-2008.12	06/06/08 13:53	01
12WW21-060408	L08060120-03	TC06-06-2008.12	06/06/08 13:53	01
12WW20-060408	L08060120-05	TC06-06-2008.14	06/06/08 14:22	01
12WW20-060408	L08060120-05	TC06-06-2008.14	06/06/08 14:22	01
12WW20-060408-FD	L08060120-06	TC06-06-2008.17	06/06/08 14:55	01
12WW20-060408-FD	L08060120-06	TC06-06-2008.17	06/06/08 14:55	01
DUP	WG273154-05	TC06-06-2008.31	06/06/08 17:54	01
12WW24-060408	L08060120-04	TC06-06-2008.62	06/07/08 00:01	DL01
12WW24-060408	L08060120-04	TC06-06-2008.62	06/07/08 00:01	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1112814
Report generated 06/08/2008 09:07

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L08060120 Prep Date:06/06/08 12:08 Sample ID:WG273154-01

Instrument ID:TOC-VWP Run Date:06/06/08 12:08 Prep Method:415.1

File ID:TC06-06-2008.04 Analyst:DIH Method:415.1

Workgroup (AAB#):WG273154 Matrix:Water Units:mg/L

Contract #:DACA56-94-D-0020 Cal ID:TOC-VW-04-APR-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name:BLANK

PDF ID: 1112815

08-JUN-2008 09:07

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00115497

Login Number:L08060120 Analyst:DIH Prep Method:415.1
Instrument ID:TOC-VWP Matrix:Water Method:415.1
Workgroup (AAB#):WG273154 Units:mg/L
QC Key:STD Lot #:STD25167

Sample ID:WG273154-02 LCS File ID:TC06-06-2008.05 Run Date:06/06/2008 12:19
Sample ID:WG273154-03 LCS2 File ID:TC06-06-2008.06 Run Date:06/06/2008 12:31

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	24.1	96.2	25.0	26.1	104	8.02	85 - 115	15	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1112816
Report generated: 06/08/2008 09:07

* FAILS %REC LIMIT

FAILS RPD LIMIT

2.2.2.3 Raw Data

TC/TIC Curves

WG#: _____

Total Organic Carbon

MAKE DAILY

CCV (TOC): See below ($\frac{10}{200}(1000) = 50\ mg/L$) ($\frac{3}{200}(1000) = 10\ mg/L$)

LCS (TOC): _____ ($\frac{5}{200}(1000) = 25\ mg/L$)

CCV (TIC): _____ ($\frac{5}{200}(1000) = 25\ mg/L$)

MS (TOC): _____

Calibration Curve Date: 4

☑ EPA 415.1 / SM5310-C TOC / TOC-4 / TOC-D / TOCLOW
☐ SW846 9060 TOC-14 / TOC-44

SOP: K 4151 Rev. 11

Instrument: Shimadza TOC-VWP/ASI

DAILY CHECK

☑ drain reservoir filled
☑ ASI water bottle full
☑ dilution water bottle full

☑ 3rd bottle full
☑ sufficient gas
☑ sufficient persulfate

☑ sufficient acid waste container

Position	Sample ID	Dilution
1	TC Curve	
2	TIC Curve	
3	TC ICV	
4	TIC ICV	
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

Position	Sample ID	Dilution
26	Curve std	
27	TC: std 22589	
28	TIC: std 23787	
29		
30		
31	ICV	
32	TC: std 25167	
33	TIC: std 23789	
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		

Position	Sample ID	Dilution
51		
52	See SOP for	
53	curve points	
54		
55		
56		
57	$\frac{5}{200}(1000) = 25$ mg/L	
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		

Analyst: Keanna Roberts Date: 4/4/08 Time: _____

DCN#74787

Keanna Roberts

Approved: April 07, 2008

	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TC	TCCURVE		Comple	04/04/2008 10:13:50 AM	0, 1, 2,
2	IC	TICCURVE		Comple	04/04/2008 12:47:07 PM	0, 6, 7,
3	TC	TC ICV	TC:25.16mg/L	Comple	04/04/2008 11:03:31 AM	11
4	IC	TIC ICV	IC:23.70mg/L	Comple	04/04/2008 12:56:08 PM	12

Approved: April 07, 2008

Instr.Information

System	TOCVW ASI
Detector	Wet Chemical

Cal. Curve

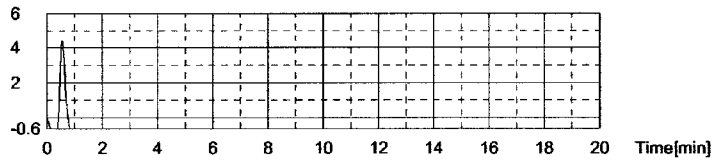
Sample Name:	TCCURVE
Sample ID:	Untitled
Cal. Curve:	TCCURVE-04-04-2008.2008_04_04_09_40_38.cal
Status	Completed

Type	Anal.
Standard	TC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	7.858	500uL	1	*******		04/04/2008 09:43:57 AM

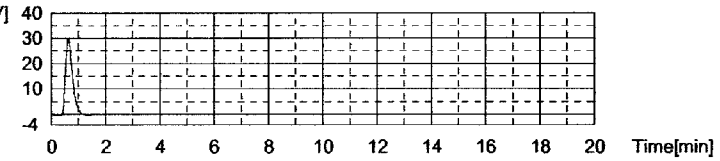
Acid Add. 0.000%
Mean Area 7.858



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	55.07	500uL	1	*******		04/04/2008 09:49:11 AM

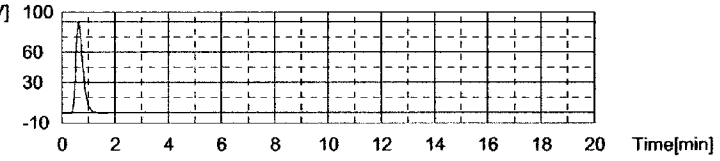
Acid Add. 0.000%
Mean Area 55.07



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	166.8	500uL	1	*******		04/04/2008 09:54:51 AM

Acid Add. 0.000%
Mean Area 166.8



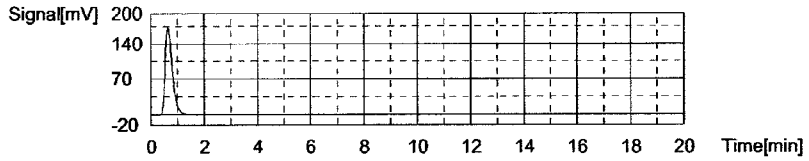
Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	332.0	500uL	1	*******		04/04/2008 10:00:41 AM

Jeanna Roberts

Approved: April 07, 2008

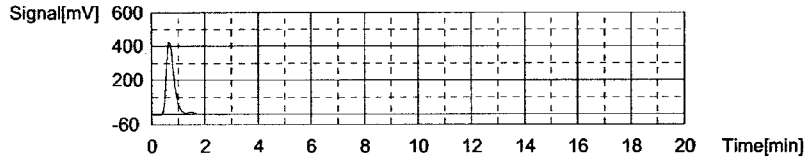
Acid Add. 0.000%
Mean Area 332.0



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	884.4	500uL	1	*******		04/04/2008 10:07:19 AM

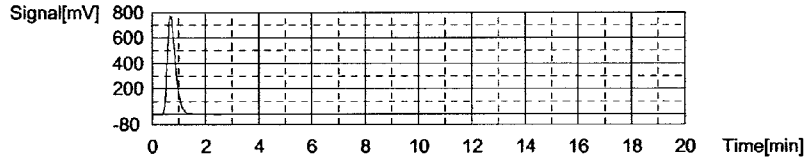
Acid Add. 0.000%
Mean Area 884.4



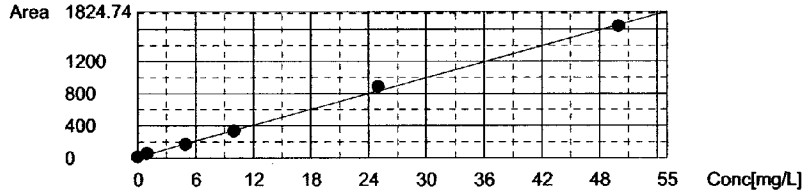
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1639	500uL	1	*******		04/04/2008 10:13:50 AM

Acid Add. 0.000%
Mean Area 1639



Slope: 32.86
Intercept 15.79
r^2 0.998495
Zero Shift No



Cal. Curve

Sample Name: TICCURVE
Sample ID: Untitled
Cal. Curve: TICCURVE-04-04-2008.2008_04_04_12_03_52.cal
Status Completed

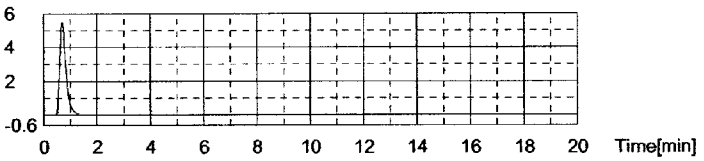
Type	Anal.
Standard	IC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	8.698	500uL	1	*******		04/04/2008 12:07:21 PM

Approved: April 07, 2008

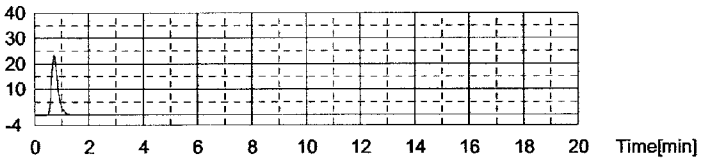
Acid Add. 10.00%
Mean Area 8.698



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	37.95	500uL	1	*******		04/04/2008 12:14:21 PM

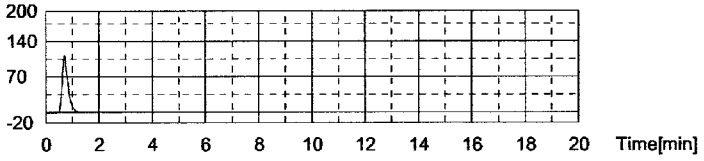
Acid Add. 10.00%
Mean Area 37.95



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	167.7	500uL	1	*******		04/04/2008 12:21:48 PM

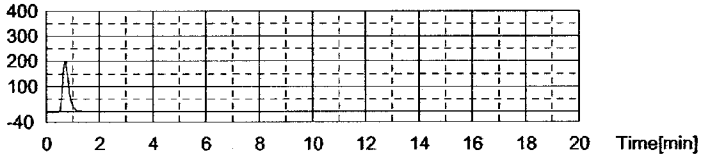
Acid Add. 10.00%
Mean Area 167.7



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	321.7	500uL	1	*******		04/04/2008 12:29:17 PM

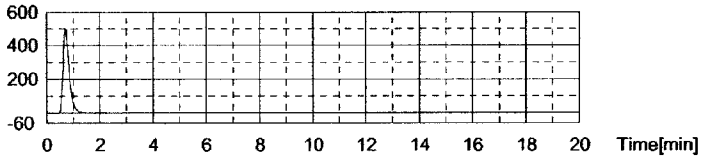
Acid Add. 10.00%
Mean Area 321.7



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	805.6	500uL	1	*******		04/04/2008 12:37:26 PM

Acid Add. 10.00%
Mean Area 805.6

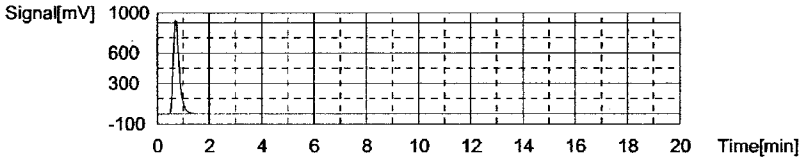


Conc: 50.00mg/L

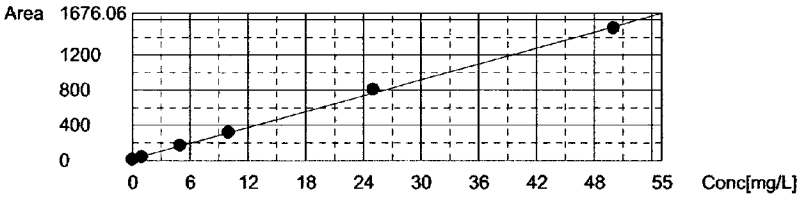
Approved: April 07, 2008

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1506	500uL	1	T*******		04/04/2008 12:47:07 PM

Acid Add. 10.00%
Mean Area 1506



Slope: 30.12
Intercept 17.83
r^2 0.998989
Zero Shift No



Sample

Sample Name: TC ICV
Sample ID: Untitled
Origin: TCCURVE-04-04-2008.cal
Status Completed
Chk. Result

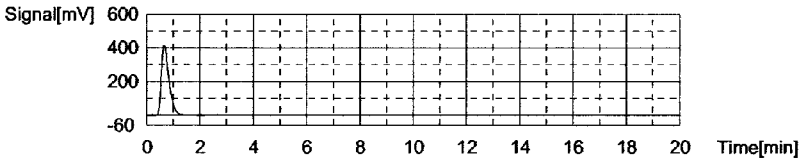
Type	Anal.	Dil.	Result
Unknown	TC	1.000	TC:25.16mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	842.6	25.16mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	04/04/2008 11:03:31 AM

Mean Area 842.6
Mean Conc. 25.16mg/L



Sample

Sample Name: TIC ICV
Sample ID: Untitled
Origin: TICCURVE-04-04-2008.cal
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	IC	1.000	IC:23.70mg/L

1. Det

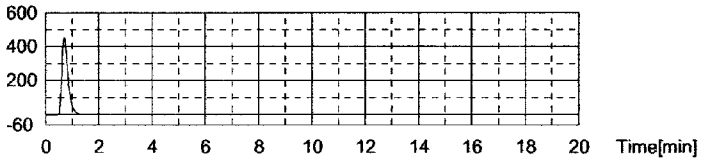
Jeanna Roberts

Approved: April 07, 2008

Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	731.5	23.70mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	04/04/2008 12:56:08 PM

Mean Area 731.5
Mean Conc. 23.70mg/L



Approved: April 07, 2008

WORKGROUP: WG273154

WG#: _____ **Total Organic Carbon** 273155

MAKE DAILY

CCV (TOC): STD25801 ($^{10}/_{200}$(1000) = 50 mg/L) ($^{2}/_{200}$(1000) = 10 mg/L)

CCV (TIC): STD23787 ($^{5}/_{200}$(1000) = 25 mg/L)

LCS (TOC): STD25167 ($^{5}/_{200}$(1000) = 25 mg/L)

MS (TOC): 0.4/40(1000)=10

Calibration Curve Date: 4/4/08

☑ EPA 415.1 / SM5310-C TOC / TOC-4 / TOC-D / TOCLOW
☐ SW846 9060 TOC-14 / TOC-44

SOP: K 4151 Rev. 11

Instrument: Shimadza TOC-VWP/ASI

☑ drain reservoir filled
☑ ASI water bottle full
☑ dilution water bottle full

DAILY CHECK
☑ 3rd bottle full
☑ sufficient gas
☑ sufficient persulfate

☑ sufficient acid waste container

Position	Sample ID	Dilution
1	CCV 50	
2	CCV 10	
3	TIC 25	
4	BIK	
5	LCS 25	
6	LCS DUP	
7	06-068-01	
8	02	
9	06-079-01	1/5
10	02	1/5
11	06-081-09	
12	06-120-03	
13	04	
14	05	
15	CCV	
16	CCB	
17	06-120-06	
18	06-042-04	1/5 CL
19	05	1/2
20	06	1/2
21	06-075-01	
22	03	
23	05	
24	06-083-01	
25	06-087-01	

Position	Sample ID	Dilution
26	06-087-02	
27	CCV	
28	CCB	
29	~~06-122-01~~ 06-053-27	
30	~~06-062-06~~ 22-01	
31	DUP	
32	MS	
33	BIK	
34	LCS	
35	LCS DUP	
36	06-053-01	
37	02	
38	03	
39	CCV	
40	CCB	
41	06-053-~~04~~ 05	
42	06	
43	07	
44	09	1/2
45	10	
46	11	
47	13	1/2
48	14	
49	15	
50	17 16	1/2

Position	Sample ID	Dilution
51	CCV	
52	CCB	
53	06-053-17 18	1/2
54	18 19	
55	19 21	1/2
56	22	
57	23	
58	25	
59	26	
60	DUP	
61	MS	
62 R	06-120-04	1/3
63	CCV	
64	CCB	
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		

Analyst: Deanna Beason Date: 6/6/08 Time: _____

DCN#75584

Deanna Roberts

Approved: June 08, 2008

	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TOC	CCV 50	!!Error!! TOC:51.47mg/L TC:51.01mg/L IC:-0.4654mg	Comple	06/06/2008 11:34:19 AM	1
2	TOC	CCV 10	!!Error!! TOC:10.42mg/L TC:9.976mg/L IC:-0.4485mg	Comple	06/06/2008 11:45:29 AM	2
3	TOC	TIC 25	TOC:1.890mg/L TC:27.84mg/L IC:25.95mg/L	Comple	06/06/2008 12:00:02 PM	3
4	TOC	WG273154-01 BLANK	!!Error!! TOC:0.1952mg/L TC:-0.09927mg/L IC:-0.294	Comple	06/06/2008 12:08:25 PM	0
5	TOC	WG273154-02 LCS	!!Error!! TOC:24.05mg/L TC:23.59mg/L IC:-0.4563mg	Comple	06/06/2008 12:19:49 PM	5
6	TOC	WG273054-03 LCSDUP	!!Error!! TOC:26.06mg/L TC:25.60mg/L IC:-0.4654mg	Comple	06/06/2008 12:31:19 PM	6
7	TOC	L08060068-01	TOC:9.712mg/L TC:35.00mg/L IC:25.29mg/L	Comple	06/06/2008 12:45:35 PM	7
8	TOC	L08060068-02	TOC:8.731mg/L TC:35.49mg/L IC:26.76mg/L	Comple	06/06/2008 12:59:17 PM	8
9	TOC	L08060079-01 (5)	TOC:23.03mg/L TC:23.72mg/L IC:0.6972mg/L	Comple	06/06/2008 01:13:09 PM	9
10	TOC	L08060079-02 (5)	TOC:28.41mg/L TC:29.06mg/L IC:0.6521mg/L	Comple	06/06/2008 01:27:19 PM	10
11	TOC	L08060081-09	TOC:5.793mg/L TC:14.31mg/L IC:8.512mg/L	Comple	06/06/2008 01:39:16 PM	11
12	TOC	L08060120-03	TOC:5.899mg/L TC:36.22mg/L IC:30.32mg/L	Comple	06/06/2008 01:53:57 PM	12
13	TOC	L06080120-04 X	TOC:7.659mg/L TC:79.22mg/L IC:71.56mg/L	Comple	06/06/2008 02:09:00 PM	13
14	TOC	L08060120-05	TOC:5.396mg/L TC:35.40mg/L IC:30.00mg/L	Comple	06/06/2008 02:22:24 PM	14
15	TOC	CCV	!!Error!! TOC:49.77mg/L TC:49.49mg/L IC:-0.2819mg	Comple	06/06/2008 02:34:20 PM	15
16	TOC	CCB	!!Error!! TOC:0.1767mg/L TC:-0.1486mg/L IC:-0.3253	Comple	06/06/2008 02:42:38 PM	0
17	TOC	L08060120-06	TOC:3.956mg/L TC:28.79mg/L IC:24.83mg/L	Comple	06/06/2008 02:55:44 PM	17
18	TOC	L08060042-04 (5)	TOC:11.24mg/L TC:13.26mg/L IC:2.024mg/L	Comple	06/06/2008 03:08:26 PM	18
19	TOC	L08060042-05 (2)	TOC:5.168mg/L TC:10.57mg/L IC:5.401mg/L	Comple	06/06/2008 03:21:08 PM	19
20	TOC	L08060042-06 (2)	TOC:3.453mg/L TC:7.337mg/L IC:3.884mg/L	Comple	06/06/2008 03:33:28 PM	20
21	TOC	L08060075-01	TOC:6.979mg/L TC:46.60mg/L IC:39.62mg/L	Comple	06/06/2008 03:47:08 PM	21
22	TOC	L08060075-03 X	TOC:0.8706mg/L TC:67.72mg/L IC:66.84mg/L	Comple	06/06/2008 04:01:58 PM	22
23	TOC	L08060075-05 X	TOC:1.571mg/L TC:66.22mg/L IC:64.65mg/L	Comple	06/06/2008 04:17:19 PM	23
24	TOC	L08060083-01	TOC:10.29mg/L TC:25.84mg/L IC:15.55mg/L	Comple	06/06/2008 04:30:41 PM	24
25	TOC	L08060087-01	TOC:17.61mg/L TC:33.39mg/L IC:15.78mg/L	Comple	06/06/2008 04:44:15 PM	25
26	TOC	L08060087-02	TOC:9.625mg/L TC:11.40mg/L IC:1.774mg/L	Comple	06/06/2008 04:56:52 PM	26
27	TOC	CCV	!!Error!! TOC:55.88mg/L TC:55.48mg/L IC:-0.3963mg	Comple	06/06/2008 05:10:46 PM	27
28	TOC	CCB	!!Error!! TOC:0.1753mg/L TC:-0.1589mg/L IC:-0.3342	Comple	06/06/2008 05:19:07 PM	0
29	TOC	L08060053-27	TOC:18.35mg/L TC:36.04mg/L IC:17.69mg/L	Comple	06/06/2008 05:32:45 PM	29
30	TOC	L08060122-01	!!Error!! TOC:0.4426mg/L TC:0.08149mg/L IC:-0.361	Comple	06/06/2008 05:43:26 PM	30
31	TOC	WG273154-05 DUP	!!Error!! TOC:0.3236mg/L TC:-0.08862mg/L IC:-0.412	Comple	06/06/2008 05:54:03 PM	31
32	TOC	WG273154-06 MS	!!Error!! TOC:10.82mg/L TC:10.39mg/L IC:-0.4340mg	Comple	06/06/2008 06:05:11 PM	32
33	TOC	WG273155-01 BLANK	!!Error!! TOC:0.1511mg/L TC:-0.1938mg/L IC:-0.3449	Comple	06/06/2008 06:13:28 PM	0
34	TOC	WG273155-02 LCS	!!Error!! TOC:26.31mg/L TC:25.90mg/L IC:-0.4108mg	Comple	06/06/2008 06:24:58 PM	34
35	TOC	WG273155-03 LCSDUP	!!Error!! TOC:26.11mg/L TC:25.70mg/L IC:-0.4164mg	Comple	06/06/2008 06:36:33 PM	35
36	TOC	L08060053-01	TOC:3.396mg/L TC:7.316mg/L IC:3.920mg/L	Comple	06/06/2008 06:48:23 PM	36
37	TOC	L08060053-02	TOC:3.534mg/L TC:7.395mg/L IC:3.861mg/L	Comple	06/06/2008 07:00:35 PM	37
38	TOC	L08060053-03	TOC:3.357mg/L TC:7.301mg/L IC:3.944mg/L	Comple	06/06/2008 07:12:24 PM	38
39	TOC	CCV	!!Error!! TOC:51.74mg/L TC:51.34mg/L IC:-0.3936mg	Comple	06/06/2008 07:24:19 PM	39
40	TOC	CCB	!!Error!! TOC:0.1667mg/L TC:-0.1792mg/L IC:-0.3458	Comple	06/06/2008 07:32:39 PM	0
41	TOC	L08060053-05	TOC:3.769mg/L TC:7.191mg/L IC:3.422mg/L	Comple	06/06/2008 07:44:43 PM	41
42	TOC	L08060053-06	TOC:5.583mg/L TC:9.072mg/L IC:3.489mg/L	Comple	06/06/2008 07:57:03 PM	42
43	TOC	L08060053-07	TOC:3.960mg/L TC:7.130mg/L IC:3.170mg/L	Comple	06/06/2008 08:09:08 PM	43
44	TOC	L08060053-09 (2)	TOC:10.77mg/L TC:15.13mg/L IC:4.355mg/L	Comple	06/06/2008 08:21:30 PM	44
45	TOC	L08060053-10 (2)	TOC:11.03mg/L TC:14.84mg/L IC:3.811mg/L	Comple	06/06/2008 08:34:09 PM	45
46	TOC	L08060053-11 (2)	TOC:10.88mg/L TC:14.22mg/L IC:3.339mg/L	Comple	06/06/2008 08:46:29 PM	46
47	TOC	L08060053-13 (2)	TOC:11.13mg/L TC:14.29mg/L IC:3.163mg/L	Comple	06/06/2008 08:59:11 PM	47
48	TOC	L08060053-14 (2)	TOC:11.04mg/L TC:14.53mg/L IC:3.489mg/L	Comple	06/06/2008 09:11:43 PM	48
49	TOC	L08060053-15 (2)	TOC:11.21mg/L TC:14.24mg/L IC:3.034mg/L	Comple	06/06/2008 09:24:24 PM	49
50	TOC	L08060053-17 (2)	TOC:8.269mg/L TC:10.15mg/L IC:1.877mg/L	Comple	06/06/2008 09:36:36 PM	50
51	TOC	CCV	!!Error!! TOC:50.64mg/L TC:50.25mg/L IC:-0.3931mg	Comple	06/06/2008 09:48:34 PM	51
52	TOC	CCB	!!Error!! TOC:0.1582mg/L TC:-0.1876mg/L IC:-0.3459	Comple	06/06/2008 09:56:52 PM	0
53	TOC	L08060053-18 (2)	TOC:8.025mg/L TC:9.510mg/L IC:1.485mg/L	Comple	06/06/2008 10:08:42 PM	53
54	TOC	L08060053-19 (2)	TOC:8.192mg/L TC:9.355mg/L IC:1.162mg/L	Comple	06/06/2008 10:20:34 PM	54
55	TOC	L08060053-21 (2)	TOC:8.759mg/L TC:9.750mg/L IC:0.9911mg/L	Comple	06/06/2008 10:32:42 PM	55
56	TOC	L08060053-22 (2)	TOC:8.643mg/L TC:9.738mg/L IC:1.095mg/L	Comple	06/06/2008 10:44:32 PM	56
57	TOC	L08060053-23 (2)	TOC:8.685mg/L TC:9.540mg/L IC:0.8549mg/L	Comple	06/06/2008 10:56:31 PM	57
58	TOC	L08060053-25	TOC:17.54mg/L TC:24.69mg/L IC:7.151mg/L	Comple	06/06/2008 11:09:33 PM	58
59	TOC	L08060053-26	TOC:17.97mg/L TC:23.08mg/L IC:5.109mg/L	Comple	06/06/2008 11:22:58 PM	59
60	TOC	WG273155-05 DUP	TOC:17.42mg/L TC:24.00mg/L IC:6.573mg/L	Comple	06/06/2008 11:35:52 PM	60
61	TOC	WG273155-06 MS	TOC:28.16mg/L TC:36.34mg/L IC:8.177mg/L	Comple	06/06/2008 11:49:32 PM	61
62	TOC	L08060120-04 (3)	TOC:4.410mg/L TC:12.18mg/L IC:7.769mg/L	Comple	06/07/2008 12:01:39 AM	62
63	TOC	CCV	!!Error!! TOC:55.11mg/L TC:54.75mg/L IC:-0.3585mg	Comple	06/07/2008 12:15:48 AM	63
64	TOC	CCB	!!Error!! TOC:0.1558mg/L TC:-0.1768mg/L IC:-0.3326	Comple	06/07/2008 12:24:09 AM	0

Approved: June 08, 2008

Instr.Information

System TOCVW ASI
Detector Wet Chemical

Sample

Sample Name: CCV 50
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

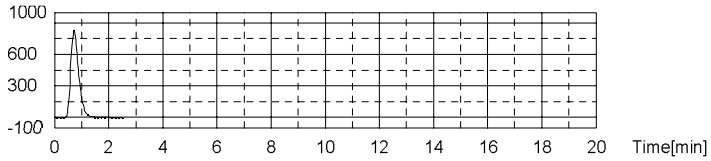
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:51.47mg/L TC:51.01mg/L IC:-0.4654mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1692	51.01mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 11:30:28 AM

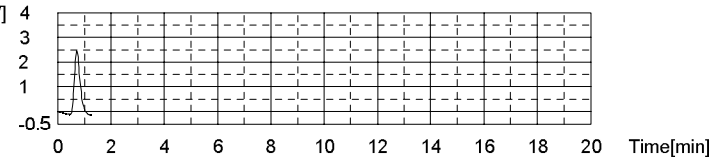
Mean Area 1692
Mean Conc. 51.01mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	3.815	-0.4654mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 11:34:19 AM

Mean Area 3.815
Mean Conc. -0.4654mg/L



Sample

Sample Name: CCV 10
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:10.42mg/L TC:9.976mg/L IC:-0.4485mg/L

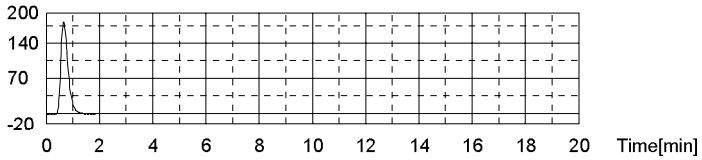
1. Det

Anal.: TC

Approved: June 08, 2008

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	343.6	9.976mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 11:41:36 AM

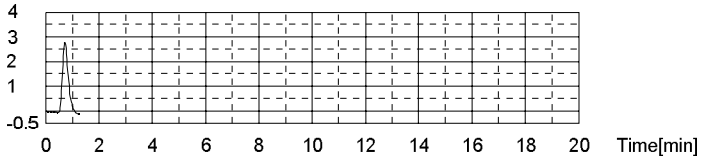
Mean Area 343.6
Mean Conc. 9.976mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.324	-0.4485mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 11:45:29 AM

Mean Area 4.324
Mean Conc. -0.4485mg/L



Sample

Sample Name: TIC 25
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

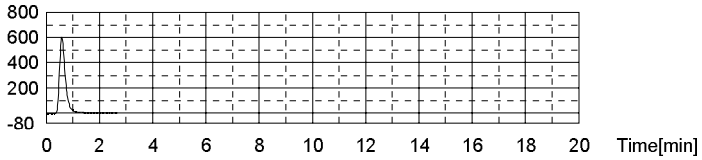
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.890mg/L TC:27.84mg/L IC:25.95mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	930.8	27.84mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 11:53:36 AM

Mean Area 930.8
Mean Conc. 27.84mg/L

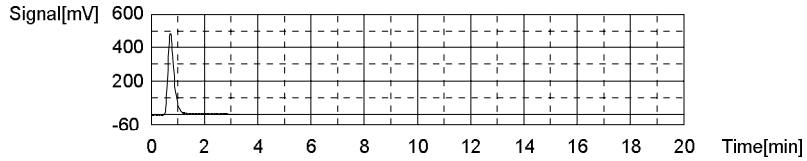


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	799.5	25.95mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 12:00:02 PM

Approved: June 08, 2008

Mean Area 799.5
Mean Conc. 25.95mg/L



Sample

Sample Name: WG273154-01 BLANK
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

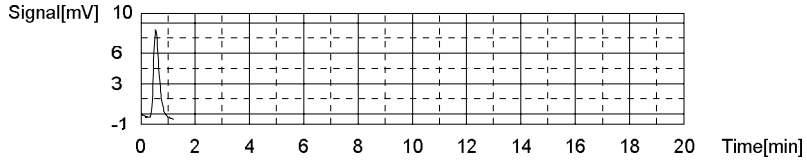
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1952mg/L TC:-0.09927mg/L IC:-0.2945mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	12.53	-0.09927mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 12:04:53 PM

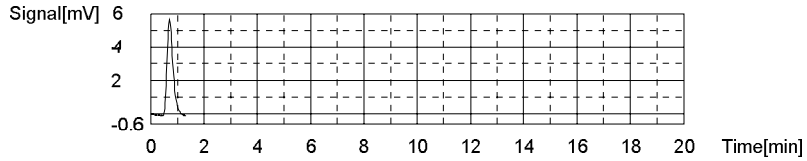
Mean Area 12.53
Mean Conc. -0.09927mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.962	-0.2945mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 12:08:25 PM

Mean Area 8.962
Mean Conc. -0.2945mg/L



Sample

Sample Name: WG273154-02 LCS
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.05mg/L TC:23.59mg/L IC:-0.4563mg/L

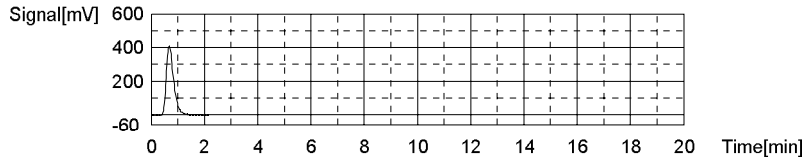
Approved: June 08, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	791.1	23.59mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 12:16:00 PM

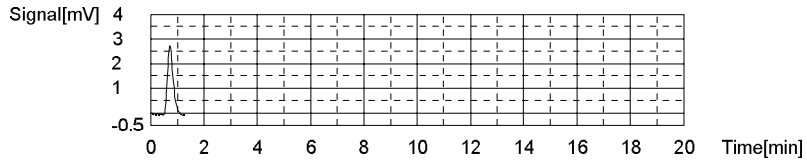
Mean Area 791.1
Mean Conc. 23.59mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.088	-0.4563mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 12:19:49 PM

Mean Area 4.088
Mean Conc. -0.4563mg/L



Sample

Sample Name: WG273054-03 LCSDUP
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

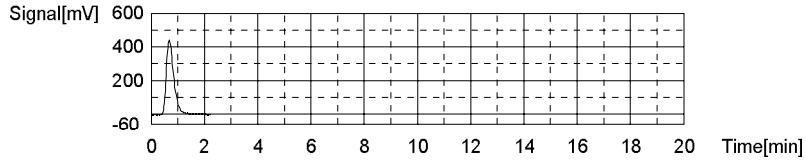
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:26.06mg/L TC:25.60mg/L IC:-0.4654mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	857.0	25.60mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 12:27:29 PM

Mean Area 857.0
Mean Conc. 25.60mg/L

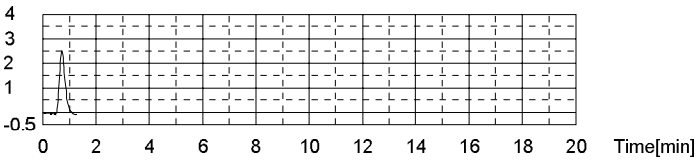


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	3.814	-0.4654mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 12:31:19 PM

Approved: June 08, 2008

Mean Area 3.814
Mean Conc. -0.4654mg/L



Sample

Sample Name: L08060068-01
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

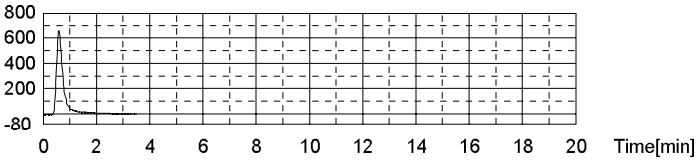
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:9.712mg/L TC:35.00mg/L IC:25.29mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1166	35.00mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 12:40:16 PM

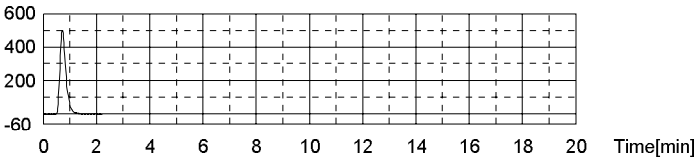
Mean Area 1166
Mean Conc. 35.00mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	779.5	25.29mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 12:45:35 PM

Mean Area 779.5
Mean Conc. 25.29mg/L



Sample

Sample Name: L08060068-02
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.731mg/L TC:35.49mg/L IC:26.76mg/L

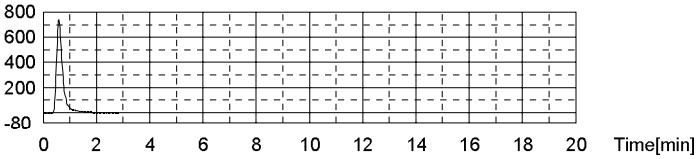
Approved: June 08, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1182	35.49mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 12:53:52 PM

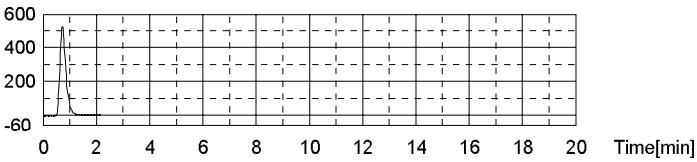
Mean Area 1182
Mean Conc. 35.49mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	823.7	26.76mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 12:59:17 PM

Mean Area 823.7
Mean Conc. 26.76mg/L



Sample

Sample Name: L08060079-01 (5)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

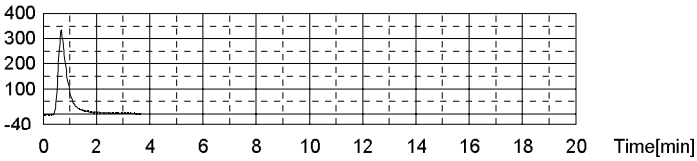
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:23.03mg/L TC:23.72mg/L IC:0.6972mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	795.4	23.72mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 01:08:23 PM

Mean Area 795.4
Mean Conc. 23.72mg/L

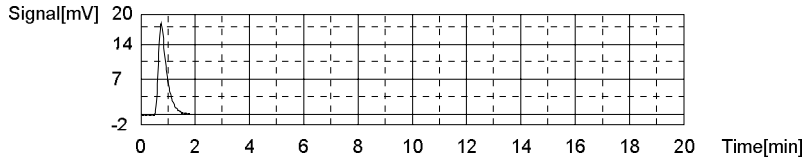


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	38.83	0.6972mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 01:13:09 PM

Approved: June 08, 2008

Mean Area 38.83
Mean Conc. 0.6972mg/L



Sample

Sample Name: L08060079-02 (5)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

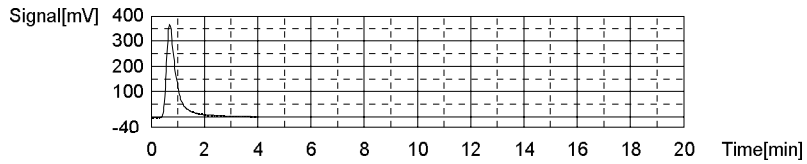
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:28.41mg/L TC:29.06mg/L IC:0.6521mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	970.9	29.06mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 01:22:33 PM

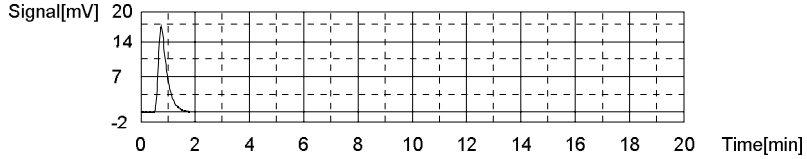
Mean Area 970.9
Mean Conc. 29.06mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	37.47	0.6521mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 01:27:19 PM

Mean Area 37.47
Mean Conc. 0.6521mg/L



Sample

Sample Name: L08060081-09
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.793mg/L TC:14.31mg/L IC:8.512mg/L

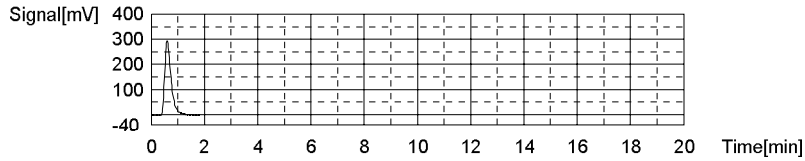
Approved: June 08, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	485.9	14.31mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 01:34:34 PM

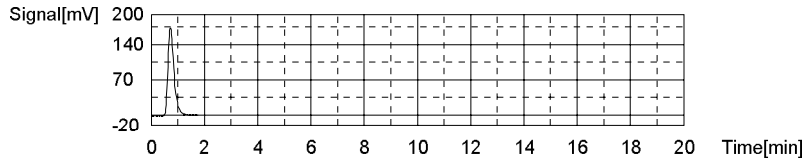
Mean Area 485.9
Mean Conc. 14.31mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	274.2	8.512mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 01:39:16 PM

Mean Area 274.2
Mean Conc. 8.512mg/L



Sample

Sample Name: L08060120-03
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

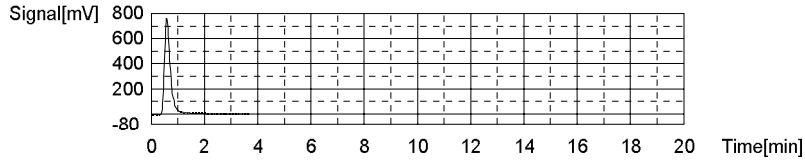
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.899mg/L TC:36.22mg/L IC:30.32mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1206	36.22mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 01:48:23 PM

Mean Area 1206
Mean Conc. 36.22mg/L

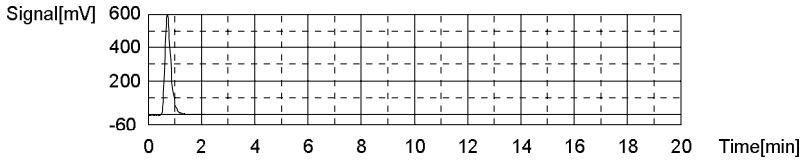


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	931.0	30.32mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 01:53:57 PM

Approved: June 08, 2008

Mean Area 931.0
Mean Conc. 30.32mg/L



Sample

Sample Name: L06080120-04
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

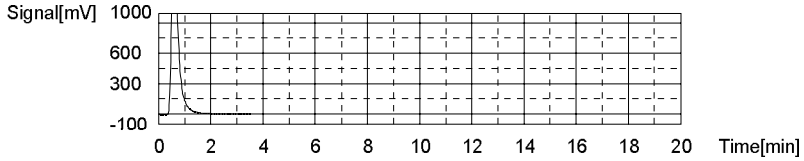
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:7.659mg/L TC:79.22mg/L IC:71.56mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2619	79.22mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 02:02:53 PM

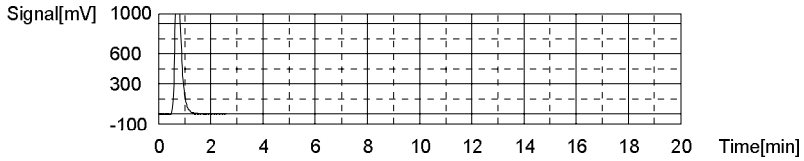
Mean Area 2619
Mean Conc. 79.22mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2173	71.56mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 02:09:00 PM

Mean Area 2173
Mean Conc. 71.56mg/L



Sample

Sample Name: L08060120-05
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.396mg/L TC:35.40mg/L IC:30.00mg/L

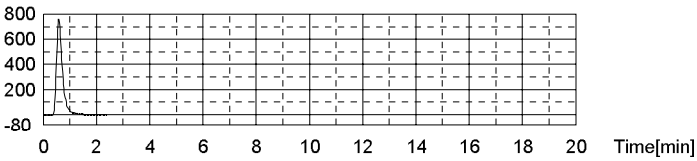
Approved: June 08, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1179	35.40mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 02:16:48 PM

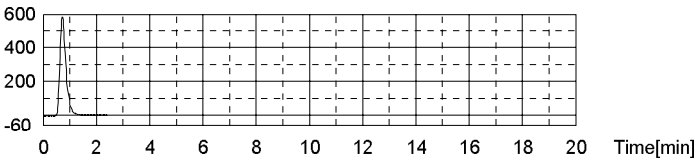
Mean Area 1179
Mean Conc. 35.40mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	921.4	30.00mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 02:22:24 PM

Mean Area 921.4
Mean Conc. 30.00mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

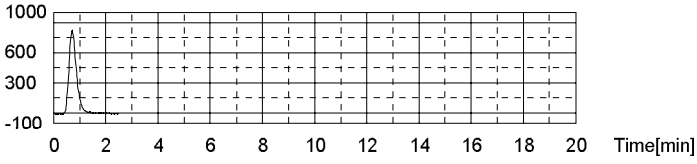
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:49.77mg/L TC:49.49mg/L IC:-0.2819mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1642	49.49mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 02:30:20 PM

Mean Area 1642
Mean Conc. 49.49mg/L

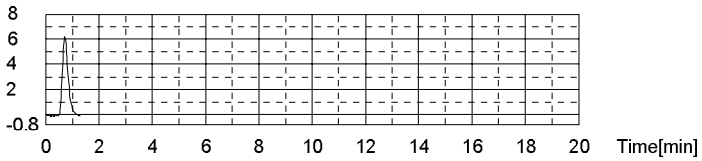


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.342	-0.2819mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 02:34:20 PM

Approved: June 08, 2008

Mean Area 9.342
Mean Conc. -0.2819mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

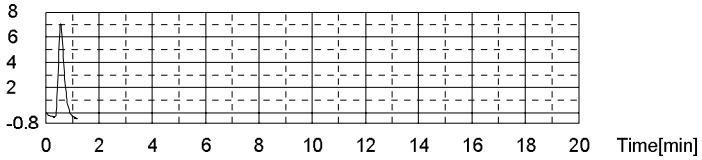
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1767mg/L TC:-0.1486mg/L IC:-0.3253mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.91	-0.1486mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 02:39:10 PM

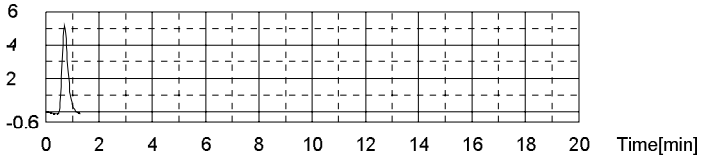
Mean Area 10.91
Mean Conc. -0.1486mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.035	-0.3253mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 02:42:38 PM

Mean Area 8.035
Mean Conc. -0.3253mg/L



Sample

Sample Name: L08060120-06
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.956mg/L TC:28.79mg/L IC:24.83mg/L

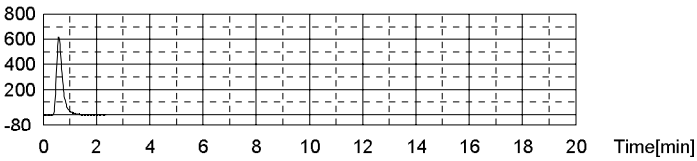
Approved: June 08, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	961.8	28.79mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 02:50:24 PM

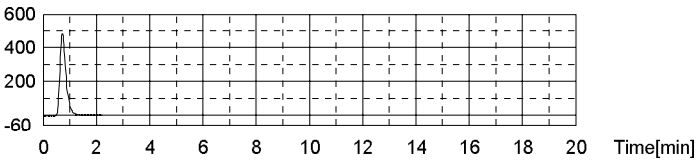
Mean Area 961.8
Mean Conc. 28.79mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	765.7	24.83mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 02:55:44 PM

Mean Area 765.7
Mean Conc. 24.83mg/L



Sample

Sample Name: L08060042-04 (5)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

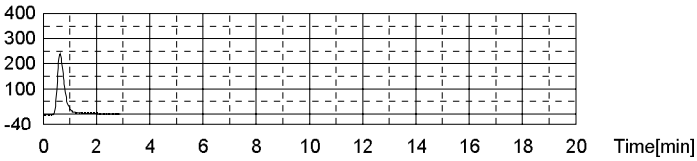
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:11.24mg/L TC:13.26mg/L IC:2.024mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	451.6	13.26mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 03:04:03 PM

Mean Area 451.6
Mean Conc. 13.26mg/L

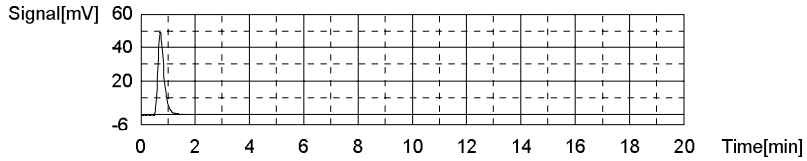


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	78.79	2.024mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 03:08:26 PM

Approved: June 08, 2008

Mean Area 78.79
Mean Conc. 2.024mg/L



Sample

Sample Name: L08060042-05 (2)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

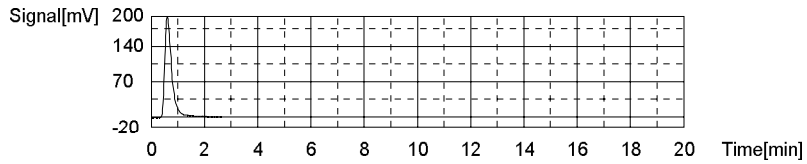
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.168mg/L TC:10.57mg/L IC:5.401mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	363.1	10.57mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 03:16:29 PM

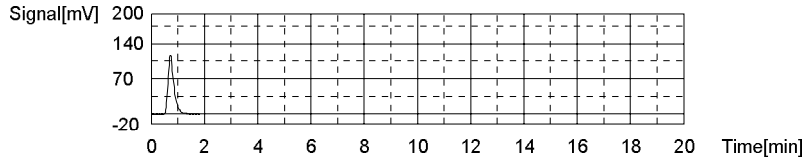
Mean Area 363.1
Mean Conc. 10.57mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	180.5	5.401mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 03:21:08 PM

Mean Area 180.5
Mean Conc. 5.401mg/L



Sample

Sample Name: L08060042-06 (2)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.453mg/L TC:7.337mg/L IC:3.884mg/L

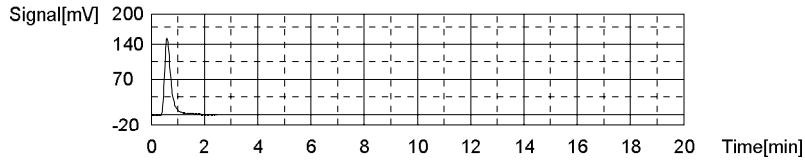
Approved: June 08, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	256.9	7.337mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 03:29:02 PM

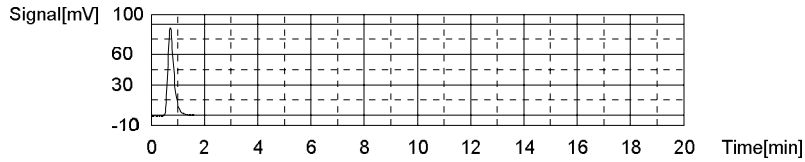
Mean Area 256.9
Mean Conc. 7.337mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	134.8	3.884mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 03:33:28 PM

Mean Area 134.8
Mean Conc. 3.884mg/L



Sample

Sample Name: L08060075-01
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

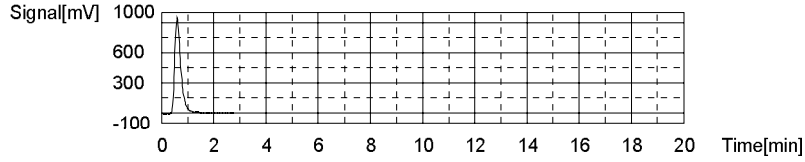
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:6.979mg/L TC:46.60mg/L IC:39.62mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1547	46.60mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 03:41:39 PM

Mean Area 1547
Mean Conc. 46.60mg/L

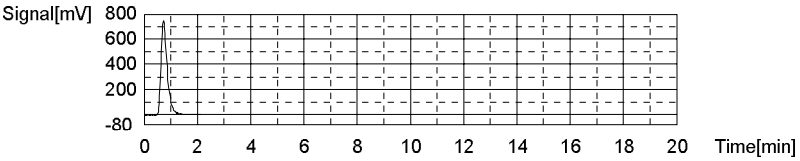


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1211	39.62mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 03:47:08 PM

Approved: June 08, 2008

Mean Area 1211
Mean Conc. 39.62mg/L



Sample

Sample Name: L08060075-03
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

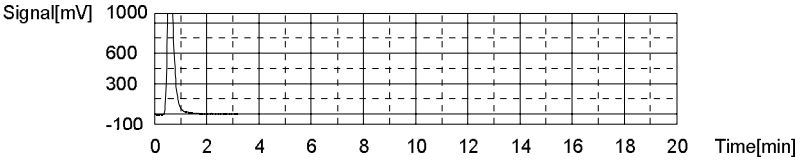
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.8706mg/L TC:67.72mg/L IC:66.84mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2241	67.72mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 03:55:45 PM

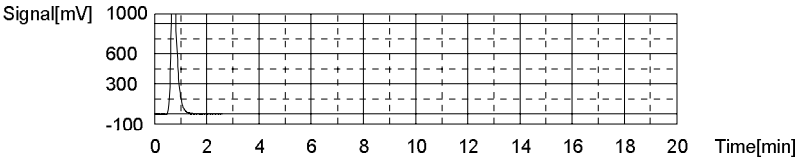
Mean Area 2241
Mean Conc. 67.72mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2031	66.84mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 04:01:58 PM

Mean Area 2031
Mean Conc. 66.84mg/L



Sample

Sample Name: L08060075-05
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.571mg/L TC:66.22mg/L IC:64.65mg/L

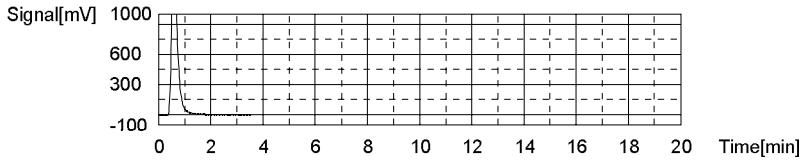
Approved: June 08, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2192	66.22mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 04:10:55 PM

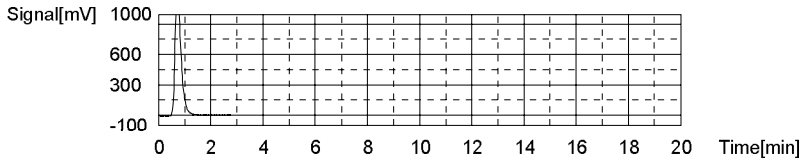
Mean Area 2192
Mean Conc. 66.22mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1965	64.65mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 04:17:19 PM

Mean Area 1965
Mean Conc. 64.65mg/L



Sample

Sample Name: L08060083-01
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

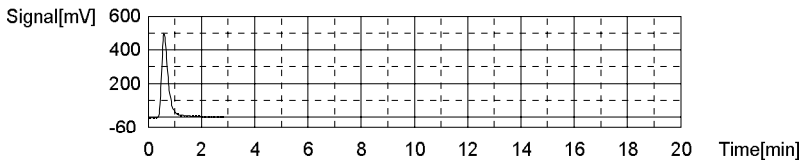
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:10.29mg/L TC:25.84mg/L IC:15.55mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	864.8	25.84mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 04:25:35 PM

Mean Area 864.8
Mean Conc. 25.84mg/L

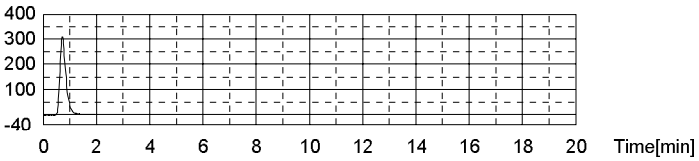


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	486.1	15.55mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 04:30:41 PM

Approved: June 08, 2008

Mean Area 486.1
Mean Conc. 15.55mg/L



Sample

Sample Name: L08060087-01
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

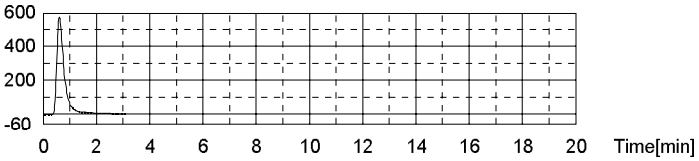
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:17.61mg/L TC:33.39mg/L IC:15.78mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1113	33.39mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 04:39:12 PM

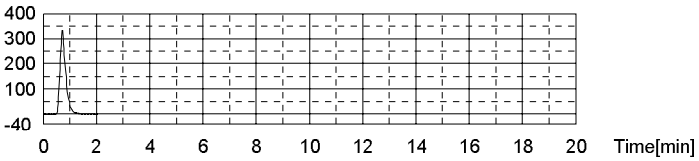
Mean Area 1113
Mean Conc. 33.39mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	493.1	15.78mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 04:44:15 PM

Mean Area 493.1
Mean Conc. 15.78mg/L



Sample

Sample Name: L08060087-02
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:9.625mg/L TC:11.40mg/L IC:1.774mg/L

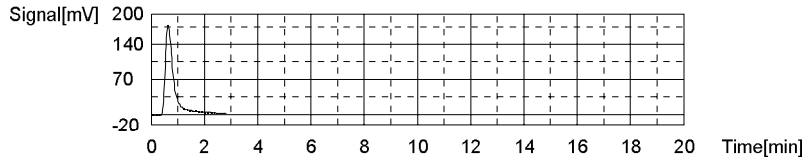
Approved: June 08, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	390.4	11.40mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 04:52:29 PM

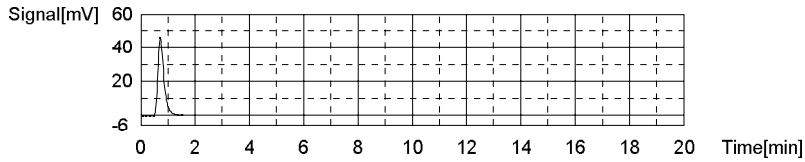
Mean Area 390.4
Mean Conc. 11.40mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	71.27	1.774mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 04:56:52 PM

Mean Area 71.27
Mean Conc. 1.774mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

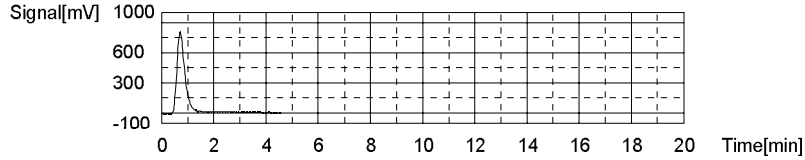
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:55.88mg/L TC:55.48mg/L IC:-0.3963mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1839	55.48mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 05:06:52 PM

Mean Area 1839
Mean Conc. 55.48mg/L

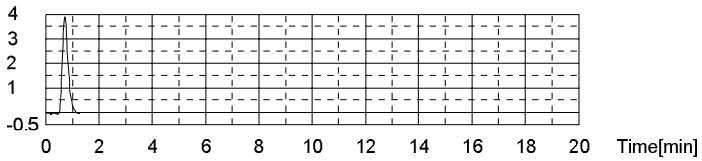


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.896	-0.3963mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 05:10:46 PM

Approved: June 08, 2008

Mean Area 5.896
Mean Conc. -0.3963mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

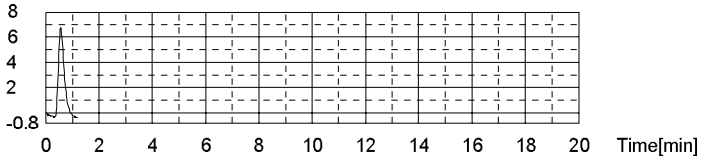
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1753mg/L TC:-0.1589mg/L IC:-0.3342mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.57	-0.1589mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 05:15:37 PM

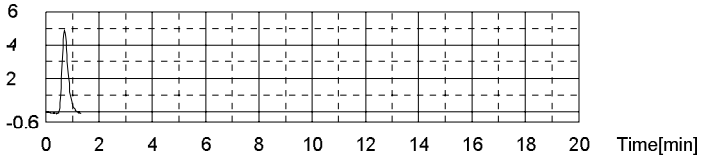
Mean Area 10.57
Mean Conc. -0.1589mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.767	-0.3342mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 05:19:07 PM

Mean Area 7.767
Mean Conc. -0.3342mg/L



Sample

Sample Name: L08060053-27
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:18.35mg/L TC:36.04mg/L IC:17.69mg/L

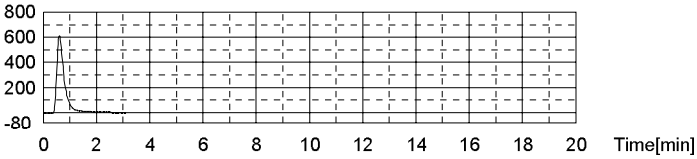
Approved: June 08, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1200	36.04mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 05:27:41 PM

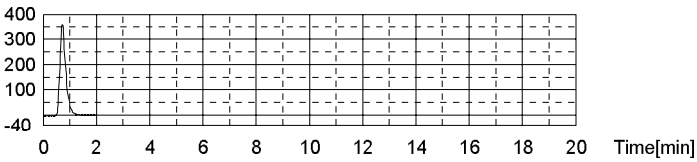
Mean Area 1200
Mean Conc. 36.04mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	550.5	17.69mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 05:32:45 PM

Mean Area 550.5
Mean Conc. 17.69mg/L



Sample

Sample Name: L08060122-01
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

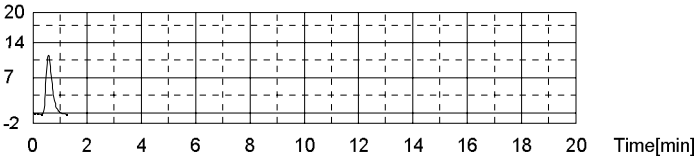
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.4426mg/L TC:0.08149mg/L IC:-0.3611mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	18.47	0.08149mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 05:39:29 PM

Mean Area 18.47
Mean Conc. 0.08149mg/L

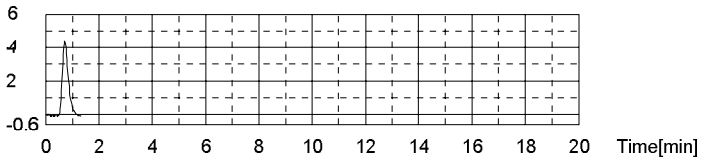


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.956	-0.3611mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 05:43:26 PM

Approved: June 08, 2008

Mean Area 6.956
Mean Conc. -0.3611mg/L



Sample

Sample Name: WG273154-05 DUP
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

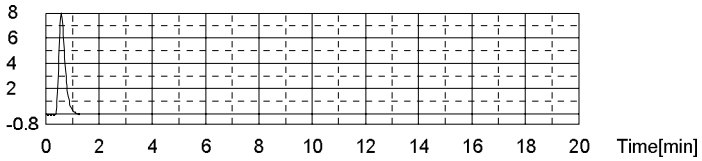
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.3236mg/L TC:-0.08862mg/L IC:-0.4122mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	12.88	-0.08862mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 05:50:09 PM

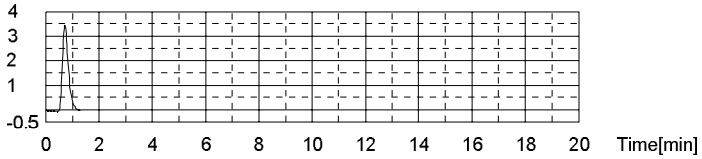
Mean Area 12.88
Mean Conc. -0.08862mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.416	-0.4122mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 05:54:03 PM

Mean Area 5.416
Mean Conc. -0.4122mg/L



Sample

Sample Name: WG273154-06 MS
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:10.82mg/L TC:10.39mg/L IC:-0.4340mg/L

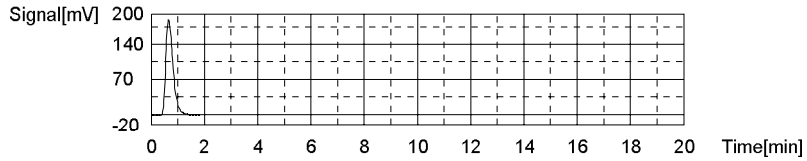
Approved: June 08, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	357.2	10.39mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 06:01:18 PM

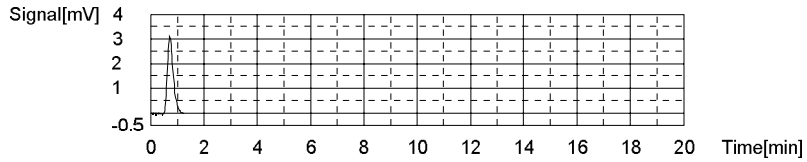
Mean Area 357.2
Mean Conc. 10.39mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.762	-0.4340mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 06:05:11 PM

Mean Area 4.762
Mean Conc. -0.4340mg/L



Sample

Sample Name: WG273155-01 BLANK
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

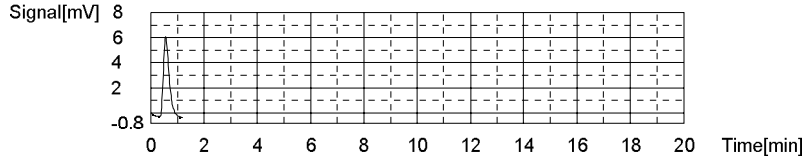
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1511mg/L TC:-0.1938mg/L IC:-0.3449mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.423	-0.1938mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 06:10:00 PM

Mean Area 9.423
Mean Conc. -0.1938mg/L



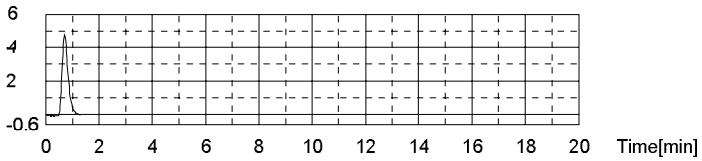
Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.445	-0.3449mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 06:13:28 PM

Jeanna Roberts

Approved: June 08, 2008

Mean Area 7.445
Mean Conc. -0.3449mg/L



Sample

Sample Name: WG273155-02 LCS
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

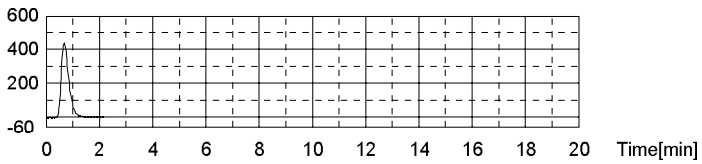
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:26.31mg/L TC:25.90mg/L IC:-0.4108mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	867.0	25.90mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 06:21:05 PM

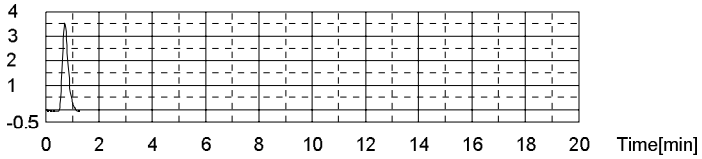
Mean Area 867.0
Mean Conc. 25.90mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.460	-0.4108mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 06:24:58 PM

Mean Area 5.460
Mean Conc. -0.4108mg/L



Sample

Sample Name: WG273155-03 LCSDUP
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:26.11mg/L TC:25.70mg/L IC:-0.4164mg/L

Jeanna Roberts

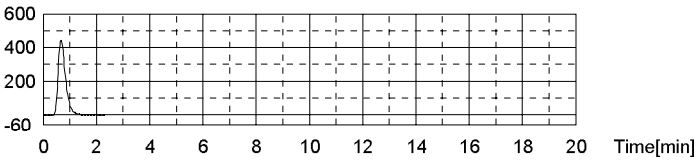
Approved: June 08, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	860.2	25.70mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 06:32:40 PM

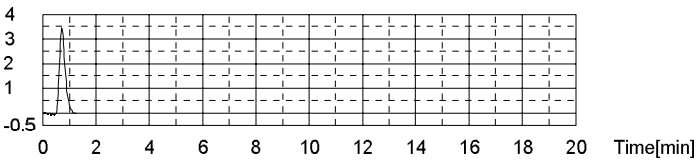
Mean Area 860.2
Mean Conc. 25.70mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.292	-0.4164mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 06:36:33 PM

Mean Area 5.292
Mean Conc. -0.4164mg/L



Sample

Sample Name: L08060053-01
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

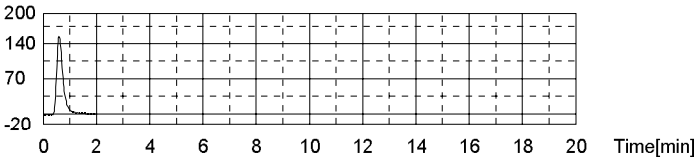
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.396mg/L TC:7.316mg/L IC:3.920mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	256.2	7.316mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 06:43:59 PM

Mean Area 256.2
Mean Conc. 7.316mg/L

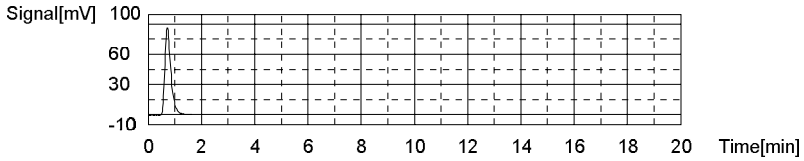


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	135.9	3.920mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 06:48:23 PM

Approved: June 08, 2008

Mean Area 135.9
Mean Conc. 3.920mg/L



Sample

Sample Name: L08060053-02
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

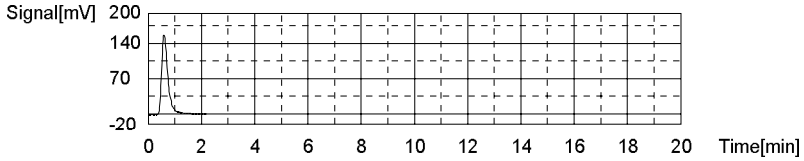
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.534mg/L TC:7.395mg/L IC:3.861mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	258.8	7.395mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 06:56:01 PM

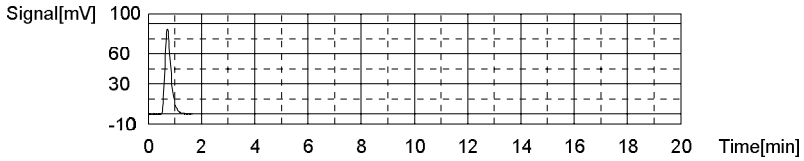
Mean Area 258.8
Mean Conc. 7.395mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	134.1	3.861mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 07:00:35 PM

Mean Area 134.1
Mean Conc. 3.861mg/L



Sample

Sample Name: L08060053-03
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.357mg/L TC:7.301mg/L IC:3.944mg/L

Jeanna Roberts

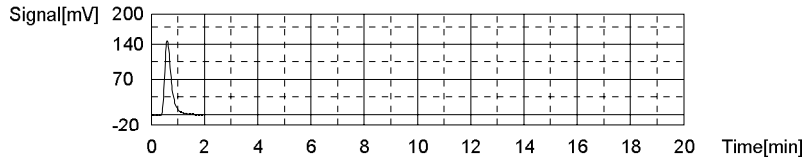
Approved: June 08, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	255.7	7.301mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 07:07:59 PM

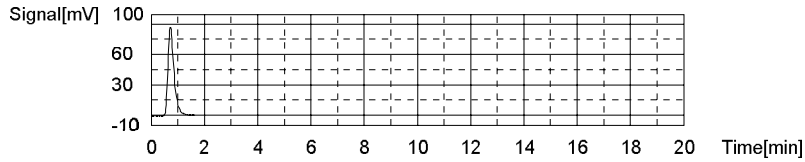
Mean Area 255.7
Mean Conc. 7.301mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	136.6	3.944mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 07:12:24 PM

Mean Area 136.6
Mean Conc. 3.944mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

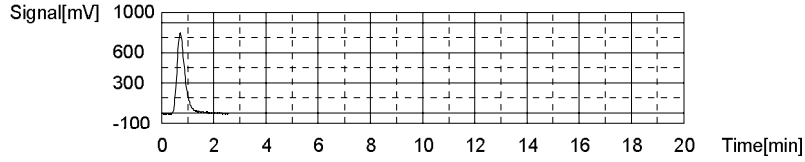
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:51.74mg/L TC:51.34mg/L IC:-0.3936mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1703	51.34mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 07:20:25 PM

Mean Area 1703
Mean Conc. 51.34mg/L

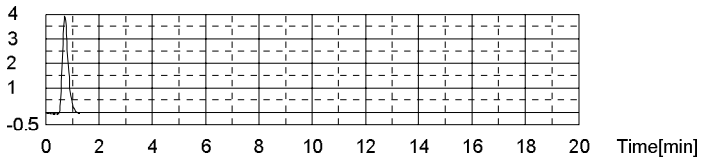


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.979	-0.3936mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 07:24:19 PM

Approved: June 08, 2008

Mean Area 5.979
Mean Conc. -0.3936mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

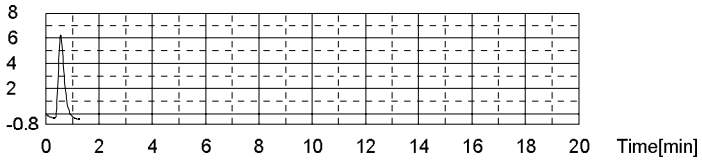
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1667mg/L TC:-0.1792mg/L IC:-0.3458mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.904	-0.1792mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 07:29:10 PM

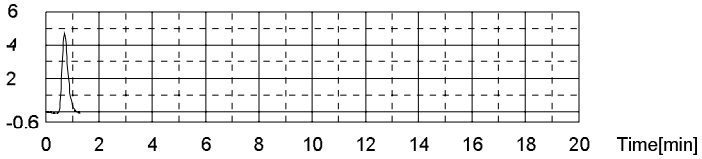
Mean Area 9.904
Mean Conc. -0.1792mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.416	-0.3458mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 07:32:39 PM

Mean Area 7.416
Mean Conc. -0.3458mg/L



Sample

Sample Name: L08060053-05
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.769mg/L TC:7.191mg/L IC:3.422mg/L

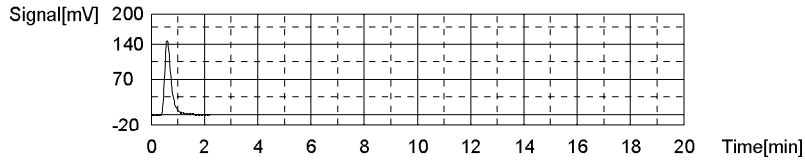
Approved: June 08, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	252.1	7.191mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 07:40:20 PM

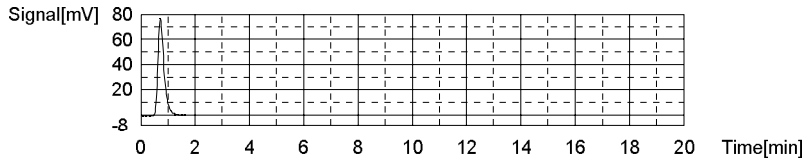
Mean Area 252.1
Mean Conc. 7.191mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	120.9	3.422mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 07:44:43 PM

Mean Area 120.9
Mean Conc. 3.422mg/L



Sample

Sample Name: L08060053-06
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

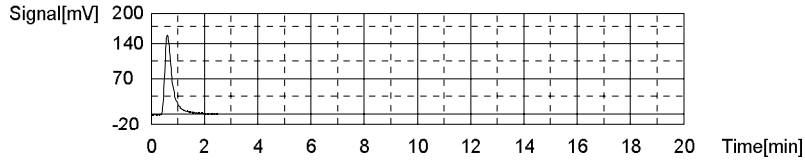
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.583mg/L TC:9.072mg/L IC:3.489mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	313.9	9.072mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 07:52:40 PM

Mean Area 313.9
Mean Conc. 9.072mg/L

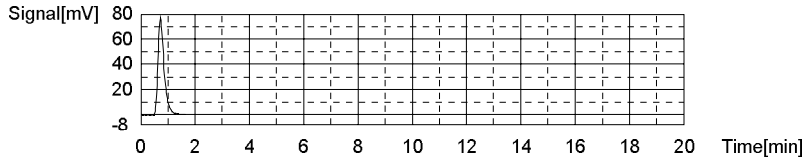


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	122.9	3.489mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 07:57:03 PM

Approved: June 08, 2008

Mean Area 122.9
Mean Conc. 3.489mg/L



Sample

Sample Name: L08060053-07
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

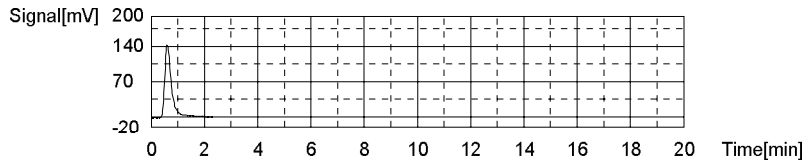
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.960mg/L TC:7.130mg/L IC:3.170mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	250.1	7.130mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 08:04:45 PM

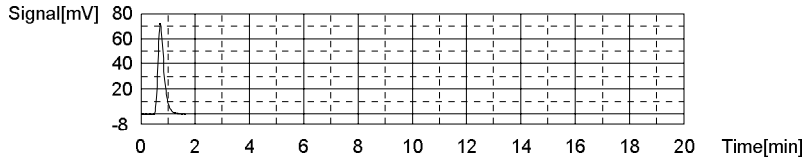
Mean Area 250.1
Mean Conc. 7.130mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	113.3	3.170mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 08:09:08 PM

Mean Area 113.3
Mean Conc. 3.170mg/L



Sample

Sample Name: L08060053-09 (2)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:10.77mg/L TC:15.13mg/L IC:4.355mg/L

Jeanna Roberts

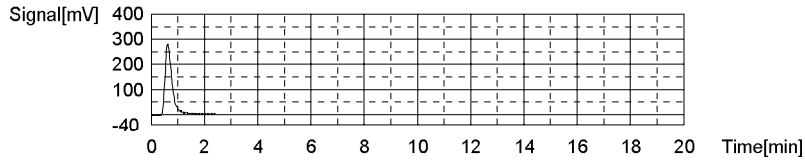
Approved: June 08, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	512.9	15.13mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 08:17:01 PM

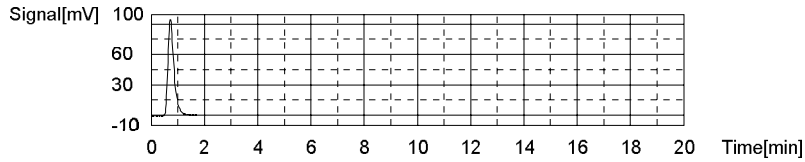
Mean Area 512.9
Mean Conc. 15.13mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	149.0	4.355mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 08:21:30 PM

Mean Area 149.0
Mean Conc. 4.355mg/L



Sample

Sample Name: L08060053-10 (2)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

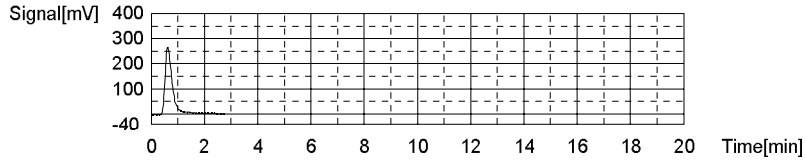
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:11.03mg/L TC:14.84mg/L IC:3.811mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	503.5	14.84mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 08:29:42 PM

Mean Area 503.5
Mean Conc. 14.84mg/L



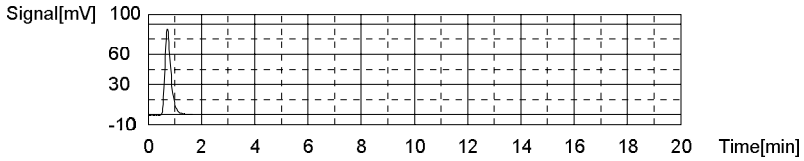
Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	132.6	3.811mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 08:34:09 PM

Jeanna Roberts

Approved: June 08, 2008

Mean Area 132.6
Mean Conc. 3.811mg/L



Sample

Sample Name: L08060053-11 (2)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

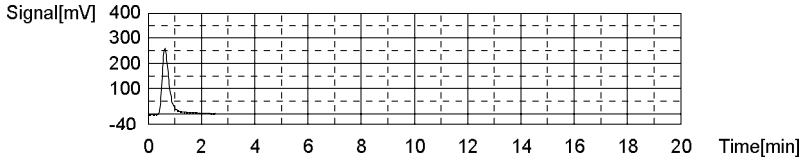
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:10.88mg/L TC:14.22mg/L IC:3.339mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	483.0	14.22mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 08:42:08 PM

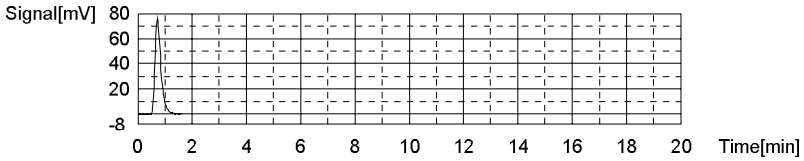
Mean Area 483.0
Mean Conc. 14.22mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	118.4	3.339mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 08:46:29 PM

Mean Area 118.4
Mean Conc. 3.339mg/L



Sample

Sample Name: L08060053-13 (2)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:11.13mg/L TC:14.29mg/L IC:3.163mg/L

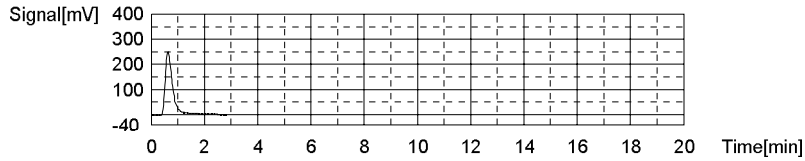
Approved: June 08, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	485.5	14.29mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 08:54:46 PM

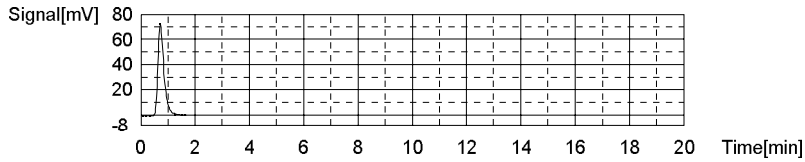
Mean Area 485.5
Mean Conc. 14.29mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	113.1	3.163mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 08:59:11 PM

Mean Area 113.1
Mean Conc. 3.163mg/L



Sample

Sample Name: L08060053-14 (2)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

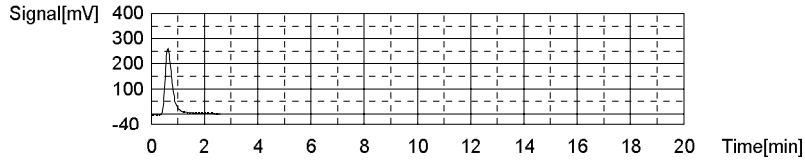
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:11.04mg/L TC:14.53mg/L IC:3.489mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	493.3	14.53mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 09:07:14 PM

Mean Area 493.3
Mean Conc. 14.53mg/L

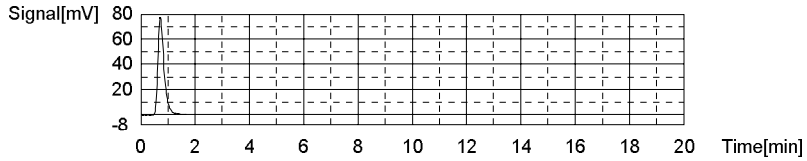


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	122.9	3.489mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 09:11:43 PM

Approved: June 08, 2008

Mean Area 122.9
Mean Conc. 3.489mg/L



Sample

Sample Name: L08060053-15 (2)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

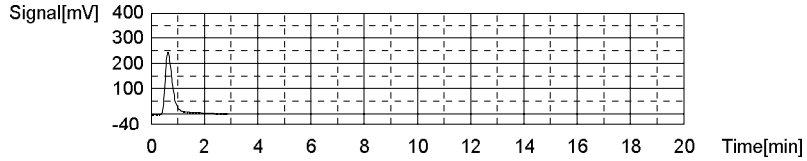
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:11.21mg/L TC:14.24mg/L IC:3.034mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	483.8	14.24mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 09:20:04 PM

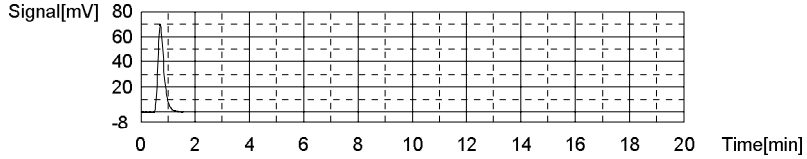
Mean Area 483.8
Mean Conc. 14.24mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	109.2	3.034mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 09:24:24 PM

Mean Area 109.2
Mean Conc. 3.034mg/L



Sample

Sample Name: L08060053-17 (2)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.269mg/L TC:10.15mg/L IC:1.877mg/L

Jeanna Roberts

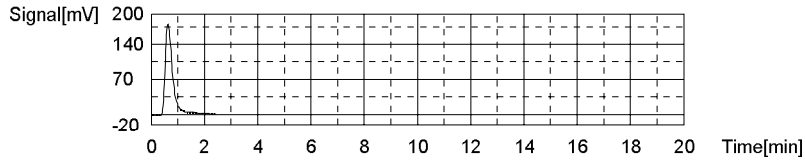
Approved: June 08, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	349.2	10.15mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 09:32:18 PM

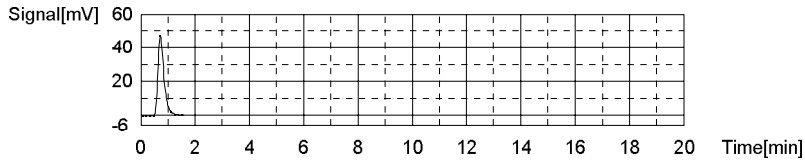
Mean Area 349.2
Mean Conc. 10.15mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	74.37	1.877mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 09:36:36 PM

Mean Area 74.37
Mean Conc. 1.877mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

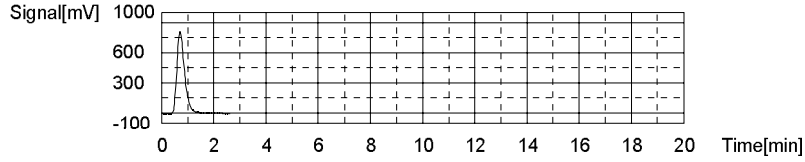
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:50.64mg/L TC:50.25mg/L IC:-0.3931mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1667	50.25mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 09:44:41 PM

Mean Area 1667
Mean Conc. 50.25mg/L



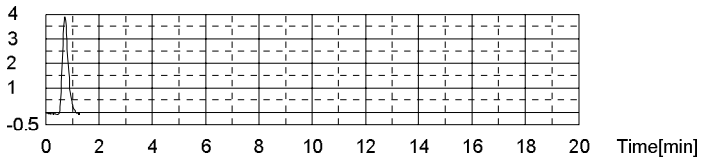
Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.992	-0.3931mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 09:48:34 PM

Jeanna Roberts

Approved: June 08, 2008

Mean Area 5.992
Mean Conc. -0.3931mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

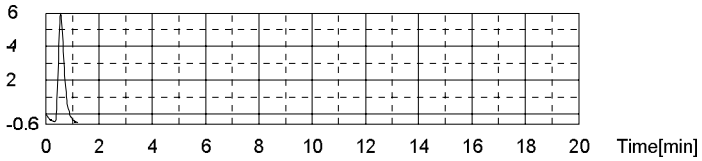
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1582mg/L TC:-0.1876mg/L IC:-0.3459mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.626	-0.1876mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 09:53:24 PM

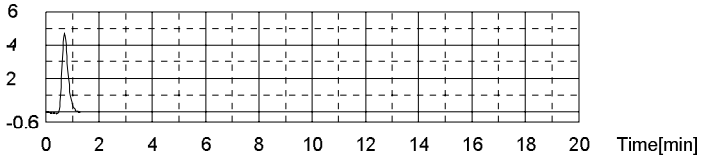
Mean Area 9.626
Mean Conc. -0.1876mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.415	-0.3459mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 09:56:52 PM

Mean Area 7.415
Mean Conc. -0.3459mg/L



Sample

Sample Name: L08060053-18 (2)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.025mg/L TC:9.510mg/L IC:1.485mg/L

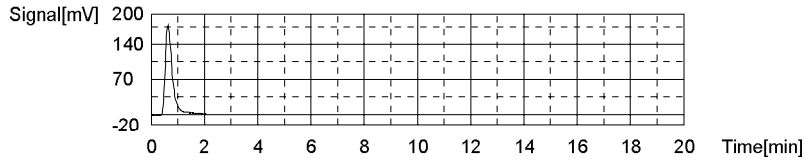
Approved: June 08, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	328.3	9.510mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 10:04:25 PM

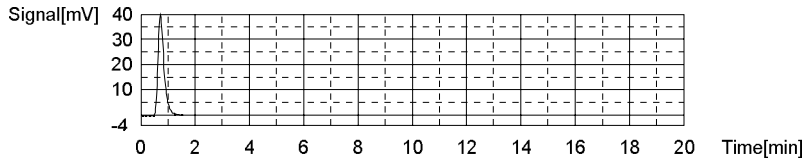
Mean Area 328.3
Mean Conc. 9.510mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	62.56	1.485mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 10:08:42 PM

Mean Area 62.56
Mean Conc. 1.485mg/L



Sample

Sample Name: L08060053-19 (2)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

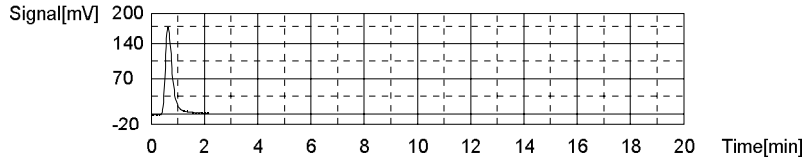
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.192mg/L TC:9.355mg/L IC:1.162mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	323.2	9.355mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 10:16:20 PM

Mean Area 323.2
Mean Conc. 9.355mg/L

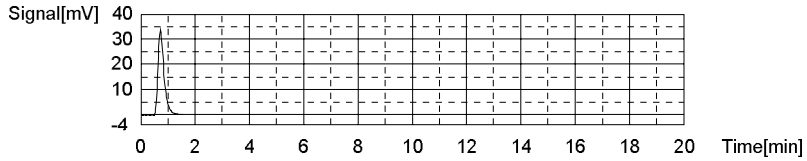


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	52.84	1.162mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 10:20:34 PM

Approved: June 08, 2008

Mean Area 52.84
Mean Conc. 1.162mg/L



Sample

Sample Name: L08060053-21 (2)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

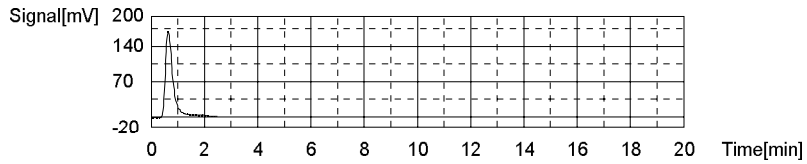
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.759mg/L TC:9.750mg/L IC:0.9911mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	336.2	9.750mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 10:28:30 PM

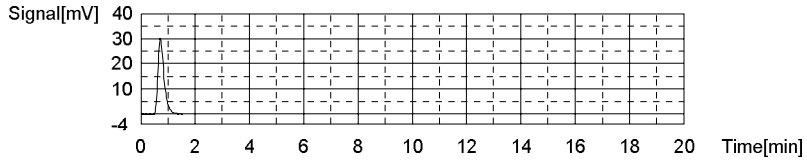
Mean Area 336.2
Mean Conc. 9.750mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	47.68	0.9911mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 10:32:42 PM

Mean Area 47.68
Mean Conc. 0.9911mg/L



Sample

Sample Name: L08060053-22 (2)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.643mg/L TC:9.738mg/L IC:1.095mg/L

Jeanna Roberts

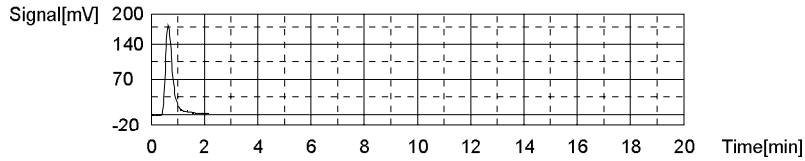
Approved: June 08, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	335.8	9.738mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 10:40:18 PM

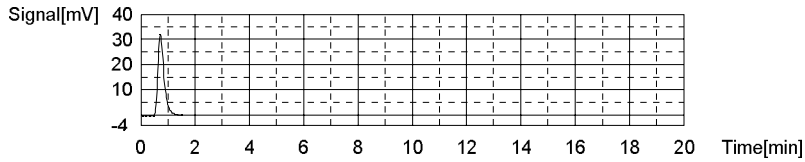
Mean Area 335.8
Mean Conc. 9.738mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	50.81	1.095mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 10:44:32 PM

Mean Area 50.81
Mean Conc. 1.095mg/L



Sample

Sample Name: L08060053-23 (2)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

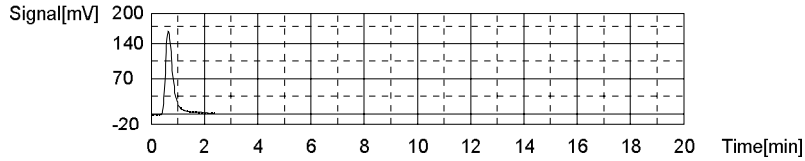
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.685mg/L TC:9.540mg/L IC:0.8549mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	329.3	9.540mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 10:52:22 PM

Mean Area 329.3
Mean Conc. 9.540mg/L

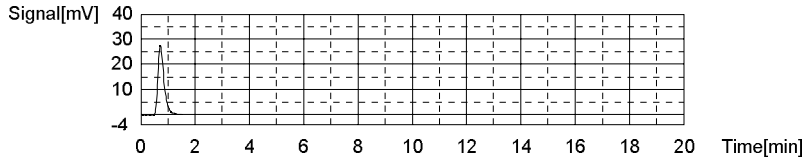


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	43.58	0.8549mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 10:56:31 PM

Approved: June 08, 2008

Mean Area 43.58
Mean Conc. 0.8549mg/L



Sample

Sample Name: L08060053-25
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

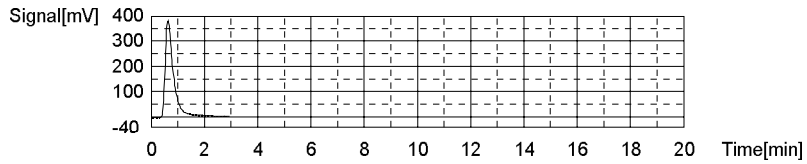
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:17.54mg/L TC:24.69mg/L IC:7.151mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	827.1	24.69mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 11:04:53 PM

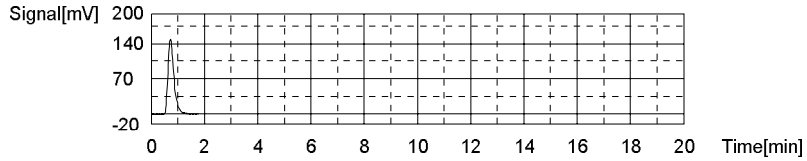
Mean Area 827.1
Mean Conc. 24.69mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	233.2	7.151mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 11:09:33 PM

Mean Area 233.2
Mean Conc. 7.151mg/L



Sample

Sample Name: L08060053-26
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:17.97mg/L TC:23.08mg/L IC:5.109mg/L

Jeanna Roberts

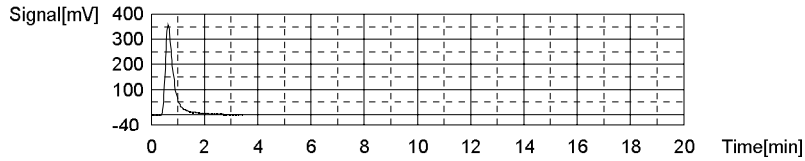
Approved: June 08, 2008

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	774.2	23.08mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 11:18:28 PM

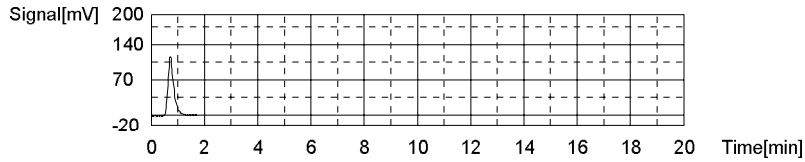
Mean Area 774.2
Mean Conc. 23.08mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	171.7	5.109mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 11:22:58 PM

Mean Area 171.7
Mean Conc. 5.109mg/L



Sample

Sample Name: WG273155-05 DUP
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

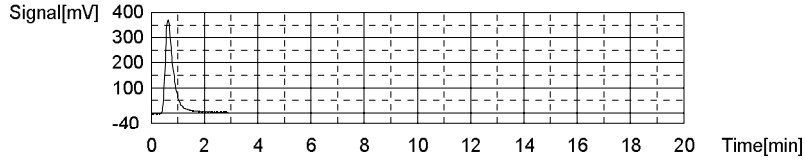
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:17.42mg/L TC:24.00mg/L IC:6.573mg/L

1. Det

Anal.: *TC*

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	804.3	24.00mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 11:31:18 PM

Mean Area 804.3
Mean Conc. 24.00mg/L

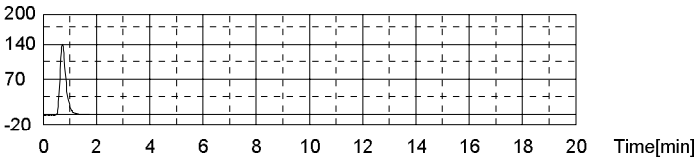


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	215.8	6.573mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 11:35:52 PM

Approved: June 08, 2008

Mean Area 215.8
Mean Conc. 6.573mg/L



Sample

Sample Name: WG273155-06 MS
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

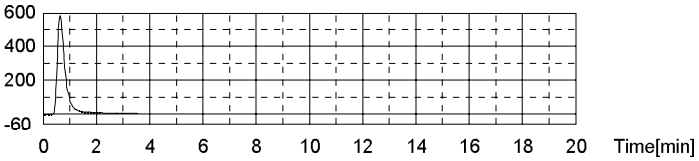
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:28.16mg/L TC:36.34mg/L IC:8.177mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1210	36.34mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 11:44:51 PM

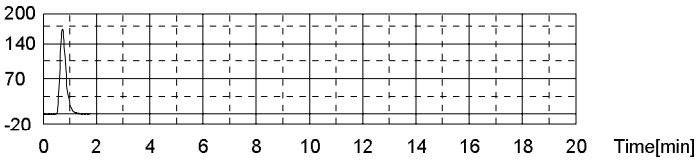
Mean Area 1210
Mean Conc. 36.34mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	264.1	8.177mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/06/2008 11:49:32 PM

Mean Area 264.1
Mean Conc. 8.177mg/L



Sample

Sample Name: L08060120-04 (3)
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.410mg/L TC:12.18mg/L IC:7.769mg/L

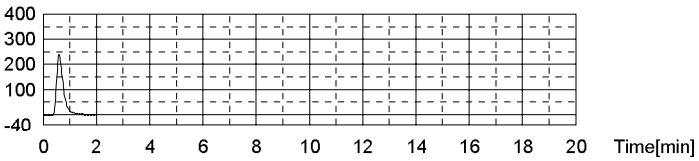
Approved: June 08, 2008

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	416.0	12.18mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/06/2008 11:57:01 PM

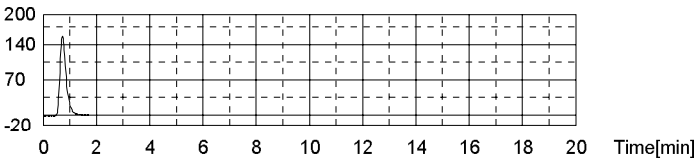
Mean Area 416.0
Mean Conc. 12.18mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	251.8	7.769mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/07/2008 12:01:39 AM

Mean Area 251.8
Mean Conc. 7.769mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

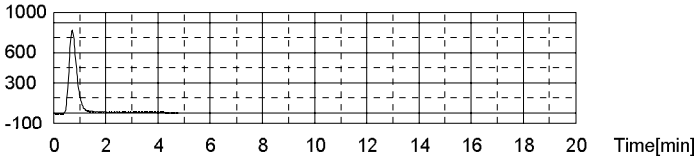
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:55.11mg/L TC:54.75mg/L IC:-0.3585mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1815	54.75mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/07/2008 12:11:53 AM

Mean Area 1815
Mean Conc. 54.75mg/L

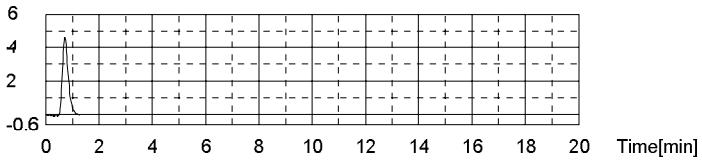


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.034	-0.3585mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/07/2008 12:15:48 AM

Approved: June 08, 2008

Mean Area 7.034
Mean Conc. -0.3585mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-04-04-2008.met
Status Completed
Chk. Result

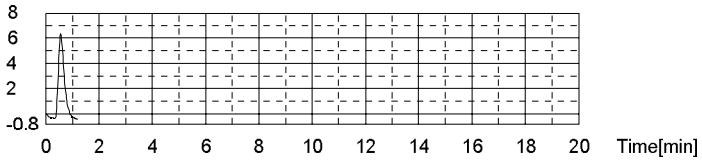
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1558mg/L TC:-0.1768mg/L IC:-0.3326mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.981	-0.1768mg/L	500uL	1		TCCURVE-04-04-2008.2008_04_04_09_40_3	06/07/2008 12:20:38 AM

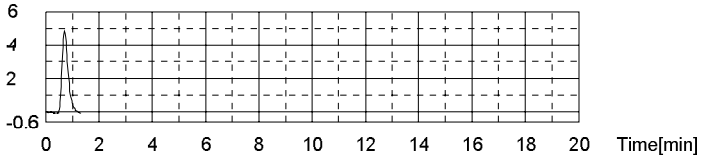
Mean Area 9.981
Mean Conc. -0.1768mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.814	-0.3326mg/L	500uL	1		TICCURVE-04-04-2008.2008_04_04_12_03_5	06/07/2008 12:24:09 AM

Mean Area 7.814
Mean Conc. -0.3326mg/L



Approved: June 08, 2008

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
June 16, 2008

ADC – ANTHONY D. CANTER
AJF – AMANDA J. FICKIESEN
ALB – ANNIE L. BROWN
AM – ALISON J. MILLER
AML – ANTHONY M. LONG
ASP – AARON S. PETRIE
BRG – BRENDA R. GREGORY
CAA – CASSIE A. AUGENSTEIN
CAF – CHERYL A. FLOWERS
CAH – CHARLES A. HALL
CEB – CHAD E. BARNES
CLC – CHRYS L. CRAWFORD
CLW – CHARISSA L. WINTERS
CMS – CRYSTAL M. STEPHENS
CPD – CHAD P. DAVIS
CSH – CHRIS S. HILL
CTB – CHRIS T. BUCINA
DDE – DEBRA D. ELLIOTT
DEL – DON E. LIGHTFRITZ
DEV – DAVID E. VANDENBERG
DGB – DOUGLAS G. BUTCHER
DIH – DEANNA I. HESSON
DLB – DAVID L. BUMGARNER
DLP – DOROTHY L. PAYNE
DLR – DIANNA L. RAUCH
DR – DEANNA ROBERTS
DSF – DEBRA S. FREDERICK
ECL – ERIC C. LAWSON
ED – EMILY E. DECKER
EDH – ETHAN D. MORRIS
ERE – ERIN R. ELDER
FJB – FRANCES J. BOLDEN
HAV – HEMA VILASAGAR
HJR – HOLLY J. REED
JBK – JEREMY B. KINNEY
JC – JOHN L. CONLEY
JDH – JUSTIN D. HESSON
JKP – JACQUELINE K. PARSONS
JKT – JANE K. THOMPSON
JWR – JOHN W. RICHARDS
JWS – JACK W. SHEAVES
JYH – JI Y. HU
KEB – KATHRYN E. BARNES
KHR – KIM H. RHODES
KJW – KATIE J. WIEFERICH
KRA – KATHY R. ALBERTSON
LKN – LINDA K. NEDEFF
LSB – LESLIE S. BUCINA
MDA – MIKE D. ALBERTSON
MDC – MICHAEL D. COCHRAN
MES – MARY E. SCHILLING
MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR
MSW – MATT S. WILSON
NPM – NATHANIEL P. MILLER
RAH – ROY A. HALSTEAD
RB – ROBERT BUCHANAN
REK – ROBERT E. KYER
RLK – ROBIN L. KLINGER
RWC – RODNEY W. CAMPBELL
SDH – SHANA D. HINYARD
SDL – SHELLY D. LENT
SLM – STEPHANIE L. MOSSBURG
SLP – SHERI L. PFALZGRAF
SMH – SHAUNA M. HYDE
TDH – TRICIA D. HUCK
TIP – TAE I. PARRISH
TMB – TIFFANY M. BAILEY
TMM – TAMMY M. MORRIS
VC – VICKI COLLIER
WTD – WADE T. DELONG

Microbac Laboratories Inc.
List of Valid Qualifiers
June 16, 2008

Qualkey: STD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
B3	Target analyte detected in calibration blank at or above the method reporting limit
C	Confirmed by GC/MS
CG	Confluent growth
D1	Sample required dilution due to matrix.
D2	Sample required dilution due to high concenration of target analyte.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E1	Concentration estimated. Analyte exceeded calibration range. Insufficient sample for reanalysis.
E2	Concentration estimated. Analyte exceeded calibration range. Reanalysis not performed due to matrix.
E3	Concentration estimated. Analyte exceeded calibration range. Reanalysis not performed due to holding time requirements
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
FL	Free Liquid
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
M1	Matrix spike recovery was high; the assocated blank spike recovery was acceptable.
M2	Matrix spike recovery was low; the assocated blank spike recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration is disproportionate to the spike level.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit
ND,L	Not detected; sample reporting limit (RL) elevated due to interference
ND,S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria fail. See narrative.
Q1	Sample integraity was not maintained. See report narrative.
QNS	Quantity of sample not sufficient to perform analysis
R1	Duplicate RPD/RSD exceeded the method acceptance limit.
R2	Duplicate RPD/RSD exceeded the laboratory acceptance limit.
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Undetected; the concentration is below the reported MDL.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.
V2	CCV recovery was above method acceptance limits. Insufficient volume for sample reanalysis.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

Microbac Laboratories Inc.
List of Valid Qualifiers
June 16, 2008

Qualkey: STD

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

00115556

Chain of Custody

NO. 10258

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: MICROBAC Address: 158 STARLITE DR MARIETTA, OH Contact: STEPHANIE MOSSBURG

Project Name: LHAAP Project Location: KARNACK, TX.

Project No.: 117591.0008A105 Project Contact: Kay Everett Project Telephone No.: 713-996-4421

Point of Contact: Scott Beesinger Telephone No.: 903-679-3448

Project Manager/Supervisor: PRAVEEN SRIVASTAV

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOA	Gases	TOC/TIC	Anions				Remarks
								Analysis and Method Desired (Indicate separate containers)								
1	12WW22-060308	6/3/08	9:35		✓	W	GROUNDWATER, SITE 12	2	2							
2	12WW23-060308	6/3/08	11:00		✓	W	Groundwater, Site 12	2	2							
3	12WW21-060408	6/4/08	9:05		✓	W	Groundwater, Site 12	7	2	3	1	1				
4	12WW24-060408	6/4/08	10:40		✓	W	Groundwater, Site 12	7	2	3	1	1				
5	12WW20-060408	6/4/08	1:45		✓	W	Groundwater, Site 12	7	2	3	1	1				
6	12WW20-060408-FD	6/4/08	1:45		✓	W	Groundwater, Site 12	7	2	3	1	1				
7																
8																
9																
10																

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
Scott Beesinger	6/4/08 3:00	Erin Poole	6-5-08 0920	
				FedEx Airbill No.:
		Laboratory		Sampler's Signature: Scott Beesinger

TAT: ____ Standard ____ Rush Date ____ Seals Intact? ____ Y ____ N Received Good Condition ____ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_1
Rev. 03-19-07

Microbac Laboratories, Inc. **SAMPLE RECEIPT FORM** 00115557

158 Starlite Drive
Marietta, OH 45750
(740) 373-4071

Client:	Longhorn, Kennedy, TX
Workorder Number:	B 71667
Date Received:	6-5-08
Delivered by:	( ) Fedx (✓) UPS ( ) Client ( ) Courier **Time:** 920
Opened by:	EDM
IR Temp Gun:	(✓) D ( ) G
Logged by:	EP/RK/BG L 08060120

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
0900	6	1Z 661 725 01 9577 4089	10257	
			10258	

Inspection Checklist	**Y**	**N**	**NA**	**Discrepancy ID**
Were shipping coolers sealed?	✓			
Were custody seals intact?	✓			
Were cooler temperatures in range of 0 - 6?	✓			
Was ice present?	✓			
Were COC's received/ information complete/signed and dated?	✓			
Were sample containers and labels intact and match COC?	✓			
Were the correct containers and volumes received?	✓			
Were correct preservatives used? (water only)	✓			
Were pH ranges acceptable? (voa's excluded)	✓			
Were VOA samples free of headspace (< 6mm)?	✓			
Were samples received within EPA hold times?	✓			

Discrepancy/Comments/Other Problems

Distribution

Name of Microbac representative:	
Client/Company:	
Person Contacted:	
Date contacted:	

Resolution/other comments:

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L08060120
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 12-JUN-2008

Samplenum	Container ID	Products
L08060120-04	465375	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	05-JUN-2008 11:20	ERE	
2	ANALYZ	W1	SEM	05-JUN-2008 12:12	ADC	ERE
3	STORE	SEM	A1	06-JUN-2008 13:06	ERE	ADC

Samplenum	Container ID	Products
L08060120-01	465367	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:25	AM	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:25	AM	ERE

Samplenum	Container ID	Products
L08060120-05	465378	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:31	AM	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:31	AM	ERE

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:31	AM	ERE

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L08060120
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 12-JUN-2008

Samplenum	Container ID	Products
L08060120-04	465376	TIC TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	05-JUN-2008 11:20	ERE	
2	ANALYZ	W1	WET	06-JUN-2008 07:22	DIH	ERE
3	STORE	WET	A1	09-JUN-2008 07:27	ERE	DIH

Samplenum	Container ID	Products
L08060120-04	465373	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:26	AM	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:26	AM	ERE

Samplenum	Container ID	Products
L08060120-06	465381	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:25	AM	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:25	AM	ERE

Samplenum	Container ID	Products
L08060120-05	465380	TIC TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	05-JUN-2008 11:20	ERE	
2	ANALYZ	W1	WET	06-JUN-2008 07:22	DIH	ERE
3	STORE	WET	A1	09-JUN-2008 07:27	ERE	DIH

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L08060120
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 12-JUN-2008

Samplenum	Container ID	Products
L08060120-03	465372	TIC TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	05-JUN-2008 11:20	ERE	
2	ANALYZ	W1	WET	06-JUN-2008 07:22	DIH	ERE
3	STORE	WET	A1	09-JUN-2008 07:27	ERE	DIH

Samplenum	Container ID	Products
L08060120-04	465374	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:31	AM	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:31	AM	ERE

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:31	AM	ERE

Samplenum	Container ID	Products
L08060120-03	465370	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:30	AM	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:30	AM	ERE

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:30	AM	ERE

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L08060120
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 12-JUN-2008

Samplenum	Container ID	Products
L08060120-06	465383	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	05-JUN-2008 11:20	ERE	
2	ANALYZ	W1	SEM	05-JUN-2008 12:12	ADC	ERE
3	STORE	SEM	A1	06-JUN-2008 13:06	ERE	ADC

Samplenum	Container ID	Products
L08060120-02	465368	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:25	AM	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:25	AM	ERE

Samplenum	Container ID	Products
L08060120-06	465382	RSK175

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:31	AM	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:31	AM	ERE

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:31	AM	ERE

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L08060120
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 12-JUN-2008

Samplenum	Container ID	Products
L08060120-06	465384	TIC TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	05-JUN-2008 11:20	ERE	
2	ANALYZ	W1	WET	06-JUN-2008 07:22	DIH	ERE
3	STORE	WET	A1	09-JUN-2008 07:27	ERE	DIH

Samplenum	Container ID	Products
L08060120-03	465371	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	05-JUN-2008 11:20	ERE	
2	ANALYZ	W1	SEM	05-JUN-2008 12:12	ADC	ERE
3	STORE	SEM	A1	06-JUN-2008 13:06	ERE	ADC

Samplenum	Container ID	Products
L08060120-05	465377	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:26	AM	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:26	AM	ERE

Samplenum	Container ID	Products
L08060120-05	465379	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	05-JUN-2008 11:20	ERE	
2	ANALYZ	W1	SEM	05-JUN-2008 12:12	ADC	ERE
3	STORE	SEM	A1	06-JUN-2008 13:06	ERE	ADC

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L08060120
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 12-JUN-2008

Samplenum	Container ID	Products
L08060120-03	465369	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:25	AM	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	05-JUN-2008 11:20	ERE	
2	ANALYZ	V1	ORG4	05-JUN-2008 13:25	AM	ERE

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

00115564

Quick Facts

Microbac®

Look closer. Go further. Do more.

Corporate Information:

Microbac Laboratories, Inc.

Franklin Corporate Center

2000 Corporate Drive, Suite 350

Wexford, PA 15090

Phone: (724) 934-5030

FAX: (724) 934-5088

www.microbac.com

President & CEO: J. Trevor Boyce

Federal Tax ID#: 25-1199-642

DUNS#: 048192892

Incorporated in the State of PA -- May 1, 1969

Employees Corporate-Wide: 467

Facilities Corporate –Wide: 18 Divisions, 28 locations across 15 states

Please note these administrative changes for our Ohio Valley Division laboratory in Marietta, OH (formerly KEMRON Environmental Services, Inc.) , in particular the address, which is a revised routing of remittances on our invoices. All invoices dated April 1, 2008 or later will reflect this change, and will be highlighted with an attention-getting sticker during our transition. Please adjust your records to ensure proper routing of payments.

Microbac®

Microbac Laboratories Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800-373-4071
Fax: 740-373-4835
Email: OVL@microbac.com

158 Starlite Drive, Marietta, OH 45750 ● T:740-373-4071 ● F:740-373-4835 ● http://www.microbac.com

Laboratory Report Number: L08090269

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box bleow at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	*Team Chemist/Data Specialist*	kalbertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	smossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	tlong@microbac.com
Brenda Gregory	*Client Services Specialist*	bgregory@microbac.com
Amanda Fickiesen	*Client Services Specialist*	afickiesen@microbac.com
Annie Brown	*Client Services Specialist*	abrown@microbac.com
Katie Barnes	*Team Assistant*	kbarnes@microbac.com
Jacqueline Parsons	*Team Assistant*	jparsons@microbac.com

This report was reviewed on September 19, 2008.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

This report was certified on September 19, 2008.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac (OVD) LQAP
This report contains a total of 70 pages.

Look closer. Go further. Do more.

Microbac REPORT L08090269
PREPARED FOR Shaw E I, Inc.
WORK ID: WEEKLY SAMPLES

1.0 Introduction 4
2.1 Volatiles Data 10
2.1.1 Volatiles GCMS Data (8260) 11
2.1.1.1 Summary Data 12
2.1.1.2 QC Summary Data 28
3.0 Attachments 62

1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L08090269

CHAIN OF CUSTODY: The chain of custody number was 10450.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 6 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 19-SEP-08

Stephanie Mossburg

Laboratory Data Package Cover Page

00115569

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	September 18, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L08090269
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	282477
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	September 18, 2008

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?		✓			1
Was the ICAL curve verified for each analyte?		✓			2
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT

ER# - Description

#1: Vinyl acetate exceeded the upper control limit.

#2: Vinyl acetate was below the lower control limit.

Footnotes:

(1) NA = Not applicable to method or project

(2) NR = Not reviewed

(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

00115576

L08090269

09/19/08 10:11

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Larry Duty

Project Number: 2773.025
Project: Longhorn AAP
Site: WEEKLY SAMPLES

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW22-090808	L08090269-01	8260B	1	12-SEP-08
12WW22-090808-FD	L08090269-02	8260B	1	12-SEP-08
12WW20-090808	L08090269-03	8260B	1	12-SEP-08
12WW24-091108	L08090269-04	8260B	2	12-SEP-08
12WW21-091108	L08090269-05	8260B	1	12-SEP-08
12WW23-091108	L08090269-06	8260B	1	12-SEP-08
TRIP BLANKS	L08090269-07	8260B	1	12-SEP-08

Microbac®

Report Number: **L08090269**
Report Date : **September 19, 2008**

00115577

Sample Number: **L08090269-01**
Client ID: **12WW22-090808**
Matrix: **Water**
Workgroup Number: **WG282478**
Collect Date: **09/08/2008 09:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/16/2008 23:19**
Cal Date: **08/30/2008 23:06**
Run Date: **09/16/2008 23:19**
File ID: **11M53601**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3	0.269	J	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Microbac®

Report Number: **L08090269**
Report Date : **September 19, 2008**

00115578

Sample Number: **L08090269-01**
Client ID: **12WW22-090808**
Matrix: **Water**
Workgroup Number: **WG282478**
Collect Date: **09/08/2008 09:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/16/2008 23:19**
Cal Date: **08/30/2008 23:06**
Run Date: **09/16/2008 23:19**
File ID: **11M53601**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	94.0	86	118	
1,2-Dichloroethane-d4	92.0	80	120	
Toluene-d8	96.1	88	110	
4-Bromofluorobenzene	106	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Microbac®

Report Number: **L08090269**
Report Date : **September 19, 2008**

00115579

Sample Number: **L08090269-02**
Client ID: **12WW22-090808-FD**
Matrix: **Water**
Workgroup Number: **WG282478**
Collect Date: **09/08/2008 09:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/16/2008 23:51**
Cal Date: **08/30/2008 23:06**
Run Date: **09/16/2008 23:51**
File ID: **11M53602**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Microbac®

Report Number: **L08090269**
Report Date : **September 19, 2008**

00115580

Sample Number: **L08090269-02**
Client ID: **12WW22-090808-FD**
Matrix: **Water**
Workgroup Number: **WG282478**
Collect Date: **09/08/2008 09:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/16/2008 23:51**
Cal Date: **08/30/2008 23:06**
Run Date: **09/16/2008 23:51**
File ID: **11M53602**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	97.0	86	118	
1,2-Dichloroethane-d4	95.6	80	120	
Toluene-d8	99.9	88	110	
4-Bromofluorobenzene	109	86	115	

U Not detected at or above adjusted sample detection limit

Microbac®

Report Number: **L08090269**
Report Date : **September 19, 2008**

00115581

Sample Number: **L08090269-03**
Client ID: **12WW20-090808**
Matrix: **Water**
Workgroup Number: **WG282478**
Collect Date: **09/08/2008 10:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/17/2008 00:23**
Cal Date: **08/30/2008 23:06**
Run Date: **09/17/2008 00:23**
File ID: **11M53603**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.667	J	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	0.985	J	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Microbac®

Report Number: **L08090269**
Report Date : **September 19, 2008**

00115582

Sample Number: **L08090269-03**
Client ID: **12WW20-090808**
Matrix: **Water**
Workgroup Number: **WG282478**
Collect Date: **09/08/2008 10:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/17/2008 00:23**
Cal Date: **08/30/2008 23:06**
Run Date: **09/17/2008 00:23**
File ID: **11M53603**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	92.3	86	118	
1,2-Dichloroethane-d4	92.8	80	120	
Toluene-d8	96.3	88	110	
4-Bromofluorobenzene	107	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Microbac®

Report Number: **L08090269**
Report Date : **September 19, 2008**

00115583

Sample Number: **L08090269-04**
Client ID: **12WW24-091108**
Matrix: **Water**
Workgroup Number: **WG282478**
Collect Date: **09/11/2008 08:55**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **2**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/17/2008 00:56**
Cal Date: **08/30/2008 23:06**
Run Date: **09/17/2008 00:56**
File ID: **11M53604**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	20.0	5.00
Benzene	71-43-2	0.756	J	2.00	0.250
Bromobenzene	108-86-1		U	2.00	0.250
Bromochloromethane	74-97-5		U	2.00	0.400
Bromodichloromethane	75-27-4		U	2.00	0.500
Bromoform	75-25-2		U	2.00	1.00
Bromomethane	74-83-9		U	2.00	1.00
2-Butanone	78-93-3		U	20.0	5.00
n-Butylbenzene	104-51-8		U	2.00	0.500
sec-Butylbenzene	135-98-8		U	2.00	0.500
tert-Butylbenzene	98-06-6		U	2.00	0.500
Carbon disulfide	75-15-0		U	2.00	1.00
Carbon tetrachloride	56-23-5		U	2.00	0.500
Chlorobenzene	108-90-7	9.79		2.00	0.250
Chlorodibromomethane	124-48-1		U	2.00	0.500
Chloroethane	75-00-3		U	2.00	1.00
2-Chloroethyl vinyl ether	110-75-8		U	20.0	4.00
Chloroform	67-66-3	0.341	J	2.00	0.250
Chloromethane	74-87-3		U	2.00	0.500
2-Chlorotoluene	95-49-8		U	2.00	0.250
4-Chlorotoluene	106-43-4		U	2.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	10.0	2.00
1,2-Dibromoethane	106-93-4		U	2.00	0.500
Dibromomethane	74-95-3		U	2.00	0.500
1,2-Dichlorobenzene	95-50-1		U	2.00	0.250
1,3-Dichlorobenzene	541-73-1		U	2.00	0.500
1,4-Dichlorobenzene	106-46-7	3.20		2.00	0.250
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
1,1-Dichloroethane	75-34-3		U	2.00	0.250
1,2-Dichloroethane	107-06-2		U	2.00	0.500
1,1-Dichloroethene	75-35-4		U	2.00	1.00
cis-1,2-Dichloroethene	156-59-2	54.3		2.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	2.00	0.500
1,2-Dichloropropane	78-87-5		U	2.00	0.400
1,3-Dichloropropane	142-28-9		U	2.00	0.400
2,2-Dichloropropane	594-20-7		U	2.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	2.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	2.00	1.00
1,1-Dichloropropene	563-58-6		U	2.00	0.500
Ethylbenzene	100-41-4		U	2.00	0.500
2-Hexanone	591-78-6		U	20.0	5.00
Hexachlorobutadiene	87-68-3		U	2.00	0.500
Isopropylbenzene	98-82-8		U	2.00	0.500
p-Isopropyltoluene	99-87-6		U	2.00	0.500
4-Methyl-2-pentanone	108-10-1		U	20.0	5.00
Methylene chloride	75-09-2	1.53	J	10.0	0.500
Naphthalene	91-20-3		U	2.00	0.400
n-Propylbenzene	103-65-1		U	2.00	0.250
Styrene	100-42-5		U	2.00	0.250
1,1,1,2-Tetrachloroethane	630-20-6		U	2.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	2.00	0.250
Tetrachloroethene	127-18-4		U	2.00	0.500
Toluene	108-88-3		U	2.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	2.00	0.300
1,2,4-Trichlorobenzene	120-82-1		U	2.00	0.400
1,1,1-Trichloroethane	71-55-6		U	2.00	0.500
1,1,2-Trichloroethane	79-00-5		U	2.00	0.500
Trichloroethene	79-01-6	185		2.00	0.500
Trichlorofluoromethane	75-69-4		U	2.00	0.500

Microbac®

Report Number: **L08090269**
Report Date : **September 19, 2008**

00115584

Sample Number:	L08090269-04	PrePrep Method:	NONE	Instrument:	HPMS11
Client ID:	12WW24-091108	Prep Method:	5030B	Prep Date:	09/17/2008 00:56
Matrix:	Water	Analytical Method:	8260B	Cal Date:	08/30/2008 23:06
Workgroup Number:	WG282478	Analyst:	FJB	Run Date:	09/17/2008 00:56
Collect Date:	09/11/2008 08:55	Dilution:	2	File ID:	11M53604
Sample Tag:	DL01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	2.00	1.00
1,2,4-Trimethylbenzene	95-63-6		U	2.00	0.500
1,3,5-Trimethylbenzene	108-67-8		U	2.00	0.500
Vinyl acetate	108-05-4		U	20.0	5.00
Vinyl chloride	75-01-4	1.45	J	2.00	0.500
o-Xylene	95-47-6		U	2.00	0.500
m-,p-Xylene	136777-61-2		U	2.00	1.00

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	94.2	86	118	
1,2-Dichloroethane-d4	95.0	80	120	
Toluene-d8	97.5	88	110	
4-Bromofluorobenzene	105	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Microbac®

Report Number: **L08090269**
Report Date : **September 19, 2008**

00115585

Sample Number: **L08090269-05**
Client ID: **12WW21-091108**
Matrix: **Water**
Workgroup Number: **WG282478**
Collect Date: **09/11/2008 10:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/17/2008 01:28**
Cal Date: **08/30/2008 23:06**
Run Date: **09/17/2008 01:28**
File ID: **11M53605**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	4.25	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3	0.323	J	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Microbac®

Report Number: **L08090269**
Report Date : **September 19, 2008**

00115586

Sample Number: **L08090269-05**
Client ID: **12WW21-091108**
Matrix: **Water**
Workgroup Number: **WG282478**
Collect Date: **09/11/2008 10:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/17/2008 01:28**
Cal Date: **08/30/2008 23:06**
Run Date: **09/17/2008 01:28**
File ID: **11M53605**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	93.5	86	118	
1,2-Dichloroethane-d4	97.6	80	120	
Toluene-d8	97.9	88	110	
4-Bromofluorobenzene	105	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Microbac®

Report Number: **L08090269**
Report Date : **September 19, 2008**

00115587

Sample Number: **L08090269-06**
Client ID: **12WW23-091108**
Matrix: **Water**
Workgroup Number: **WG282478**
Collect Date: **09/11/2008 11:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/17/2008 02:00**
Cal Date: **08/30/2008 23:06**
Run Date: **09/17/2008 02:00**
File ID: **11M53606**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Microbac®

Report Number: **L08090269**
Report Date : **September 19, 2008**

00115588

Sample Number: **L08090269-06**
Client ID: **12WW23-091108**
Matrix: **Water**
Workgroup Number: **WG282478**
Collect Date: **09/11/2008 11:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/17/2008 02:00**
Cal Date: **08/30/2008 23:06**
Run Date: **09/17/2008 02:00**
File ID: **11M53606**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	92.8	86	118	
1,2-Dichloroethane-d4	95.4	80	120	
Toluene-d8	95.8	88	110	
4-Bromofluorobenzene	103	86	115	

U Not detected at or above adjusted sample detection limit

Microbac®

Report Number: **L08090269**
Report Date : **September 19, 2008**

00115589

Sample Number: **L08090269-07**
Client ID: **TRIP BLANKS**
Matrix: **Water**
Workgroup Number: **WG282478**
Collect Date: **09/11/2008 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/16/2008 22:14**
Cal Date: **08/30/2008 23:06**
Run Date: **09/16/2008 22:14**
File ID: **11M53599**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3	0.278	J	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2	0.341	J	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3	0.275	J	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Microbac®

Report Number: **L08090269**
Report Date : **September 19, 2008**

00115590

Sample Number: **L08090269-07**
Client ID: **TRIP BLANKS**
Matrix: **Water**
Workgroup Number: **WG282478**
Collect Date: **09/11/2008 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **09/16/2008 22:14**
Cal Date: **08/30/2008 23:06**
Run Date: **09/16/2008 22:14**
File ID: **11M53599**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	93.2	86	118	
1,2-Dichloroethane-d4	88.2	80	120	
Toluene-d8	94.3	88	110	
4-Bromofluorobenzene	102	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Microbac®

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:		Example
Ax =	Area of the characteristic ion for the compound being measured:	3399156
Cis =	Concentration of the specific internal standard (ug/mL)	25
Ais =	Area of the characteristic ion of the specific internal standard	846471
Cx =	Concentration of the compound in the standard being measured (ug/mL)	100
RF =	Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:		**Example**
Ax =	Area of the characteristic ion for the compound being measured	**3122498**
Cis =	Concentration of the specific internal standard (ug/L)	**25**
D =	Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais =	Area of the characteristic ion of the specific internal standard	**611048**
RF =	Average RF from the ICAL	**1.004**
Vs =	Purge volume of sample (mL)	**10**
Vn =	Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx =	Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:		**Example**
Ax =	Area of the characteristic ion for the compound being measured	**3122498**
Cis =	Concentration of the specific internal standard (ug/L)	**25**
D =	Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais =	Area of the characteristic ion of the specific internal standard	**611048**
RF =	Average RF from the ICAL	**1.004**
Ws =	Weight of sample purged (g)	**5**
Wn =	Nominal purge weight (g) (5.0 g)	**5**
Cx =	Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

	Percent solids (PCT_S)	**50**
	Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS11 Dataset: 083008
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 12
Method: 5030B SOP: PAT01 Rev: 11

Maintenance Log ID: 25669

Internal Standard: STD27689 Surrogate Standard: STD28357
CCV: STD28498 LCS: STD28255 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG281247

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	11M53169	WG281247-01 50NG BFB STD	NA	1	1	STD28162	08/30/08 16:01
2	11M53170	WG281247-02 0.3ug/L 8260 STD	NA	1	1	STD28498	08/30/08 16:36
3	11M53171	WG281247-03 0.4 ug/L 8260 STD	NA	1	1	STD28498	08/30/08 17:09
4	11M53172	WG281247-04 1 ug/L 8260 STD	NA	1	1	STD28498	08/30/08 17:41
5	11M53173	WG281247-02 0.3 ug/L 8260 STD	NA	1	1	STD28498	08/30/08 18:13
6	11M53174	WG281247-05 2 ug/L 8260 STD	NA	1	1	STD28498	08/30/08 18:46
7	11M53175	WG281247-06 5 ug/L 8260 STD	NA	1	1	STD28498	08/30/08 19:20
8	11M53176	WG281247-07 20 ug/L 8260 STD	NA	1	1	STD28498	08/30/08 19:52
9	11M53177	SYSTEM BLANK	NA	1	1	STD28498	08/30/08 20:24
10	11M53178	WG281247-03 0.4ug/L 8260 STD	NA	1	1	STD28498	08/30/08 20:57
11	11M53179	WG281247-08 50 ug/L 8260 STD	NA	1	1	STD28498	08/30/08 21:29
12	11M53180	WG281247-09 100 ug/L 8260 STD	NA	1	1	STD28498	08/30/08 22:01
13	11M53181	WG281247-10 200 ug/L 8260 STD	NA	1	1	STD28498	08/30/08 22:34
14	11M53182	WG281247-11 300 ug/L 8260 STD	NA	1	1	STD28498	08/30/08 23:06
15	11M53183	SYSTEM BLANK	NA	1	1		08/30/08 23:38
16	11M53184	SYSTEM BLANK	NA	1	1		08/31/08 00:11
17	11M53185	WG281247-12 20ug/L ALT SOURCE	NA	1	1	STD28255	08/31/08 00:43
18	11M53186	SYSTEM BLANK	NA	1	1		08/31/08 01:15
19	11M53187	SYSTEM BLANK	NA	1	1		08/31/08 01:48
20	11M53188	QMDL CHECK	NA	1	1	STD27953	08/31/08 02:20

Comments

Seq.	Rerun	Dil.	Reason	Analytes
2	X			
File ID: 11M53170				
	DNR.			
3	X			
File ID: 11M53171				
	DNR.			

Approved: September 05, 2008

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS11 Dataset: 091608
Analyst1: CMS Analyst2: FJB
Method: 8260B SOP: MSV01 Rev: 12
Method: 5030B SOP: PAT01 Rev: 12

Maintenance Log ID: 25834

Internal Standard: STD28640 Surrogate Standard: STD28751
CCV: STD28770 LCS: STD28615 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG282387;WG282478

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	11M53573	WG282386-01 BFB 50ng STD 8260	NA	1	1	STD28704	09/16/08 08:45
2	11M53574	WG282386-02 50ug/L STD 8260	NA	1	1	STD28770	09/16/08 09:12
3	11M53575	WG282387-01 VBLK0916 BLANK 8260	NA	1	1		09/16/08 09:44
4	11M53576	WG282387-01 VBLK0916 BLANK 8260	NA	1	1		09/16/08 10:17
5	11M53577	WG282387-02 20ug/L LCS STD 8260	NA	1	1	STD28615	09/16/08 10:53
6	11M53578	WG282387-03 20ug/L LCSDUP STD 8260	NA	1	1	STD28615	09/16/08 11:26
7	11M53579	L08090217-01 B 10000X 826-LOW D1	<2	1	10000		09/16/08 11:59
8	11M53580	L08090218-05 B 826-LOW	<2	1	1		09/16/08 12:32
9	11M53581	L08090218-09 B 826-LOW	<2	1	1		09/16/08 13:05
10	11M53582	L08090217-02 B 50X 826-LOW	<2	1	50		09/16/08 13:37
11	11M53583	L08090217-03 B 10X 826-LOW	<2	1	10		09/16/08 14:10
12	11M53584	L08090217-04 B 10X 826-LOW	<2	1	10		09/16/08 14:43
13	11M53585	L08090218-01 B 826-LOW	<2	1	1		09/16/08 15:16
14	11M53586	L08090218-06 B 25X 826-LOW	<2	1	25		09/16/08 15:49
15	11M53587	L08090218-03 B 2.5X 826-LOW	<2	1	2.5		09/16/08 16:22
16	11M53588	L08090218-10 B 826-LOW	<2	1	1		09/16/08 16:55
17	11M53589	WG282477-01 BFB 50ng STD 8260	NA	1	1	STD28704	09/16/08 17:26
18	11M53590	WG282477-01 BFB 50ng STD 8260	NA	1	1	STD28704	09/16/08 17:38
19	11M53591	WG282477-01 BFB 50ng STD 8260	NA	1	1	STD28704	09/16/08 17:57
20	11M53592	WG282477-01 BFB 50ng STD 8260	NA	1	1	STD28704	09/16/08 18:33
21	11M53593	WG282477-02 50ug/L STD 8260	NA	1	1	STD28770	09/16/08 18:58
22	11M53594	WG282478-01 VBLK0916 BLANK 8260	NA	1	1		09/16/08 19:32
23	11M53595	WG282478-01 VBLK0916 BLANK 8260	NA	1	1		09/16/08 20:04
24	11M53596	WG282478-02 20ug/L LCS STD 8260	NA	1	1	STD28615	09/16/08 20:37
25	11M53597	WG282478-03 20ug/L LCS DUP STD 8260	NA	1	1	STD28615	09/16/08 21:09
26	11M53598	L08080413-01 B 10X 826-TC	NA	17	10		09/16/08 21:42
27	11M53599	L08090269-07 A 826-LOW	<2	1	1		09/16/08 22:14
28	11M53600	L08090272-07 A 826-SPE	<2	1	1		09/16/08 22:46
29	11M53601	L08090269-01 A 826-LOW	<2	1	1		09/16/08 23:19
30	11M53602	L08090269-02 A 826-LOW	<2	1	1		09/16/08 23:51
31	11M53603	L08090269-03 A 826-LOW	<2	1	1		09/17/08 00:23
32	11M53604	L08090269-04 A 2X 826-LOW	<2	1	2		09/17/08 00:56
33	11M53605	L08090269-05 A 826-LOW	<2	1	1		09/17/08 01:28
34	11M53606	L08090269-06 A 826-LOW	<2	1	1		09/17/08 02:00

Approved: September 17, 2008

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS11 Dataset: 091608
Analyst1: CMS Analyst2: FJB
Method: 8260B SOP: MSV01 Rev: 12
Method: 5030B SOP: PAT01 Rev: 12

Maintenance Log ID: 25834

Internal Standard: STD28640 Surrogate Standard: STD28751
CCV: STD28770 LCS: STD28615 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG282387;WG282478

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
35	11M53607	L08090213-01 A 826-SPE1	<2	1	1		09/17/08 02:33
36	11M53608	L08090213-04 A 826-SPE1	<2	1	1		09/17/08 03:05
37	11M53609	L08090213-05 A 826-SPE1	<2	1	1		09/17/08 03:37
38	11M53610	L08090213-09 A 826-SPE1	<2	1	1		09/17/08 04:10
39	11M53611	L08090213-02 A 100X 826-SPE1	<2	1	100		09/17/08 04:42
40	11M53612	L08090213-03 A 2.5X 826-SPE1	<2	1	2.5		09/17/08 05:15
41	11M53613	L08090213-07 A 100X 826-SPE1	<2	1	100		09/17/08 05:47
42	11M53614	SYSTEM BLANK	NA	1	1		09/17/08 06:19

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X		Carry-over contamination	
File ID: 11M53575				
	DNR			
11	X	50	Over Calibration Range	TCE
File ID: 11M53583				
13	X	200	Over Calibration Range	TCE
File ID: 11M53585				
14	X			
File ID: 11M53586				
17	X			
File ID: 11M53589				
	Tune failed/DNR			
18	X			
File ID: 11M53590				
	Tune failed/DNR-Replaced septa			
19	X			
File ID: 11M53591				
	Tune faiiled/DNR-Baked out			
22	X		Carry-over contamination	
File ID: 11M53594				
	DNR			
40	X	25	Over Calibration Range	Tol., m+p-Xyl., o-xyl.

Approved: September 17, 2008

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS11 Dataset: 091608
Analyst1: CMS Analyst2: FJB
Method: 8260B SOP: MSV01 Rev: 12
Method: 5030B SOP: PAT01 Rev: 12

Maintenance Log ID: 25834

Internal Standard: STD28640 Surrogate Standard: STD28751
CCV: STD28770 LCS: STD28615 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG282387;WG282478

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 11M53612				

Approved: September 17, 2008

Checklist ID: 31605

00115598

Microbac Laboratories Inc.

Data Checklist

Date: 30-AUG-2008
Analyst: MES
Analyst: NA
Method: 8260
Instrument: HPMS11
Curve Workgroup: NA
Runlog ID: 24078
Analytical Workgroups: WG281247

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	NA
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
04-SEP-2008
Tiffany Bailey

Secondary Reviewer:
05-SEP-2008

Microbac®

Checklist ID: 31929

00115599

Microbac Laboratories Inc.

Data Checklist

Date: 16-SEP-2008
Analyst: CMS
Analyst: FJB
Method: 8260B
Instrument: HPMS11
Curve Workgroup: NA
Runlog ID: 24271
Analytical Workgroups: WG282387;WG282478

System Performance Check	X
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	CMS
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
17-SEP-2008

Secondary Reviewer:
17-SEP-2008

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00115600

Analytical Method: 8260B

AAB#: WG282478

Login Number: L08090269

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
TRIP BLANKS	09/11/08	09/12/08	09/16/08	14	5.93	09/16/08	14	5.93	
12WW21-091108	09/11/08	09/12/08	09/17/08	14	5.64	09/17/08	14	5.64	
12WW23-091108	09/11/08	09/12/08	09/17/08	14	5.61	09/17/08	14	5.61	
12WW24-091108	09/11/08	09/12/08	09/17/08	14	5.67	09/17/08	14	5.67	
12WW22-090808	09/08/08	09/12/08	09/16/08	14	8.59	09/16/08	14	8.59	
12WW22-090808-FD	09/08/08	09/12/08	09/16/08	14	8.61	09/16/08	14	8.61	
12WW20-090808	09/08/08	09/12/08	09/17/08	14	8.58	09/17/08	14	8.58	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

Microbac®

Microbac Laboratories Inc.

SURROGATE STANDARDS

Login Number: L08090269
Instrument Id: HPMS11
Workgroup (AAB#): WG282478

Method: 8260
CAL ID: HPMS11-30-AUG-08
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L08090269-01	1.00	01	92.0	94.0	106	96.1
L08090269-02	1.00	01	95.6	97.0	109	99.9
L08090269-03	1.00	01	92.8	92.3	107	96.3
L08090269-04	2.00	DL01	95.0	94.2	105	97.5
L08090269-05	1.00	01	97.6	93.5	105	97.9
L08090269-06	1.00	01	95.4	92.8	103	95.8
L08090269-07	1.00	01	88.2	93.2	102	94.3
WG282478-01	1.00	01	94.4	93.1	105	95.8
WG282478-02	1.00	01	92.9	93.5	103	96.4
WG282478-03	1.00	01	90.9	90.7	100	95.9

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1200961
Report generated: 09/18/2008 16:01

Microbac®

Microbac Laboratories Inc.

00115602

METHOD BLANK SUMMARY

Login Number: L08090269
Work Group: WG282478
Blank File ID: 11M53595
Blank Sample ID: WG282478-01
Prep Date: 09/16/08 20:04
Instrument ID: HPMS11
Analyzed Date: 09/16/08 20:04
Method: 8260B
Analyst: FJB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG282478-02	11M53596	09/16/08 20:37	01
LCS2	WG282478-03	11M53597	09/16/08 21:09	01
TRIP BLANKS	L08090269-07	11M53599	09/16/08 22:14	01
12WW22-090808	L08090269-01	11M53601	09/16/08 23:19	01
12WW22-090808-FD	L08090269-02	11M53602	09/16/08 23:51	01
12WW20-090808	L08090269-03	11M53603	09/17/08 00:23	01
12WW24-091108	L08090269-04	11M53604	09/17/08 00:56	DL01
12WW21-091108	L08090269-05	11M53605	09/17/08 01:28	01
12WW23-091108	L08090269-06	11M53606	09/17/08 02:00	01

Report Name: BLANK_SUMMARY
PDF File ID: 1200954
Report generated 09/18/2008 16:01

Microbac®

Microbac Laboratories Inc.

METHOD BLANK REPORT

00115603

Login Number:L08090269 Prep Date:09/16/08 20:04 Sample ID:WG282478-01

Instrument ID:HPMS11 Run Date:09/16/08 20:04 Prep Method:5030B

File ID:11M53595 Analyst:FJB Method:8260B

Workgroup (AAB#):WG282478 Matrix:Water Units:ug/L

Contract #:DACA56-94-D-0020 Cal ID:HPMS11-30-AUG-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.334	1	J
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

Report Name:BLANK

PDF ID: 1200955

18-SEP-2008 16:01

Microbac®

Microbac Laboratories Inc.

METHOD BLANK REPORT

00115604

Login Number:L08090269 Prep Date:09/16/08 20:04 Sample ID:WG282478-01

Instrument ID:HPMS11 Run Date:09/16/08 20:04 Prep Method:5030B

File ID:11M53595 Analyst:FJB Method:8260B

Workgroup (AAB#):WG282478 Matrix:Water Units:ug/L

Contract #:DACA56-94-D-0020 Cal ID:HPMS11-30-AUG-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.365	1	J
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	93.1	86 - 118	PASS
1,2-Dichloroethane-d4	94.4	80 - 120	PASS
Toluene-d8	95.8	88 - 110	PASS
4-Bromofluorobenzene	105	86 - 115	PASS

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name:BLANK

PDF ID: 1200955

18-SEP-2008 16:01

Microbac®

Microbac Laboratories Inc.

LABORATORY CONTROL SAMPLE (LCS)

00115605

Login Number: L08090269 Analyst: FJB Prep Method: 5030B

Instrument ID: HPMS11 Matrix: Water Method: 8260B

Workgroup (AAB#): WG282478 Units: ug/L

QC Key: STD Lot #: STD28615

Sample ID: WG282478-02 LCS File ID: 11M53596 Run Date: 09/16/2008 20:37

Sample ID: WG282478-03 LCS2 File ID: 11M53597 Run Date: 09/16/2008 21:09

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	19.6	98.0	20.0	19.8	98.9	0.862	40 - 142	20	
Benzene	20.0	19.9	99.3	20.0	19.2	95.8	3.60	80 - 121	20	
Bromobenzene	20.0	22.4	112	20.0	22.0	110	2.05	80 - 120	20	
Bromochloromethane	20.0	19.9	99.4	20.0	19.2	95.8	3.68	65 - 130	20	
Bromodichloromethane	20.0	22.4	112	20.0	21.0	105	6.46	80 - 131	20	
Bromoform	20.0	20.8	104	20.0	20.2	101	2.71	70 - 130	20	
Bromomethane	20.0	12.4	62.2	20.0	12.9	64.4	3.53	30 - 145	20	
2-Butanone	20.0	19.9	99.5	20.0	20.3	101	1.78	30 - 150	20	
n-Butylbenzene	20.0	23.2	116	20.0	21.7	109	6.56	80 - 131	20	
sec-Butylbenzene	20.0	23.9	119	20.0	22.8	114	4.49	80 - 127	20	
tert-Butylbenzene	20.0	24.0	120	20.0	22.8	114	5.38	80 - 126	20	
Carbon disulfide	20.0	17.3	86.5	20.0	16.2	80.8	6.76	58 - 138	20	
Carbon tetrachloride	20.0	23.9	120	20.0	22.1	110	8.15	65 - 140	20	
Chlorobenzene	20.0	21.9	109	20.0	20.8	104	5.06	80 - 120	20	
Chlorodibromomethane	20.0	22.8	114	20.0	22.1	111	3.16	60 - 135	20	
Chloroethane	20.0	18.4	92.0	20.0	17.4	86.9	5.75	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	18.5	92.4	20.0	18.9	94.3	2.04	58 - 151	20	
Chloroform	20.0	21.0	105	20.0	19.9	99.3	5.76	80 - 125	20	
Chloromethane	20.0	14.7	73.5	20.0	13.6	68.0	7.76	40 - 125	20	
2-Chlorotoluene	20.0	24.2	121	20.0	23.0	115	5.03	80 - 127	20	
4-Chlorotoluene	20.0	21.5	108	20.0	20.8	104	3.24	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	22.5	112	20.0	20.9	105	6.96	50 - 130	20	
1,2-Dibromoethane	20.0	22.1	111	20.0	21.8	109	1.70	80 - 125	20	
Dibromomethane	20.0	21.9	110	20.0	21.1	105	3.94	75 - 125	20	
1,2-Dichlorobenzene	20.0	22.6	113	20.0	21.4	107	5.29	80 - 125	20	
1,3-Dichlorobenzene	20.0	22.0	110	20.0	21.1	106	4.19	80 - 120	20	
1,4-Dichlorobenzene	20.0	21.5	108	20.0	20.6	103	4.48	80 - 120	20	
Dichlorodifluoromethane	20.0	21.7	108	20.0	20.2	101	6.86	50 - 133	20	
1,1-Dichloroethane	20.0	20.0	100	20.0	19.1	95.4	4.79	80 - 125	20	
1,2-Dichloroethane	20.0	21.9	110	20.0	20.8	104	5.13	80 - 129	20	
1,1-Dichloroethene	20.0	21.4	107	20.0	19.8	99.1	7.81	80 - 132	20	
cis-1,2-Dichloroethene	20.0	20.9	105	20.0	20.0	99.8	4.56	70 - 125	20	
trans-1,2-Dichloroethene	20.0	21.1	105	20.0	19.4	96.8	8.38	80 - 127	20	
1,2-Dichloropropane	20.0	19.0	95.0	20.0	18.4	92.2	3.01	80 - 120	20	
1,3-Dichloropropane	20.0	20.8	104	20.0	20.5	103	1.56	80 - 120	20	
2,2-Dichloropropane	20.0	22.5	113	20.0	20.5	102	9.48	80 - 133	20	
cis-1,3-Dichloropropene	20.0	19.9	99.4	20.0	19.3	96.3	3.20	70 - 130	20	
trans-1,3-Dichloropropene	20.0	20.4	102	20.0	19.7	98.7	3.45	80 - 130	20	
1,1-Dichloropropene	20.0	21.8	109	20.0	20.1	100	8.13	75 - 130	20	
Ethylbenzene	20.0	23.1	115	20.0	22.2	111	3.92	80 - 122	20	

LCS_LCS2 - Modified 03/06/2008

PDF File ID: 1200786

Report generated: 09/18/2008 16:01

Microbac®

Microbac Laboratories Inc.

LABORATORY CONTROL SAMPLE (LCS)

00115606

Login Number: L08090269 Analyst: FJB Prep Method: 5030B

Instrument ID: HPMS11 Matrix: Water Method: 8260B

Workgroup (AAB#): WG282478 Units: ug/L

QC Key: STD Lot #: STD28615

Sample ID: WG282478-02 LCS File ID: 11M53596 Run Date: 09/16/2008 20:37

Sample ID: WG282478-03 LCS2 File ID: 11M53597 Run Date: 09/16/2008 21:09

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	19.9	99.7	20.0	20.0	99.9	0.159	55 - 130	20	
Hexachlorobutadiene	20.0	26.1	130	20.0	24.0	120	8.19	72 - 132	20	
Isopropylbenzene	20.0	20.7	104	20.0	19.6	98.1	5.36	80 - 122	20	
p-Isopropyltoluene	20.0	23.7	119	20.0	22.4	112	5.77	80 - 122	20	
4-Methyl-2-pentanone	20.0	18.4	92.1	20.0	18.8	93.8	1.84	64 - 140	20	
Methylene chloride	20.0	18.8	94.1	20.0	18.5	92.5	1.72	80 - 123	20	
Naphthalene	20.0	21.0	105	20.0	20.5	103	2.35	59 - 149	20	
n-Propylbenzene	20.0	23.5	117	20.0	22.4	112	4.86	80 - 129	20	
Styrene	20.0	22.1	110	20.0	21.1	106	4.46	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	23.3	116	20.0	22.2	111	4.80	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	20.3	102	20.0	20.4	102	0.435	79 - 125	20	
Tetrachloroethene	20.0	24.1	120	20.0	22.6	113	6.54	80 - 124	20	
Toluene	20.0	21.4	107	20.0	20.5	103	4.04	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	22.1	111	20.0	21.2	106	4.41	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	21.4	107	20.0	20.8	104	2.97	65 - 135	20	
1,1,1-Trichloroethane	20.0	22.8	114	20.0	20.9	105	8.77	80 - 134	20	
1,1,2-Trichloroethane	20.0	21.3	106	20.0	20.8	104	2.09	80 - 125	20	
Trichloroethene	20.0	20.8	104	20.0	19.5	97.6	6.33	80 - 122	20	
Trichlorofluoromethane	20.0	22.3	112	20.0	20.2	101	9.94	62 - 151	20	
1,2,3-Trichloropropane	20.0	22.7	114	20.0	22.0	110	3.24	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	24.1	121	20.0	23.2	116	3.91	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	24.6	123	20.0	23.4	117	5.05	80 - 127	20	
Vinyl acetate	20.0	27.6	138	20.0	27.2	136	1.19	10 - 150	20	
Vinyl chloride	20.0	24.7	123	20.0	22.0	110	11.3	65 - 140	20	
o-Xylene	20.0	23.1	115	20.0	22.2	111	3.98	80 - 122	20	
m-,p-Xylene	40.0	45.8	114	40.0	43.9	110	4.25	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	93.5	90.7	86 - 118	PASS
1,2-Dichloroethane-d4	92.9	90.9	80 - 120	PASS
Toluene-d8	96.4	95.9	88 - 110	PASS
4-Bromofluorobenzene	103	100	86 - 115	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008

PDF File ID: 1200786

Report generated: 09/18/2008 16:01

Microbac®

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

00115607

BFB

Login Number: L08090269
Instrument: HPMS11
Analyst: MES
Workgroup: WG281247

Tune ID: WG281247-01
Run Date: 08/30/2008
Run Time: 16:01
File ID: 11M53169
Cal ID: HPMS11-30-AUG-08

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	23.3	10025	PASS
75.0	95.0	30.0	60.0	46.2	19919	PASS
95.0	95.0	100	100	100	43085	PASS
96.0	95.0	5.00	9.00	7.16	3084	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	78.7	33925	PASS
175	174	5.00	9.00	7.03	2385	PASS
176	174	95.0	101	98.6	33466	PASS
177	176	5.00	9.00	6.63	2219	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG281247-04	STD	01	08/30/2008 17:41	
WG281247-02	STD	01	08/30/2008 18:13	
WG281247-05	STD	01	08/30/2008 18:46	
WG281247-06	STD	01	08/30/2008 19:20	
WG281247-07	STD	01	08/30/2008 19:52	
WG281247-03	STD	01	08/30/2008 20:57	
WG281247-08	STD-CCV	01	08/30/2008 21:29	
WG281247-09	STD	01	08/30/2008 22:01	
WG281247-10	STD	01	08/30/2008 22:34	
WG281247-11	STD	01	08/30/2008 23:06	
WG281247-12	SSCV	01	08/31/2008 00:43	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1200958
Report generated 09/18/2008 16:01

Microbac®

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

00115608

BFB

Login Number: L08090269
Instrument: HPMS11
Analyst: FJB
Workgroup: WG282477

Tune ID: WG282477-01
Run Date: 09/16/2008
Run Time: 18:33
File ID: 11M53592
Cal ID: HPMS11-30-AUG-08

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	24.7	6904	PASS
75.0	95.0	30.0	60.0	50.6	14146	PASS
95.0	95.0	100	100	100	27941	PASS
96.0	95.0	5.00	9.00	7.05	1971	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	77.6	21696	PASS
175	174	5.00	9.00	7.68	1666	PASS
176	174	95.0	101	98.5	21370	PASS
177	176	5.00	9.00	7.16	1530	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG282477-02	CCV	01	09/16/2008 18:58	
WG282478-01	BLANK	01	09/16/2008 20:04	
WG282478-02	LCS	01	09/16/2008 20:37	
WG282478-03	LCS2	01	09/16/2008 21:09	
L08090269-07	TRIP BLANKS	01	09/16/2008 22:14	
L08090269-01	12WW22-090808	01	09/16/2008 23:19	
L08090269-02	12WW22-090808-FD	01	09/16/2008 23:51	
L08090269-03	12WW20-090808	01	09/17/2008 00:23	
L08090269-04	12WW24-091108	DL01	09/17/2008 00:56	
L08090269-05	12WW21-091108	01	09/17/2008 01:28	
L08090269-06	12WW23-091108	01	09/17/2008 02:00	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1200958
Report generated 09/18/2008 16:01

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

00115609

Login Number:L08090269 Instrument ID:HPMS11

Analytical Method:8260B Initial Calibration Date:30-AUG-08 23:06

ICAL Workgroup:WG281247 Column ID:F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.4178	7.66		
1,2-Dichloropropane	CCC	0.2487	2.35		
Chloroform	CCC	0.4472	4.16		
Ethylbenzene	CCC	0.3805	6.69		
Toluene	CCC	1.105	5.84		
Vinyl Chloride	CCC	0.2356	14.4		
1,1,2,2-Tetrachloroethane	SPCC	0.3773	18.9		1.00000
1,1-Dichloroethane	SPCC	0.4995	3.58		
Bromoform	SPCC	0.1712	7.90		
Chlorobenzene	SPCC	0.7398	4.76		
Chloromethane	SPCC	0.3343	7.23		
1,1,1,2-Tetrachloroethane		0.2839	9.39		
1,1,1-Trichloroethane		0.4049	7.15		
1,1,2-Trichloroethane		0.1931	7.57		
1,1-Dichloropropene		0.3034	6.11		
1,2,3-Trichlorobenzene		0.7580	8.01		
1,2,3-Trichloropropane		0.1374	16.6		1.00000
1,2,4-Trichlorobenzene		0.8260	5.69		
1,2,4-Trimethylbenzene		1.997	6.06		
1,2-Dibromo-3-Chloropropane		0.09407	6.74		
1,2-Dibromoethane		0.1958	6.87		
1,2-Dichlorobenzene		1.054	5.42		
1,2-Dichloroethane		0.4121	5.18		
1,3,5-Trimethylbenzene		1.891	7.10		
1,3-Dichlorobenzene		1.125	5.10		
1,3-Dichloropropane		0.3691	5.41		
1,4-Dichlorobenzene		1.171	5.95		
2,2-Dichloropropane		0.4017	4.82		
2-Butanone		0.07920	3.10		
2-Chloroethyl Vinyl Ether		0.1250	12.6		
2-Chlorotoluene		1.695	7.45		
2-Hexanone		0.1412	10.6		
4-Chlorotoluene		1.749	5.50		
4-Methyl-2-Pentanone		0.07150	8.63		
Acetone		0.06215	8.60		
Benzene		0.8261	3.14		
Bromobenzene		0.5593	6.67		
Bromochloromethane		0.1200	27.6		1.00000
Bromodichloromethane		0.3233	6.60		
Bromomethane		0.1488	9.94		
Carbon Disulfide		0.6889	2.70		
Carbon Tetrachloride		0.3499	8.16		
Chloroethane		0.1871	7.87		
Dibromochloromethane		0.2758	10.9		
Dibromomethane		0.1134	11.4		

INT_CAL - Modified 03/06/2008

PDF File ID: 1200956

Report generated 09/18/2008 16:01

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

00115610

Login Number:L08090269 Instrument ID:HPMS11

Analytical Method:8260B Initial Calibration Date:30-AUG-08 23:06

ICAL Workgroup:WG281247 Column ID:F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Dichlorodifluoromethane		0.3309	7.89		
Hexachlorobutadiene		0.2966	10.5		
Isopropylbenzene		1.246	6.16		
Methylene Chloride		0.2698	31.2		1.00000
Naphthalene		1.637	8.85		
Styrene		0.7878	7.57		
Tetrachloroethene		0.2058	8.16		
Trichloroethene		0.2300	3.62		
Trichlorofluoromethane		0.4822	10.4		
Vinyl Acetate		0.1436	29.4	0.99800	
cis-1,2-Dichloroethene		0.2284	4.63		
cis-1,3-Dichloropropene		0.3433	6.18		
m-,p-Xylene		0.4755	4.94		
n-Butylbenzene		1.925	6.67		
n-Propylbenzene		2.609	7.17		
o-Xylene		0.4549	8.45		
p-Isopropyltoluene		2.092	6.79		
sec-Butylbenzene		2.367	6.43		
tert-Butylbenzene		0.3913	7.52		
trans-1,2-Dichloroethene		0.2080	10.8		
trans-1,3-Dichloropropene		0.3997	11.3		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

If the %RSD is greater than the limit specified by the method or project QAP, then linear or quadratic equations will be used.

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115611

Login Number: L08090269 **Instrument ID:** HPMS11

Analytical Method: 8260B **Initial Calibration Date:** 30-AUG-08 23:06

Column ID: F

Analyte	WG281247-02			WG281247-03			WG281247-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	3856.00000	0.3755	1.00	9873.00000	0.3703
1,2-Dichloropropane	NA	NA	NA	0.400	2539.00000	0.2473	1.00	6357.00000	0.2384
Chloroform	0.300	3524.00000	0.4430	0.400	4513.00000	0.4395	1.00	12196.0000	0.4574
Ethylbenzene	NA	NA	NA	0.400	2890.00000	0.3438	1.00	7696.00000	0.3569
Toluene	NA	NA	NA	0.400	9013.00000	1.072	1.00	23417.0000	1.086
Vinyl Chloride	NA	NA	NA	0.400	2893.00000	0.2818	1.00	6963.00000	0.2611
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	1040.00000	0.2255	1.00	3952.00000	0.3302
1,1-Dichloroethane	NA	NA	NA	0.400	5089.00000	0.4956	1.00	13008.0000	0.4878
Bromoform	NA	NA	NA	NA	NA	NA	1.00	3145.00000	0.1458
Chlorobenzene	NA	NA	NA	0.400	6231.00000	0.7413	1.00	16087.0000	0.7460
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	9871.00000	0.3702
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	2088.00000	0.2484	1.00	5911.00000	0.2741
1,1,1-Trichloroethane	NA	NA	NA	0.400	3667.00000	0.3571	1.00	11094.0000	0.4160
1,1,2-Trichloroethane	NA	NA	NA	0.400	1469.00000	0.1748	1.00	3694.00000	0.1713
1,1-Dichloropropene	NA	NA	NA	0.400	2882.00000	0.2807	1.00	7498.00000	0.2812
1,2,3-Trichlorobenzene	0.300	2748.00000	0.7630	0.400	3582.00000	0.7767	1.00	8432.00000	0.7046
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	1173.00000	0.09800
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	3964.00000	0.8595	1.00	9416.00000	0.7868
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	8773.00000	1.902	1.00	23073.0000	1.928
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	1536.00000	0.1827	1.00	3683.00000	0.1708
1,2-Dichlorobenzene	0.300	3591.00000	0.9971	0.400	4849.00000	1.051	1.00	12464.0000	1.042
1,2-Dichloroethane	NA	NA	NA	0.400	4122.00000	0.4015	1.00	10738.0000	0.4027
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	7692.00000	1.668	1.00	21680.0000	1.812
1,3-Dichlorobenzene	NA	NA	NA	0.400	5214.00000	1.131	1.00	13420.0000	1.121
1,3-Dichloropropane	NA	NA	NA	0.400	3400.00000	0.4045	1.00	7673.00000	0.3558
1,4-Dichlorobenzene	0.300	4397.00000	1.221	0.400	5466.00000	1.185	1.00	13620.0000	1.138
2,2-Dichloropropane	NA	NA	NA	0.400	4006.00000	0.3902	1.00	10619.0000	0.3982
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	1.00	2537.00000	0.09510
2-Chlorotoluene	NA	NA	NA	0.400	7646.00000	1.658	1.00	20473.0000	1.711
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	7840.00000	1.700	1.00	20870.0000	1.744
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	8483.00000	0.8262	1.00	21770.0000	0.8164
Bromobenzene	0.300	1944.00000	0.5398	0.400	2689.00000	0.5830	1.00	6598.00000	0.5513
Bromochloromethane	NA	NA	NA	0.400	506.000000	0.04930	1.00	2516.00000	0.09440
Bromodichloromethane	NA	NA	NA	0.400	3029.00000	0.2950	1.00	7900.00000	0.2963
Bromomethane	NA	NA	NA	0.400	1835.00000	0.1787	1.00	4057.00000	0.1521
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	17795.0000	0.6673
Carbon Tetrachloride	NA	NA	NA	0.400	3142.00000	0.3060	1.00	8537.00000	0.3202

INT_CAL - Modified 03/06/2008

PDF File ID: 1200956

Report generated 09/18/2008 16:01

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115612

Login Number: L08090269

Analytical Method: 8260B

Instrument ID: HPMS11

Initial Calibration Date: 30-AUG-08 23:06

Column ID: F

Analyte	WG281247-05			WG281247-06			WG281247-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	21433.0000	0.4095	5.00	60652.0000	0.4532	20.0	241457.000	0.4412
1,2-Dichloropropane	2.00	13106.0000	0.2504	5.00	33664.0000	0.2516	20.0	138381.000	0.2529
Chloroform	2.00	22376.0000	0.4275	5.00	63168.0000	0.4720	20.0	254766.000	0.4655
Ethylbenzene	2.00	16272.0000	0.3804	5.00	45330.0000	0.4150	20.0	178234.000	0.4028
Toluene	2.00	49730.0000	1.163	5.00	133368.000	1.221	20.0	499538.000	1.129
Vinyl Chloride	2.00	13451.0000	0.2570	5.00	33767.0000	0.2523	20.0	117359.000	0.2145
1,1,2,2-Tetrachloroethane	2.00	10900.0000	0.4632	5.00	23946.0000	0.3977	20.0	102823.000	0.4170
1,1-Dichloroethane	2.00	25297.0000	0.4833	5.00	70123.0000	0.5240	20.0	281719.000	0.5148
Bromoform	2.00	7847.00000	0.1835	5.00	17675.0000	0.1618	20.0	78340.0000	0.1770
Chlorobenzene	2.00	33044.0000	0.7726	5.00	84891.0000	0.7772	20.0	337095.000	0.7617
Chloromethane	2.00	16672.0000	0.3185	5.00	44765.0000	0.3345	20.0	162310.000	0.2966
1,1,1,2-Tetrachloroethane	2.00	13142.0000	0.3073	5.00	34167.0000	0.3128	20.0	135963.000	0.3072
1,1,1-Trichloroethane	2.00	20623.0000	0.3940	5.00	58932.0000	0.4404	20.0	233943.000	0.4275
1,1,2-Trichloroethane	2.00	9011.00000	0.2107	5.00	22058.0000	0.2019	20.0	91604.0000	0.2070
1,1-Dichloropropene	2.00	15151.0000	0.2895	5.00	43188.0000	0.3227	20.0	175661.000	0.3210
1,2,3-Trichlorobenzene	2.00	20530.0000	0.8724	5.00	46740.0000	0.7762	20.0	195665.000	0.7934
1,2,3-Trichloropropane	2.00	4104.00000	0.1744	5.00	8234.00000	0.1367	20.0	36838.0000	0.1494
1,2,4-Trichlorobenzene	2.00	20708.0000	0.8799	5.00	49809.0000	0.8272	20.0	212723.000	0.8626
1,2,4-Trimethylbenzene	2.00	49633.0000	2.109	5.00	129268.000	2.147	20.0	518499.000	2.103
1,2-Dibromo-3-Chloropropane	2.00	2456.00000	0.1044	5.00	5141.00000	0.08540	20.0	23559.0000	0.09550
1,2-Dibromoethane	2.00	8518.00000	0.1991	5.00	21434.0000	0.1962	20.0	93915.0000	0.2122
1,2-Dichlorobenzene	2.00	27679.0000	1.176	5.00	64063.0000	1.064	20.0	266813.000	1.082
1,2-Dichloroethane	2.00	21944.0000	0.4193	5.00	57709.0000	0.4313	20.0	238044.000	0.4350
1,3,5-Trimethylbenzene	2.00	46418.0000	1.972	5.00	121251.000	2.014	20.0	503621.000	2.042
1,3-Dichlorobenzene	2.00	28606.0000	1.216	5.00	70614.0000	1.173	20.0	281682.000	1.142
1,3-Dichloropropane	2.00	15419.0000	0.3605	5.00	40609.0000	0.3718	20.0	169502.000	0.3830
1,4-Dichlorobenzene	2.00	30508.0000	1.296	5.00	72473.0000	1.204	20.0	291034.000	1.180
2,2-Dichloropropane	2.00	20340.0000	0.3886	5.00	58737.0000	0.4389	20.0	226637.000	0.4141
2-Butanone	NA	NA	NA	5.00	10389.0000	0.07760	20.0	44598.0000	0.08150
2-Chloroethyl Vinyl Ether	2.00	5576.00000	0.1065	5.00	17588.0000	0.1314	20.0	76000.0000	0.1389
2-Chlorotoluene	2.00	43222.0000	1.837	5.00	109708.000	1.822	20.0	441669.000	1.791
2-Hexanone	NA	NA	NA	5.00	12299.0000	0.1126	20.0	67524.0000	0.1526
4-Chlorotoluene	2.00	44032.0000	1.871	5.00	111625.000	1.854	20.0	448975.000	1.821
4-Methyl-2-Pentanone	NA	NA	NA	5.00	8008.00000	0.05980	20.0	41292.0000	0.07550
Acetone	NA	NA	NA	5.00	8840.00000	0.06610	20.0	35945.0000	0.06570
Benzene	2.00	41744.0000	0.7976	5.00	115445.000	0.8627	20.0	461568.000	0.8434
Bromobenzene	2.00	14741.0000	0.6264	5.00	35234.0000	0.5852	20.0	141969.000	0.5757
Bromochloromethane	2.00	6254.00000	0.1195	5.00	17550.0000	0.1311	20.0	77939.0000	0.1424
Bromodichloromethane	2.00	16452.0000	0.3143	5.00	45798.0000	0.3422	20.0	187300.000	0.3423
Bromomethane	2.00	7510.00000	0.1435	5.00	18715.0000	0.1399	20.0	69696.0000	0.1274
Carbon Disulfide	2.00	35747.0000	0.6830	5.00	93110.0000	0.6958	20.0	383043.000	0.6999
Carbon Tetrachloride	2.00	18069.0000	0.3452	5.00	51556.0000	0.3853	20.0	207041.000	0.3783

INT_CAL - Modified 03/06/2008

PDF File ID: 1200956

Report generated 09/18/2008 16:01

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115613

Login Number: L08090269

Analytical Method: 8260B

Instrument ID: HPMS11

Initial Calibration Date: 30-AUG-08 23:06

Column ID: F

Analyte	WG281247-08			WG281247-09			WG281247-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	584888.000	0.4506	100	1110002.00	0.4301	200	2316546.00	0.4121
1,2-Dichloropropane	50.0	333321.000	0.2568	100	644785.000	0.2498	200	1364254.00	0.2427
Chloroform	50.0	601415.000	0.4633	100	1134778.00	0.4396	200	2342224.00	0.4167
Ethylbenzene	50.0	430946.000	0.4010	100	823235.000	0.3856	200	1640807.00	0.3581
Toluene	50.0	1173614.00	1.092	100	2279695.00	1.068	200	4633919.00	1.011
Vinyl Chloride	50.0	299686.000	0.2309	100	540066.000	0.2092	200	999179.000	0.1778
1,1,2,2-Tetrachloroethane	50.0	250050.000	0.3960	100	525598.000	0.3943	200	1068827.00	0.3941
1,1-Dichloroethane	50.0	673755.000	0.5191	100	1281573.00	0.4965	200	2670789.00	0.4751
Bromoform	50.0	189999.000	0.1768	100	391603.000	0.1834	200	780535.000	0.1703
Chlorobenzene	50.0	791655.000	0.7367	100	1524335.00	0.7141	200	3065330.00	0.6689
Chloromethane	50.0	424365.000	0.3269	100	869055.000	0.3367	200	2003217.00	0.3564
1,1,1,2-Tetrachloroethane	50.0	317339.000	0.2953	100	600538.000	0.2813	200	1120149.00	0.2444
1,1,1-Trichloroethane	50.0	556029.000	0.4284	100	1040228.00	0.4030	200	2096006.00	0.3729
1,1,2-Trichloroethane	50.0	213759.000	0.1989	100	416811.000	0.1953	200	847410.000	0.1849
1,1-Dichloropropene	50.0	420268.000	0.3238	100	803355.000	0.3112	200	1668378.00	0.2968
1,2,3-Trichlorobenzene	50.0	480039.000	0.7603	100	955257.000	0.7167	200	1786105.00	0.6585
1,2,3-Trichloropropane	50.0	86861.0000	0.1376	100	177629.000	0.1333	200	358879.000	0.1323
1,2,4-Trichlorobenzene	50.0	536719.000	0.8501	100	1068975.00	0.8020	200	2006790.00	0.7399
1,2,4-Trimethylbenzene	50.0	1291645.00	2.046	100	2587155.00	1.941	200	4893426.00	1.804
1,2-Dibromo-3-Chloropropane	50.0	60657.0000	0.09610	100	122525.000	0.09190	200	247078.000	0.09110
1,2-Dibromoethane	50.0	222404.000	0.2070	100	434813.000	0.2037	200	890725.000	0.1944
1,2-Dichlorobenzene	50.0	674266.000	1.068	100	1367533.00	1.026	200	2651008.00	0.9774
1,2-Dichloroethane	50.0	560808.000	0.4321	100	1038916.00	0.4025	200	2094529.00	0.3726
1,3,5-Trimethylbenzene	50.0	1255904.00	1.989	100	2488997.00	1.867	200	4794166.00	1.768
1,3-Dichlorobenzene	50.0	704094.000	1.115	100	1432544.00	1.075	200	2785670.00	1.027
1,3-Dichloropropane	50.0	397925.000	0.3703	100	774674.000	0.3629	200	1574381.00	0.3436
1,4-Dichlorobenzene	50.0	726058.000	1.150	100	1475453.00	1.107	200	2859765.00	1.054
2,2-Dichloropropane	50.0	533562.000	0.4111	100	1021742.00	0.3959	200	2115555.00	0.3764
2-Butanone	50.0	104136.000	0.08020	100	211568.000	0.08200	200	440154.000	0.07830
2-Chloroethyl Vinyl Ether	50.0	178307.000	0.1374	100	347295.000	0.1346	200	728683.000	0.1296
2-Chlorotoluene	50.0	1070621.00	1.696	100	2105481.00	1.580	200	3983071.00	1.469
2-Hexanone	50.0	159595.000	0.1485	100	322936.000	0.1513	200	663150.000	0.1447
4-Chlorotoluene	50.0	1103440.00	1.748	100	2210492.00	1.659	200	4330769.00	1.597
4-Methyl-2-Pentanone	50.0	97374.0000	0.07500	100	196298.000	0.07610	200	410506.000	0.07300
Acetone	50.0	85231.0000	0.06570	100	163966.000	0.06350	200	333735.000	0.05940
Benzene	50.0	1102663.00	0.8495	100	2133585.00	0.8266	200	4418764.00	0.7861
Bromobenzene	50.0	346401.000	0.5486	100	690136.000	0.5178	200	1371966.00	0.5058
Bromochloromethane	50.0	187493.000	0.1444	100	366338.000	0.1419	200	770747.000	0.1371
Bromodichloromethane	50.0	453035.000	0.3490	100	860469.000	0.3334	200	1763673.00	0.3138
Bromomethane	50.0	186207.000	0.1435	100	395717.000	0.1533	200	852807.000	0.1517
Carbon Disulfide	50.0	932706.000	0.7186	100	1785458.00	0.6917	200	3745363.00	0.6663
Carbon Tetrachloride	50.0	488888.000	0.3767	100	895715.000	0.3470	200	1914429.00	0.3406

INT_CAL - Modified 03/06/2008

PDF File ID: 1200956

Report generated 09/18/2008 16:01

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115614

Login Number: L08090269 **Instrument ID:** HPMS11

Analytical Method: 8260B **Initial Calibration Date:** 30-AUG-08 23:06

Column ID: F

Analyte	WG281247-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	643434.000	0.07560
2-Chloroethyl Vinyl Ether	300	1076504.00	0.1265
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	936046.000	0.1377
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	592460.000	0.06960
Acetone	300	446831.000	0.05250
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

INT_CAL - Modified 03/06/2008

PDF File ID: 1200956

Report generated 09/18/2008 16:01

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115615

Login Number: L08090269
Analytical Method: 8260B

Instrument ID: HPMS11
Initial Calibration Date: 30-AUG-08 23:06
Column ID: F

Analyte	WG281247-02			WG281247-03			WG281247-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	4528.00000	0.1698
Dibromochloromethane	NA	NA	NA	0.400	1755.00000	0.2088	1.00	5638.00000	0.2614
Dibromomethane	NA	NA	NA	0.400	872.000000	0.08490	1.00	2838.00000	0.1064
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	8145.00000	0.3055
Hexachlorobutadiene	NA	NA	NA	0.400	1026.00000	0.2225	1.00	3613.00000	0.3019
Isopropylbenzene	NA	NA	NA	0.400	9475.00000	1.127	1.00	25224.0000	1.170
Methylene Chloride	NA	NA	NA	0.400	4716.00000	0.4593	1.00	8406.00000	0.3152
Naphthalene	NA	NA	NA	0.400	6824.00000	1.480	1.00	17614.0000	1.472
Styrene	NA	NA	NA	0.400	5703.00000	0.6784	1.00	15626.0000	0.7246
Tetrachloroethene	NA	NA	NA	0.400	1423.00000	0.1693	1.00	4403.00000	0.2042
Trichloroethene	NA	NA	NA	0.400	2279.00000	0.2220	1.00	6034.00000	0.2263
Trichlorofluoromethane	NA	NA	NA	0.400	3859.00000	0.3758	1.00	12255.0000	0.4596
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	2176.00000	0.2119	1.00	5996.00000	0.2249
cis-1,3-Dichloropropene	NA	NA	NA	0.400	3166.00000	0.3083	1.00	8493.00000	0.3185
m-,p-Xylene	NA	NA	NA	0.800	7909.00000	0.4704	2.00	19636.0000	0.4553
n-Butylbenzene	NA	NA	NA	0.400	7660.00000	1.661	1.00	22603.0000	1.889
n-Propylbenzene	NA	NA	NA	0.400	10871.0000	2.357	1.00	29506.0000	2.466
o-Xylene	NA	NA	NA	0.400	3155.00000	0.3753	1.00	9284.00000	0.4305
p-Isopropyltoluene	NA	NA	NA	0.400	8510.00000	1.845	1.00	23777.0000	1.987
sec-Butylbenzene	NA	NA	NA	0.400	9728.00000	2.109	1.00	27340.0000	2.285
tert-Butylbenzene	NA	NA	NA	0.400	1662.00000	0.3604	1.00	4228.00000	0.3533
trans-1,2-Dichloroethene	NA	NA	NA	0.400	1588.00000	0.1547	1.00	5703.00000	0.2139
trans-1,3-Dichloropropene	NA	NA	NA	0.400	2677.00000	0.3185	1.00	7363.00000	0.3414

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115616

Login Number: L08090269

Analytical Method: 8260B

Instrument ID: HPMS11

Initial Calibration Date: 30-AUG-08 23:06

Column ID: F

Analyte	WG281247-05			WG281247-06			WG281247-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	9084.00000	0.1736	5.00	25291.0000	0.1890	20.0	104850.000	0.1916
Dibromochloromethane	2.00	11854.0000	0.2771	5.00	31364.0000	0.2871	20.0	132743.000	0.3000
Dibromomethane	2.00	6148.00000	0.1175	5.00	16114.0000	0.1204	20.0	68161.0000	0.1246
Dichlorodifluoromethane	2.00	18030.0000	0.3445	5.00	47315.0000	0.3536	20.0	185342.000	0.3387
Hexachlorobutadiene	2.00	7183.00000	0.3052	5.00	19327.0000	0.3210	20.0	75998.0000	0.3082
Isopropylbenzene	2.00	52909.0000	1.237	5.00	145049.000	1.328	20.0	583909.000	1.320
Methylene Chloride	2.00	13664.0000	0.2611	5.00	33163.0000	0.2478	20.0	123503.000	0.2257
Naphthalene	2.00	44175.0000	1.877	5.00	98019.0000	1.628	20.0	439854.000	1.784
Styrene	2.00	33588.0000	0.7853	5.00	89535.0000	0.8197	20.0	369569.000	0.8351
Tetrachloroethene	2.00	8680.00000	0.2029	5.00	24254.0000	0.2220	20.0	97739.0000	0.2209
Trichloroethene	2.00	11920.0000	0.2277	5.00	32291.0000	0.2413	20.0	127622.000	0.2332
Trichlorofluoromethane	2.00	26182.0000	0.5002	5.00	71100.0000	0.5313	20.0	281307.000	0.5140
Vinyl Acetate	NA	NA	NA	5.00	9656.00000	0.07220	20.0	77204.0000	0.1411
cis-1,2-Dichloroethene	2.00	11311.0000	0.2161	5.00	31954.0000	0.2388	20.0	129925.000	0.2374
cis-1,3-Dichloropropene	2.00	17649.0000	0.3372	5.00	47554.0000	0.3554	20.0	199166.000	0.3639
m-,p-Xylene	4.00	39583.0000	0.4627	10.0	111140.000	0.5087	40.0	439956.000	0.4971
n-Butylbenzene	2.00	45944.0000	1.952	5.00	123274.000	2.047	20.0	499097.000	2.024
n-Propylbenzene	2.00	63963.0000	2.718	5.00	171965.000	2.856	20.0	694864.000	2.818
o-Xylene	2.00	19528.0000	0.4566	5.00	53371.0000	0.4886	20.0	215646.000	0.4873
p-Isopropyltoluene	2.00	50880.0000	2.162	5.00	135271.000	2.247	20.0	551009.000	2.234
sec-Butylbenzene	2.00	56334.0000	2.394	5.00	154412.000	2.564	20.0	624257.000	2.531
tert-Butylbenzene	2.00	10031.0000	0.4262	5.00	25197.0000	0.4185	20.0	103753.000	0.4207
trans-1,2-Dichloroethene	2.00	10714.0000	0.2047	5.00	30198.0000	0.2257	20.0	119579.000	0.2185
trans-1,3-Dichloropropene	2.00	17647.0000	0.4126	5.00	46436.0000	0.4251	20.0	196246.000	0.4435

INT_CAL - Modified 03/06/2008

PDF File ID: 1200956

Report generated 09/18/2008 16:01

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115617

Login Number: L08090269
Analytical Method: 8260B
Instrument ID: HPMS11
Initial Calibration Date: 30-AUG-08 23:06
Column ID: F

Analyte	WG281247-08			WG281247-09			WG281247-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	270322.000	0.2083	100	520565.000	0.2017	200	986576.000	0.1755
Dibromochloromethane	50.0	320622.000	0.2983	100	631877.000	0.2960	200	1270994.00	0.2774
Dibromomethane	50.0	159092.000	0.1226	100	305882.000	0.1185	200	632690.000	0.1126
Dichlorodifluoromethane	50.0	461988.000	0.3559	100	858644.000	0.3327	200	1605200.00	0.2856
Hexachlorobutadiene	50.0	198921.000	0.3151	100	406545.000	0.3050	200	796721.000	0.2937
Isopropylbenzene	50.0	1407232.00	1.310	100	2750793.00	1.289	200	5446067.00	1.189
Methylene Chloride	50.0	298812.000	0.2302	100	567572.000	0.2199	200	1120288.00	0.1993
Naphthalene	50.0	1070147.00	1.695	100	2177169.00	1.634	200	4139468.00	1.526
Styrene	50.0	902079.000	0.8394	100	1796914.00	0.8417	200	3566522.00	0.7783
Tetrachloroethene	50.0	232553.000	0.2164	100	445734.000	0.2088	200	923805.000	0.2016
Trichloroethene	50.0	312880.000	0.2410	100	594111.000	0.2302	200	1225774.00	0.2181
Trichlorofluoromethane	50.0	675009.000	0.5200	100	1271427.00	0.4926	200	2608630.00	0.4641
Vinyl Acetate	50.0	205940.000	0.1587	100	462729.000	0.1793	200	937927.000	0.1669
cis-1,2-Dichloroethene	50.0	310889.000	0.2395	100	602087.000	0.2333	200	1264294.00	0.2249
cis-1,3-Dichloropropene	50.0	474996.000	0.3659	100	920721.000	0.3567	200	1912574.00	0.3402
m-,p-Xylene	100	1061097.00	0.4937	200	2037915.00	0.4773	400	4019241.00	0.4386
n-Butylbenzene	50.0	1280373.00	2.028	100	2607066.00	1.956	200	4991194.00	1.840
n-Propylbenzene	50.0	1700510.00	2.693	100	3371705.00	2.530	200	6598593.00	2.433
o-Xylene	50.0	519328.000	0.4833	100	1009083.00	0.4727	200	2037405.00	0.4446
p-Isopropyltoluene	50.0	1380353.00	2.186	100	2783594.00	2.088	200	5388683.00	1.987
sec-Butylbenzene	50.0	1548195.00	2.452	100	3137113.00	2.354	200	6089393.00	2.245
tert-Butylbenzene	50.0	254101.000	0.4024	100	510467.000	0.3830	200	992854.000	0.3660
trans-1,2-Dichloroethene	50.0	285390.000	0.2199	100	558664.000	0.2164	200	1180382.00	0.2100
trans-1,3-Dichloropropene	50.0	466417.000	0.4340	100	900472.000	0.4218	200	1834949.00	0.4004

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115618

Login Number: L08090269
Instrument ID: HPMS11
Analytical Method: 8260B
Initial Calibration Date: 30-AUG-08 23:06
Column ID: F

Analyte	WG281247-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

Microbac®

Microbac Laboratories Inc.

ALTERNATE SOURCE CALIBRATION REPORT

00115619

Login Number:L08090269 Run Date:08/31/2008 Sample ID:WG281247-12

Instrument ID:HPMS11 Run Time:00:43 Method:8260B

File ID:11M53185 Analyst:MES QC Key:STD

ICal Workgroup:WG281247 Cal ID:HPMS11 - 30-AUG-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	20.2	ug/L	0.451	0.900	30	
1,1-Dichloroethene	CCC	20.0	21.3	ug/L	0.445	6.40	30	
1,2-Dichloropropane	CCC	20.0	20.5	ug/L	0.255	2.40	30	
Ethylbenzene	CCC	20.0	22.1	ug/L	0.421	10.7	30	
Toluene	CCC	20.0	20.8	ug/L	1.15	4.00	30	
Vinyl Chloride	CCC	20.0	21.1	ug/L	0.249	5.70	30	
Bromoform	SPCC	20.0	19.1	ug/L	0.164	4.40	30	
Chlorobenzene	SPCC	20.0	21.1	ug/L	0.779	5.30	30	
Chloromethane	SPCC	20.0	17.1	ug/L	0.286	14.3	30	
1,1-Dichloroethane	SPCC	20.0	20.7	ug/L	0.518	3.70	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	19.2	ug/L	0.383	4.10	30	
Acetone		20.0	22.1	ug/L	0.0688	10.7	30	
Benzene		20.0	21.2	ug/L	0.874	5.80	30	
Bromobenzene		20.0	21.0	ug/L	0.587	5.00	30	
Bromochloromethane		20.0	19.7	ug/L	0.142	1.40	30	
Bromodichloromethane		20.0	21.2	ug/L	0.342	5.80	30	
Bromomethane		20.0	17.4	ug/L	0.129	13.0	30	
2-Butanone		20.0	21.2	ug/L	0.0841	6.10	30	
n-Butylbenzene		20.0	22.2	ug/L	2.14	11.1	30	
sec-Butylbenzene		20.0	22.1	ug/L	2.61	10.4	30	
tert-Butylbenzene		20.0	22.0	ug/L	0.430	10.0	30	
Carbon Disulfide		20.0	18.4	ug/L	0.634	8.10	30	
Carbon Tetrachloride		20.0	21.5	ug/L	0.375	7.30	30	
Dibromochloromethane		20.0	20.6	ug/L	0.284	3.00	30	
Chloroethane		20.0	21.2	ug/L	0.198	5.80	30	
2-Chloroethyl Vinyl Ether		20.0	20.1	ug/L	0.126	0.500	30	
2-Chlorotoluene		20.0	21.6	ug/L	1.83	7.80	30	
4-Chlorotoluene		20.0	21.0	ug/L	1.83	4.90	30	
1,2-Dibromo-3-Chloropropane		20.0	19.1	ug/L	0.0898	4.50	30	
1,2-Dibromoethane		20.0	21.2	ug/L	0.207	5.90	30	
Dibromomethane		20.0	21.5	ug/L	0.122	7.70	30	
1,2-Dichlorobenzene		20.0	21.0	ug/L	1.10	4.80	30	
1,3-Dichlorobenzene		20.0	21.1	ug/L	1.19	5.40	30	
1,4-Dichlorobenzene		20.0	20.4	ug/L	1.19	1.90	30	
Dichlorodifluoromethane		20.0	20.1	ug/L	0.333	0.700	30	
1,2-Dichloroethane		20.0	20.3	ug/L	0.419	1.70	30	
cis-1,2-Dichloroethene		20.0	21.4	ug/L	0.244	6.90	30	
trans-1,2-Dichloroethene		20.0	21.5	ug/L	0.223	7.30	30	
1,3-Dichloropropane		20.0	20.4	ug/L	0.375	2.10	30	
2,2-Dichloropropane		20.0	18.9	ug/L	0.379	5.60	30	
cis-1,3-Dichloropropene		20.0	20.3	ug/L	0.348	1.50	30	
trans-1,3-Dichloropropene		20.0	19.0	ug/L	0.380	4.90	30	

ALT - Modified 09/06/2007

Version 1.5 PDF File ID: 1200957

Report generated 09/18/2008 16:01

Microbac®

Microbac Laboratories Inc.

ALTERNATE SOURCE CALIBRATION REPORT

00115620

Login Number: L08090269 Run Date: 08/31/2008 Sample ID: WG281247-12

Instrument ID: HPMS11 Run Time: 00:43 Method: 8260B

File ID: 11M53185 Analyst: MES QC Key: STD

ICal Workgroup: WG281247 Cal ID: HPMS11 - 30-AUG-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	21.5	ug/L	0.326	7.50	30	
2-Hexanone		20.0	20.2	ug/L	0.143	1.10	30	
Hexachlorobutadiene		20.0	21.8	ug/L	0.323	8.90	30	
Isopropylbenzene		20.0	19.5	ug/L	1.22	2.40	30	
p-Isopropyltoluene		20.0	21.8	ug/L	2.28	8.90	30	
4-Methyl-2-Pentanone		20.0	19.7	ug/L	0.0704	1.60	30	
Methylene Chloride		20.0	20.1	ug/L	0.238	0.600	30	
Naphthalene		20.0	21.5	ug/L	1.76	7.30	30	
n-Propylbenzene		20.0	22.0	ug/L	2.87	10.2	30	
Styrene		20.0	21.8	ug/L	0.861	9.20	30	
1,1,1,2-Tetrachloroethane		20.0	20.9	ug/L	0.297	4.60	30	
Tetrachloroethene		20.0	22.9	ug/L	0.236	14.6	30	
1,2,3-Trichlorobenzene		20.0	20.8	ug/L	0.789	4.10	30	
1,2,4-Trichlorobenzene		20.0	21.2	ug/L	0.874	5.80	30	
1,1,1-Trichloroethane		20.0	20.8	ug/L	0.421	4.10	30	
1,1,2-Trichloroethane		20.0	20.8	ug/L	0.201	4.10	30	
Trichloroethene		20.0	21.5	ug/L	0.247	7.50	30	
Trichlorofluoromethane		20.0	20.2	ug/L	0.487	1.00	30	
1,2,3-Trichloropropane		20.0	19.7	ug/L	0.137	1.30	30	
1,2,4-Trimethylbenzene		20.0	22.2	ug/L	2.22	11.0	30	
1,3,5-Trimethylbenzene		20.0	22.3	ug/L	2.11	11.4	30	
Vinyl Acetate		20.0	10.4	ug/L	0.0720	47.9	40	*
o-Xylene		20.0	22.3	ug/L	0.507	11.5	30	
m-,p-Xylene		40.0	44.3	ug/L	0.527	10.7	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

Microbac®

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115621

Login Number: L08090269 Run Date: 09/16/2008 Sample ID: WG282477-02

Instrument ID: HPMS11 Run Time: 18:58 Method: 8260B

File ID: 11M53593 Analyst: FJB QC Key: STD

Workgroup (AAB#): WG282478 Cal ID: HPMS11 - 30-AUG-08

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	52.1	ug/L	0.466	4.14	20	
1,1-Dichloroethene	CCC	50.0	56.0	ug/L	0.468	12.0	20	
1,2-Dichloropropane	CCC	50.0	47.1	ug/L	0.234	5.76	20	
Ethylbenzene	CCC	50.0	58.6	ug/L	0.446	17.1	20	
Toluene	CCC	50.0	53.0	ug/L	1.17	5.95	20	
Vinyl Chloride	CCC	50.0	52.0	ug/L	0.245	4.04	20	
Bromoform	SPCC	50.0	53.0	ug/L	0.182	6.00	40	
Chlorobenzene	SPCC	50.0	54.3	ug/L	0.803	8.52	40	
Chloromethane	SPCC	50.0	40.3	ug/L	0.270	19.3	40	
1,1-Dichloroethane	SPCC	50.0	50.5	ug/L	0.505	0.994	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	46.3	ug/L	0.368	7.31	40	
Acetone		50.0	46.0	ug/L	0.0572	7.99	40	
Benzene		50.0	49.9	ug/L	0.824	0.279	40	
Bromobenzene		50.0	54.5	ug/L	0.610	9.09	40	
Bromochloromethane		50.0	48.4	ug/L	0.139	3.26	40	
Bromodichloromethane		50.0	52.6	ug/L	0.340	5.24	40	
Bromomethane		50.0	32.7	ug/L	0.0974	34.5	40	
2-Butanone		50.0	42.9	ug/L	0.0679	14.3	40	
n-Butylbenzene		50.0	58.2	ug/L	2.24	16.5	40	
sec-Butylbenzene		50.0	59.0	ug/L	2.79	17.9	40	
tert-Butylbenzene		50.0	57.8	ug/L	0.452	15.6	40	
Carbon Disulfide		50.0	49.5	ug/L	0.682	1.00	40	
Carbon Tetrachloride		50.0	59.7	ug/L	0.418	19.4	40	
Dibromochloromethane		50.0	56.5	ug/L	0.312	13.1	40	
Chloroethane		50.0	46.3	ug/L	0.173	7.46	40	
2-Chloroethyl Vinyl Ether		50.0	46.6	ug/L	0.117	6.78	40	
2-Chlorotoluene		50.0	57.9	ug/L	1.96	15.7	40	
4-Chlorotoluene		50.0	55.0	ug/L	1.92	10.0	40	
1,2-Dibromo-3-Chloropropane		50.0	51.3	ug/L	0.0964	2.52	40	
1,2-Dibromoethane		50.0	53.1	ug/L	0.208	6.11	40	
Dibromomethane		50.0	52.1	ug/L	0.118	4.10	40	
1,2-Dichlorobenzene		50.0	54.3	ug/L	1.14	8.63	40	
1,3-Dichlorobenzene		50.0	54.6	ug/L	1.23	9.14	40	
1,4-Dichlorobenzene		50.0	53.5	ug/L	1.25	6.93	40	
Dichlorodifluoromethane		50.0	55.2	ug/L	0.365	10.3	40	
1,2-Dichloroethane		50.0	52.0	ug/L	0.429	3.99	40	
cis-1,2-Dichloroethene		50.0	51.1	ug/L	0.233	2.16	40	
trans-1,2-Dichloroethene		50.0	54.3	ug/L	0.226	8.59	40	
1,3-Dichloropropane		50.0	49.8	ug/L	0.366	0.416	40	
2,2-Dichloropropane		50.0	56.6	ug/L	0.455	13.3	40	
cis-1,3-Dichloropropene		50.0	50.3	ug/L	0.345	0.572	40	
trans-1,3-Dichloropropene		50.0	56.7	ug/L	0.453	13.3	40	

CCV - Modified 03/05/2008

PDF File ID: 1200959

Report generated 09/18/2008 16:01

Microbac®

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115622

Login Number: L08090269 Run Date: 09/16/2008 Sample ID: WG282477-02

Instrument ID: HPMS11 Run Time: 18:58 Method: 8260B

File ID: 11M53593 Analyst: FJB QC Key: STD

Workgroup (AAB#): WG282478 Cal ID: HPMS11 - 30-AUG-08

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	54.9	ug/L	0.333	9.75	40	
2-Hexanone		50.0	48.0	ug/L	0.136	3.95	40	
Hexachlorobutadiene		50.0	62.3	ug/L	0.369	24.6	40	
Isopropylbenzene		50.0	59.0	ug/L	1.47	18.0	40	
p-Isopropyltoluene		50.0	60.3	ug/L	2.52	20.6	40	
4-Methyl-2-Pentanone		50.0	42.9	ug/L	0.0614	14.1	40	
Methylene Chloride		50.0	46.5	ug/L	0.214	6.95	40	
Naphthalene		50.0	45.1	ug/L	1.48	9.85	40	
n-Propylbenzene		50.0	58.4	ug/L	3.05	16.8	40	
Styrene		50.0	57.4	ug/L	0.904	14.7	40	
1,1,1,2-Tetrachloroethane		50.0	56.9	ug/L	0.323	13.8	40	
Tetrachloroethene		50.0	60.2	ug/L	0.248	20.4	40	
1,2,3-Trichlorobenzene		50.0	49.5	ug/L	0.750	1.07	40	
1,2,4-Trichlorobenzene		50.0	50.9	ug/L	0.841	1.87	40	
1,1,1-Trichloroethane		50.0	56.1	ug/L	0.454	12.1	40	
1,1,2-Trichloroethane		50.0	50.0	ug/L	0.193	0.0806	40	
Trichloroethene		50.0	52.1	ug/L	0.240	4.20	40	
Trichlorofluoromethane		50.0	56.8	ug/L	0.548	13.5	40	
1,2,3-Trichloropropane		50.0	50.2	ug/L	0.137	0.476	40	
1,2,4-Trimethylbenzene		50.0	58.5	ug/L	2.34	16.9	40	
1,3,5-Trimethylbenzene		50.0	60.2	ug/L	2.28	20.3	40	
Vinyl Acetate		50.0	101	ug/L	0.338	101	40	*
o-Xylene		50.0	58.4	ug/L	0.532	16.9	40	
m-,p-Xylene		100	116	ug/L	0.554	16.5	40	
1,2-Dichloroethene		100	105	ug/L	0.230	5.37	40	
Xylenes		150	175	ug/L	0.543	16.6	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

Microbac®

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00115623

Login Number: L08090269
Instrument ID: HPMS11
Workgroup (AAB#): WG282478

CCV Number: WG282477-02
CAL ID: HPMS11-30-AUG-08
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG282477-02	NA	NA	263282	456827	607283
Upper Limit	NA	NA	526564	913654	1214566
Lower Limit	NA	NA	131641	228414	303642
L08090269-01	1.00	01	211642	412636	549025
L08090269-02	1.00	01	201214	389517	515132
L08090269-03	1.00	01	198190	386346	516923
L08090269-04	2.00	DL01	200156	381829	506291
L08090269-05	1.00	01	192369	367765	493612
L08090269-06	1.00	01	191154	371802	489205
L08090269-07	1.00	01	234402	446823	583107
WG282478-01	1.00	01	209697	406318	539424
WG282478-02	1.00	01	240159	436472	565626
WG282478-03	1.00	01	249705	457226	595178

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

Microbac®

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

00115624

Login Number:L08090269
Instrument ID:HPMS11
Workgroup (AAB#):WG282478

CCV Number:WG282477-02
CAL ID: HPMS11-30-AUG-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG282477-02	NA	NA	16.52	13.73	10.11
Upper Limit	NA	NA	17.02	14.23	10.61
Lower Limit	NA	NA	16.02	13.23	9.61
L08090269-01	1.00	01	16.523	13.731	10.112
L08090269-02	1.00	01	16.523	13.721	10.112
L08090269-03	1.00	01	16.523	13.731	10.112
L08090269-04	2.00	DL01	16.523	13.721	10.112
L08090269-05	1.00	01	16.523	13.721	10.112
L08090269-06	1.00	01	16.523	13.731	10.112
L08090269-07	1.00	01	16.523	13.721	10.112
WG282478-01	1.00	01	16.523	13.721	10.112
WG282478-02	1.00	01	16.523	13.721	10.112
WG282478-03	1.00	01	16.523	13.721	10.112

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

Microbac®

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
September 19, 2008

ADC – ANTHONY D. CANTER	AJF – AMANDA J. FICKIESEN	ALB – ANNIE L. BROWN
AM – ALISON J. MILLER	AML – ANTHONY M. LONG	BRG – BRENDA R. GREGORY
CAA – CASSIE A. AUGENSTEIN	CAF – CHERYL A. FLOWERS	CAH – CHARLES A. HALL
CEB – CHAD E. BARNES	CLC – CHRYS L. CRAWFORD	CLW – CHARISSA L. WINTERS
CMS – CRYSTAL M. STEPHENS	CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL
CTB – CHRIS T. BUCINA	DDE – DEBRA D. ELLIOTT	DEL – DON E. LIGHTFRITZ
DEV – DAVID E. VANDENBERG	DGB – DOUGLAS G. BUTCHER	DIH – DEANNA I. HESSON
DLB – DAVID L. BUMGARNER	DLP – DOROTHY L. PAYNE	DLR – DIANNA L. RAUCH
DR – DEANNA ROBERTS	DSF – DEBRA S. FREDERICK	EAB – EDDIE A. BYERS
ECL – ERIC C. LAWSON	ED – EMILY E. DECKER	EDA – ERIN D. AGEE
EDH – ETHAN D. MORRIS	ERP – ERIN R. PORTER	FJB – FRANCES J. BOLDEN
HAV – HEMA VILASAGAR	HJR – HOLLY J. REED	JBK – JEREMY B. KINNEY
JC – JOHN L. CONLEY	JDH – JUSTIN D. HESSON	JKP – JACQUELINE K. PARSONS
JKT – JANE K. THOMPSON	JWR – JOHN W. RICHARDS	JWS – JACK W. SHEAVES
JYH – JI Y. HU	KEB – KATHRYN E. BARNES	KHR – KIM H. RHODES
KJW – KATIE J. WIEFERICH	KRA – KATHY R. ALBERTSON	LKN – LINDA K. NEDEFF
LSB – LESLIE S. BUCINA	MDA – MIKE D. ALBERTSON	MDC – MICHAEL D. COCHRAN
MES – MARY E. SCHILLING	MMB – MAREN M. BEERY	MRT – MICHELLE R. TAYLOR
MSW – MATT S. WILSON	NPM – NATHANIEL P. MILLER	PDM – PIERCE D. MORRIS
RAH – ROY A. HALSTEAD	RB – ROBERT BUCHANAN	REK – ROBERT E. KYER
RLK – ROBIN L. KLINGER	RWC – RODNEY W. CAMPBELL	SAV – SARAH A. VANDENBERG
SDH – SHANA D. HINYARD	SDL – SHELLY D. LENT	SLM – STEPHANIE L. MOSSBURG
SLP – SHERI L. PFALZGRAF	SMH – SHAUNA M. HYDE	TDH – TRICIA D. HUCK
TIP – TAE I. PARRISH	TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS
VC – VICKI COLLIER	WTD – WADE T. DELONG	

Microbac Laboratories Inc.
List of Valid Qualifiers
September 19, 2008

00115627

Qualkey: STD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
B3	Target analyte detected in calibration blank at or above the method reporting limit
C	Confirmed by GC/MS
CG	Confluent growth
D1	Sample required dilution due to matrix.
D2	Sample required dilution due to high concenration of target analyte.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E1	Concentration estimated. Analyte exceeded calibration range. Insufficient sample for reanalysis.
E2	Concentration estimated. Analyte exceeded calibration range. Reanalysis not performed due to matrix.
E3	Concentration estimated. Analyte exceeded calibration range. Reanalysis not performed due to holding time requirements
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
FL	Free Liquid
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
M1	Matrix spike recovery was high; the assocated blank spike recovery was acceptable.
M2	Matrix spike recovery was low; the assocated blank spike recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration is disproportionate to the spike level.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria fail. See narrative.
Q1	Sample integraity was not maintained. See report narrative.
QNS	Quantity of sample not sufficient to perform analysis
R1	Duplicate RPD/RSD exceeded the method acceptance limit.
R2	Duplicate RPD/RSD exceeded the laboratory acceptance limit.
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Undetected; the concentration is below the reported MDL.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.
V2	CCV recovery was above method acceptance limits. Insufficient volume for sample reanalysis.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

Microbac®

Microbac Laboratories Inc.
List of Valid Qualifiers
September 19, 2008

00115628

Qualkey: STD

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

Microbac®

00115629

Shaw® Shaw Environmental, Inc.

3010 Briarpark Drive, Suite 4N
Houston, TX 77042 (713) 996-4400

CHAIN-OF-CUSTODY

No. 10450

Laboratory Name: MICROBAC Address: 158 STARLITE DR. MARIETTA, OH. Contact: Stephanie MOSSBURG

Project Name: LHAAP Project Location: KARNACK, TX.

Project No.: 117591.0008A105 Project Contact: Kay Everett Project Telephone No.: 713-996-4421

Point of contact: Scott Beesinger Telephone No. 903-679-3448

Project Manager/Supervisor: Praveen Srivastav

Analysis and Method Desired (Indicate separate containers)

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOA							Remarks
1	12WW22-090808	9/8/08	9:15		✓	W	Groundwater, Site 12	2	✓							
2	12WW22-090808-FD	9/8/08	9:15		✓	W	Groundwater, Site 12	2	✓							
3	12WW20-090808	9/8/08	10:30		✓	W	Groundwater, Site 12	2	✓							
4	12WW24-091108	9/11/08	8:55		✓	W	Groundwater, Site 12	2	✓							
5	12WW21-091108	9/11/08	10:00		✓	W	Groundwater, Site 12	2	✓							
6	12WW23-091108	9/11/08	11:15		✓	W	Groundwater, Site 12	2	✓							
7	Trip Blanks	9/11/08						2	✓							
8																
9																
10																

Transfers Relinquished By (Signature)	Date/Time	Transfers Accepted By (Signature)	Date/Time
Scott Beesinger	9/11/08 12:00		
		Laboratory	9/12/08 925

Special Instructions

FedEx Airbill No.:

Sampler's Signature: Scott Beesinger

TAT: ✓ Standard ____ Rush Due: ____ Seals Intact? ____ Y ____ N Received Good Condition ____ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Microbac Laboratories, Inc. **SAMPLE RECEIPT FORM** B9084- 826-Cou 00115630

158 Starlite Drive
Marietta, OH 45750
(740) 373-4071

(RK)

Client:	~~Microbac~~ Shaw
Workorder Number:	B ~~9190~~ (?) 9084
Date Received:	9-12-08
Delivered by:	( ) Fedx (✓) UPS ( ) Client ( ) Courier **Time:** 925
Opened by:	BLK
IR Temp Gun:	(✓) D ( ) G
Logged by:	RLK L 0809C269

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
2088	6	17 66V 725 0196871436	10450	water

Inspection Checklist	**Y**	**N**	**NA**	**Discrepancy ID**
Were shipping coolers sealed?	✓			
Were custody seals intact?	✓			
Were cooler temperatures in range of 0 - 6?	✓			
Was ice present?	✓			
Were COC's received/ information complete/signed and dated?	✓			
Were sample containers and labels intact and match COC?	✓			
Were the correct containers and volumes received?	✓			
Were correct preservatives used? (water only)			✓	
Were pH ranges acceptable? (voa's excluded)			✓	
Were VOA samples free of headspace (< 6mm)?	✓			
Were samples received within EPA hold times?	✓			

Discrepancy/Comments/Other Problems

Distribution

Name of Microbac representative:	
Client/Company:	
Person Contacted:	
Date contacted:	

Resolution/other comments:

Microbac Laboratories Inc.

00115631

Internal Chain of Custody Report

Login: L08090269
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 19-SEP-2008

Samplenum	Container ID	Products
L08090269-04	499437	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	12-SEP-2008 16:20	RLK	
2	ANALYZ	V1	ORG4	15-SEP-2008 09:47	MRT	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	12-SEP-2008 16:20	RLK	
2	ANALYZ	V1	ORG4	15-SEP-2008 09:47	MRT	ERE

Samplenum	Container ID	Products
L08090269-02	499435	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	12-SEP-2008 16:20	RLK	
2	ANALYZ	V1	ORG4	15-SEP-2008 09:46	MRT	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	12-SEP-2008 16:20	RLK	
2	ANALYZ	V1	ORG4	15-SEP-2008 09:47	MRT	ERE

Samplenum	Container ID	Products
L08090269-07	499440	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	12-SEP-2008 16:20	RLK	
2	ANALYZ	V1	ORG4	15-SEP-2008 09:47	MRT	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	12-SEP-2008 16:20	RLK	
2	ANALYZ	V1	ORG4	15-SEP-2008 09:47	MRT	ERE

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac®

Microbac Laboratories Inc.

00115632

Internal Chain of Custody Report

Login: L08090269
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 19-SEP-2008

Samplenum	Container ID	Products
L08090269-01	499434	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	12-SEP-2008 16:20	RLK	
2	ANALYZ	V1	ORG4	15-SEP-2008 09:46	MRT	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	12-SEP-2008 16:20	RLK	
2	ANALYZ	V1	ORG4	15-SEP-2008 09:46	MRT	ERE

Samplenum	Container ID	Products
L08090269-05	499438	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	12-SEP-2008 16:20	RLK	
2	ANALYZ	V1	ORG4	15-SEP-2008 09:47	MRT	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	12-SEP-2008 16:20	RLK	
2	ANALYZ	V1	ORG4	15-SEP-2008 09:47	MRT	ERE

Samplenum	Container ID	Products
L08090269-06	499439	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	12-SEP-2008 16:20	RLK	
2	ANALYZ	V1	ORG4	15-SEP-2008 09:47	MRT	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	12-SEP-2008 16:20	RLK	
2	ANALYZ	V1	ORG4	15-SEP-2008 09:47	MRT	ERE

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac®

Microbac Laboratories Inc.

00115633

Internal Chain of Custody Report

Login: L08090269
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 19-SEP-2008

Samplenum	Container ID	Products
L08090269-03	499436	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	12-SEP-2008 16:20	RLK	
2	ANALYZ	V1	ORG4	15-SEP-2008 09:47	MRT	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	12-SEP-2008 16:20	RLK	
2	ANALYZ	V1	ORG4	15-SEP-2008 09:47	MRT	ERE

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

158 Starlite Drive, Marietta, OH 45750 ● T:740-373-4071 ● F:740-373-4835 ● http://www.microbac.com

Laboratory Report Number: L09020136

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	*Team Chemist/Data Specialist*	kalbertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	smossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	tlong@microbac.com
Brenda Gregory	*Client Services Specialist*	bgregory@microbac.com
Amanda Fickiesen	*Client Services Specialist*	afickiesen@microbac.com
Annie Brown	*Client Services Specialist*	abrown@microbac.com
Jacqueline Parsons	*Team Assistant*	jparsons@microbac.com

This report was reviewed on February 12, 2009.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

This report was certified on February 12, 2009.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac (OVD) LQAP
This report contains a total of 65 pages.

Look closer. Go further. Do more.

Microbac REPORT L09020136
PREPARED FOR Shaw E I, Inc.
WORK ID:

1.0 Introduction 3
2.1 Volatiles Data 9
2.1.1 Volatiles GCMS Data (8260) 10
2.1.1.1 Summary Data 11
2.1.1.2 QC Summary Data 25
3.0 Attachments 58

1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09020136

CHAIN OF CUSTODY: The chain of custody number was 5770.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 3 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 12-FEB-09

Stephanie Moosburg

Laboratory Data Package Cover Page

00115638

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	February 12, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09020136
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	294549
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	February 12, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		✓			1
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				3
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?		✓			2
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT

ER# - Description

#1: The RPD for vinyl chloride exceeded the upper advisory limit.

#2: Vinyl acetate was below the lower control limit.

#3: Elevated reporting limits for sample 03 due to the presence of target analytes.

Footnotes:

(1) NA = Not applicable to method or project

(2) NR = Not reviewed

(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

00115645

L09020136

02/12/09 15:57

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW22-020409	L09020136-01	8260B	1	06-FEB-09
12WW20-020409	L09020136-02	8260B	1	06-FEB-09
12WW24-020409	L09020136-03	8260B	2	06-FEB-09
12WW23-020409	L09020136-04	8260B	1	06-FEB-09
12WW21-020409	L09020136-05	8260B	1	06-FEB-09
12WW21-020409-FD	L09020136-06	8260B	1	06-FEB-09

Microbac

Microbac Laboratories Inc.

Report Number: **L09020136**
Report Date : **February 12, 2009**

00115646

Sample Number: **L09020136-01**
Client ID: **12WW22-020409**
Matrix: **Water**
Workgroup Number: **WG294549**
Collect Date: **02/04/2009 08:31**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **WTD**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **02/10/2009 16:58**
Cal Date: **02/06/2009 14:52**
Run Date: **02/10/2009 16:58**
File ID: **11M57002**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Microbac®

Report Number: **L09020136**
Report Date : **February 12, 2009**

00115647

Sample Number: **L09020136-01**
Client ID: **12WW22-020409**
Matrix: **Water**
Workgroup Number: **WG294549**
Collect Date: **02/04/2009 08:31**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **WTD**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **02/10/2009 16:58**
Cal Date: **02/06/2009 14:52**
Run Date: **02/10/2009 16:58**
File ID: **11M57002**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	97.8	86	118	
1,2-Dichloroethane-d4	91.6	80	120	
Toluene-d8	97.8	88	110	
4-Bromofluorobenzene	107	86	115	

U Not detected at or above adjusted sample detection limit

Microbac®

Report Number: **L09020136**
Report Date : **February 12, 2009**

00115648

Sample Number: **L09020136-02**
Client ID: **12WW20-020409**
Matrix: **Water**
Workgroup Number: **WG294549**
Collect Date: **02/04/2009 09:33**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **WTD**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **02/10/2009 17:29**
Cal Date: **02/06/2009 14:52**
Run Date: **02/10/2009 17:29**
File ID: **11M57003**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3	0.378	J	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.818	J	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	1.18		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Microbac®

Report Number: **L09020136**
Report Date : **February 12, 2009**

00115649

Sample Number: **L09020136-02**
Client ID: **12WW20-020409**
Matrix: **Water**
Workgroup Number: **WG294549**
Collect Date: **02/04/2009 09:33**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **WTD**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **02/10/2009 17:29**
Cal Date: **02/06/2009 14:52**
Run Date: **02/10/2009 17:29**
File ID: **11M57003**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	98.5	86	118	
1,2-Dichloroethane-d4	92.4	80	120	
Toluene-d8	98.3	88	110	
4-Bromofluorobenzene	110	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Microbac®

Report Number: **L09020136**
Report Date : **February 12, 2009**

00115650

Sample Number: **L09020136-03**
Client ID: **12WW24-020409**
Matrix: **Water**
Workgroup Number: **WG294549**
Collect Date: **02/04/2009 10:44**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **WTD**
Dilution: **2**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **02/10/2009 19:29**
Cal Date: **02/06/2009 14:52**
Run Date: **02/10/2009 19:29**
File ID: **11M57007**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	20.0	5.00
Benzene	71-43-2	1.08	J	2.00	0.250
Bromobenzene	108-86-1		U	2.00	0.250
Bromochloromethane	74-97-5		U	2.00	0.400
Bromodichloromethane	75-27-4		U	2.00	0.500
Bromoform	75-25-2		U	2.00	1.00
Bromomethane	74-83-9		U	2.00	1.00
2-Butanone	78-93-3		U	20.0	5.00
n-Butylbenzene	104-51-8		U	2.00	0.500
sec-Butylbenzene	135-98-8		U	2.00	0.500
tert-Butylbenzene	98-06-6		U	2.00	0.500
Carbon disulfide	75-15-0		U	2.00	1.00
Carbon tetrachloride	56-23-5		U	2.00	0.500
Chlorobenzene	108-90-7	14.4		2.00	0.250
Chlorodibromomethane	124-48-1		U	2.00	0.500
Chloroethane	75-00-3		U	2.00	1.00
2-Chloroethyl vinyl ether	110-75-8		U	20.0	4.00
Chloroform	67-66-3	0.550	J	2.00	0.250
Chloromethane	74-87-3	0.551	J	2.00	0.500
2-Chlorotoluene	95-49-8		U	2.00	0.250
4-Chlorotoluene	106-43-4		U	2.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	10.0	2.00
1,2-Dibromoethane	106-93-4		U	2.00	0.500
Dibromomethane	74-95-3		U	2.00	0.500
1,2-Dichlorobenzene	95-50-1		U	2.00	0.250
1,3-Dichlorobenzene	541-73-1		U	2.00	0.500
1,4-Dichlorobenzene	106-46-7	5.30		2.00	0.250
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
1,1-Dichloroethane	75-34-3	1.09	J	2.00	0.250
1,2-Dichloroethane	107-06-2		U	2.00	0.500
1,1-Dichloroethene	75-35-4		U	2.00	1.00
cis-1,2-Dichloroethene	156-59-2	96.2		2.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	2.00	0.500
1,2-Dichloropropane	78-87-5		U	2.00	0.400
1,3-Dichloropropane	142-28-9		U	2.00	0.400
2,2-Dichloropropane	594-20-7		U	2.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	2.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	2.00	1.00
1,1-Dichloropropene	563-58-6		U	2.00	0.500
Ethylbenzene	100-41-4		U	2.00	0.500
2-Hexanone	591-78-6		U	20.0	5.00
Hexachlorobutadiene	87-68-3		U	2.00	0.500
Isopropylbenzene	98-82-8		U	2.00	0.500
p-Isopropyltoluene	99-87-6		U	2.00	0.500
4-Methyl-2-pentanone	108-10-1		U	20.0	5.00
Methylene chloride	75-09-2		U	10.0	0.500
Naphthalene	91-20-3		U	2.00	0.400
n-Propylbenzene	103-65-1		U	2.00	0.250
Styrene	100-42-5		U	2.00	0.250
1,1,1,2-Tetrachloroethane	630-20-6		U	2.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	2.00	0.250
Tetrachloroethene	127-18-4	1.09	J	2.00	0.500
Toluene	108-88-3		U	2.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	2.00	0.300
1,2,4-Trichlorobenzene	120-82-1		U	2.00	0.400
1,1,1-Trichloroethane	71-55-6		U	2.00	0.500
1,1,2-Trichloroethane	79-00-5		U	2.00	0.500
Trichloroethene	79-01-6	334		2.00	0.500
Trichlorofluoromethane	75-69-4		U	2.00	0.500

Microbac®

Report Number: **L09020136**
Report Date : **February 12, 2009**

00115651

Sample Number: **L09020136-03**
Client ID: **12WW24-020409**
Matrix: **Water**
Workgroup Number: **WG294549**
Collect Date: **02/04/2009 10:44**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **WTD**
Dilution: **2**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **02/10/2009 19:29**
Cal Date: **02/06/2009 14:52**
Run Date: **02/10/2009 19:29**
File ID: **11M57007**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	2.00	1.00
1,2,4-Trimethylbenzene	95-63-6		U	2.00	0.500
1,3,5-Trimethylbenzene	108-67-8		U	2.00	0.500
Vinyl acetate	108-05-4		U	20.0	5.00
Vinyl chloride	75-01-4	3.60		2.00	0.500
o-Xylene	95-47-6		U	2.00	0.500
m-,p-Xylene	136777-61-2		U	2.00	1.00

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	96.9	86	118	
1,2-Dichloroethane-d4	88.8	80	120	
Toluene-d8	97.9	88	110	
4-Bromofluorobenzene	110	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Microbac®

Report Number: **L09020136**
Report Date : **February 12, 2009**

00115652

Sample Number: **L09020136-04**
Client ID: **12WW23-020409**
Matrix: **Water**
Workgroup Number: **WG294549**
Collect Date: **02/04/2009 13:48**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **WTD**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **02/10/2009 17:59**
Cal Date: **02/06/2009 14:52**
Run Date: **02/10/2009 17:59**
File ID: **11M57004**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Microbac®

Report Number: **L09020136**
Report Date : **February 12, 2009**

00115653

Sample Number: **L09020136-04**
Client ID: **12WW23-020409**
Matrix: **Water**
Workgroup Number: **WG294549**
Collect Date: **02/04/2009 13:48**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **WTD**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **02/10/2009 17:59**
Cal Date: **02/06/2009 14:52**
Run Date: **02/10/2009 17:59**
File ID: **11M57004**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	98.9	86	118	
1,2-Dichloroethane-d4	91.9	80	120	
Toluene-d8	98.4	88	110	
4-Bromofluorobenzene	109	86	115	

U Not detected at or above adjusted sample detection limit

Microbac®

Report Number: **L09020136**
Report Date : **February 12, 2009**

00115654

Sample Number: **L09020136-05**
Client ID: **12WW21-020409**
Matrix: **Water**
Workgroup Number: **WG294549**
Collect Date: **02/04/2009 15:21**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **WTD**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **02/10/2009 18:29**
Cal Date: **02/06/2009 14:52**
Run Date: **02/10/2009 18:29**
File ID: **11M57005**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Microbac®

Report Number: **L09020136**
Report Date : **February 12, 2009**

00115655

Sample Number: **L09020136-05**
Client ID: **12WW21-020409**
Matrix: **Water**
Workgroup Number: **WG294549**
Collect Date: **02/04/2009 15:21**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **WTD**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **02/10/2009 18:29**
Cal Date: **02/06/2009 14:52**
Run Date: **02/10/2009 18:29**
File ID: **11M57005**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	98.0	86	118	
1,2-Dichloroethane-d4	91.5	80	120	
Toluene-d8	98.2	88	110	
4-Bromofluorobenzene	110	86	115	

U Not detected at or above adjusted sample detection limit

Microbac®

Report Number: **L09020136**
Report Date : **February 12, 2009**

00115656

Sample Number: **L09020136-06**
Client ID: **12WW21-020409-FD**
Matrix: **Water**
Workgroup Number: **WG294549**
Collect Date: **02/04/2009 15:21**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **WTD**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **02/10/2009 18:59**
Cal Date: **02/06/2009 14:52**
Run Date: **02/10/2009 18:59**
File ID: **11M57006**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Microbac®

Report Number: **L09020136**
Report Date : **February 12, 2009**

00115657

Sample Number: **L09020136-06**
Client ID: **12WW21-020409-FD**
Matrix: **Water**
Workgroup Number: **WG294549**
Collect Date: **02/04/2009 15:21**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **WTD**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **02/10/2009 18:59**
Cal Date: **02/06/2009 14:52**
Run Date: **02/10/2009 18:59**
File ID: **11M57006**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	98.1	86	118	
1,2-Dichloroethane-d4	91.1	80	120	
Toluene-d8	99.3	88	110	
4-Bromofluorobenzene	108	86	115	

U Not detected at or above adjusted sample detection limit

Microbac®

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a\left(c - y\right)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS11 Dataset: 020609
Analyst1: WTD Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 12
Method: 5030B/5035 SOP: PAT01 Rev: 11

Maintenance Log ID: 27562

Internal Standard: STD31017 Surrogate Standard: STD31019
CCV: STD31193 LCS: STD31090 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG294332

Comments: First calibration after installation of 0.6mm id draw out plate.

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	11M56945	WG294332-01 50ng BFB STD 8260	NA	1	1	STD30703	02/06/09 09:21
2	11M56946	SYSTEM BLANK	NA	1	1		02/06/09 09:49
3	11M56947	WG294332-02 0.3ug/L STD 8260	NA	1	1	STD31193	02/06/09 10:22
4	11M56948	WG294332-03 0.4ug/L STD 8260	NA	1	1	STD31193	02/06/09 10:52
5	11M56949	WG294332-04 1.0ug/L STD 8260	NA	1	1	STD31193	02/06/09 11:22
6	11M56950	WG294332-05 2.0ug/L STD 8260	NA	1	1	STD31193	02/06/09 11:52
7	11M56951	WG294332-06 5.0ug/L STD 8260	NA	1	1	STD31193	02/06/09 12:22
8	11M56952	WG294332-07 20ug/L STD 8260	NA	1	1	STD31193	02/06/09 12:52
9	11M56953	WG294332-08 50ug/L STD 8260	NA	1	1	STD31193	02/06/09 13:22
10	11M56954	WG294332-09 100ug/L STD 8260	NA	1	1	STD31193	02/06/09 13:52
11	11M56955	WG294332-10 200ug/L STD 8260	NA	1	1	STD31193	02/06/09 14:22
12	11M56956	WG294332-11 300ug/L STD 8260	NA	1	1	STD31193	02/06/09 14:52
13	11M56957	SYSTEM BLANK	NA	1	1		02/06/09 15:22
14	11M56958	SYSTEM BLANK	NA	1	1		02/06/09 15:53
15	11M56959	SYSTEM BLANK	NA	1	1		02/06/09 16:24
16	11M56960	WG294332-12 20ug/L ALT SRC	NA	1	1	STD31090	02/06/09 16:54
17	11M56961	SYSTEM BLANK	NA	1	1		02/06/09 17:25
18	11M56962	SYSTEM BLANK	NA	1	1		02/06/09 17:56

Comments

Seq.	Rerun	Dil.	Reason	Analytes
16				
File ID: 11M56960				
			Oxygenates spiked at 50ug/L. ALT Source OXY's reran on 10-FEB-2009.	

Approved: February 12, 2009

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS11 Dataset: 021009
Analyst1: WTD Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 12
Method: 5030B/5035 SOP: PAT01 Rev: 11

Maintenance Log ID: 27593

Internal Standard: STD31017 Surrogate Standard: STD31019
CCV: STD31246 LCS: STD31203 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: 294549

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	11M56989	WG294548-01 50ng BFB STD 8260	NA	1	1	STD31210	02/10/09 10:29
2	11M56990	WG294332-12 OXY ALT SOURCE	NA	1	1	STD31098	02/10/09 10:53
3	11M56991	WG294548-02 50ug/L STD 8260	NA	1	1	STD31193	02/10/09 11:23
4	11M56992	WG294549-01 BLANK 8260	NA	1	1		02/10/09 11:57
5	11M56993	WG294549-01 BLANK 8260	NA	1	1		02/10/09 12:27
6	11M56994	WG294549-02 20ug/L LCS 8260	NA	1	1	STD31090	02/10/09 12:57
7	11M56995	WG294549-03 20ug/L LCSD 8260	NA	1	1	STD31090	02/10/09 13:27
8	11M56996	SYSTEM BLANK	NA	1	1		02/10/09 13:57
9	11M56997	L09020114-08 A 826-SPE	<2	1	1		02/10/09 14:27
10	11M56998	L09020114-10 A 826-SPE	<2	1	1		02/10/09 14:57
11	11M56999	L09020114-11 A 826-SPE	<2	1	1		02/10/09 15:28
12	11M57000	L09020114-12 A 826-SPE	<2	1	1		02/10/09 15:58
13	11M57001	L09020114-13 A 826-SPE	<2	1	1		02/10/09 16:28
14	11M57002	L09020136-01 A 826-SPE	<2	1	1		02/10/09 16:58
15	11M57003	L09020136-02 A 826-SPE	<2	1	1		02/10/09 17:29
16	11M57004	L09020136-04 A 826-SPE	<2	1	1		02/10/09 17:59
17	11M57005	L09020136-05 A 826-SPE	<2	1	1		02/10/09 18:29
18	11M57006	L09020136-06 A 826-SPE	<2	1	1		02/10/09 18:59
19	11M57007	L09020136-03 A 2X 826-SPE	<2	1	2		02/10/09 19:29
20	11M57008	L09020123-01 A 100X 826-SPE	<2	1	100		02/10/09 19:59
21	11M57009	L09020123-02 A 100X 826-SPE	<2	1	100		02/10/09 20:29
22	11M57010	SYSTEM BLANK	NA	1	1		02/10/09 20:59
23	11M57011	SYSTEM BLANK	NA	1	1		02/10/09 21:29

Comments

Seq.	Rerun	Dil.	Reason	Analytes
4	X		Carry-over contamination	
File ID: 11M56992				
	DNR			
20	X	1	Analyzed too dilute	
File ID: 11M57008				
21	X	1	Analyzed too dilute	

Approved: February 12, 2009

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS11 Dataset: 021009
Analyst1: WTD Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 12
Method: 5030B/5035 SOP: PAT01 Rev: 11

Maintenance Log ID: 27593

Internal Standard: STD31017 Surrogate Standard: STD31019
CCV: STD31246 LCS: STD31203 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: 294549

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 11M57009				

Approved: February 12, 2009

Checklist ID: 35906

00115664

Microbac Laboratories Inc.

Data Checklist

Date: 06-FEB-2009

Analyst: WTD

Analyst: NA

Method: 8260

Instrument: HPMS11

Curve Workgroup: NA

Runlog ID: 26468

Analytical Workgroups: 294332

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	
Reruns	
Manual Integrations	X
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	WTD
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
10-FEB-2009

Secondary Reviewer:
12-FEB-2009

CHECKLIST1 - Modified 03/05/2008

Generated: FEB-12-2009 10:18:30

Microbac®

Checklist ID: 35961

00115665

Microbac Laboratories Inc.

Data Checklist

Date: 10-FEB-2009

Analyst: WTD

Analyst: NA

Method: 8260

Instrument: HPMS11

Curve Workgroup: NA

Runlog ID: 26501

Analytical Workgroups: 294549

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	WTD
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
12-FEB-2009

Secondary Reviewer:
12-FEB-2009

CHECKLIST1 - Modified 03/05/2008

Generated: FEB-12-2009 13:26:33

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00115666

Analytical Method: 8260B

AAB#: WG294549

Login Number: L09020136

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW22-020409	02/04/09	02/06/09	02/10/09	14	6.35	02/10/09	14	6.35	
12WW24-020409	02/04/09	02/06/09	02/10/09	14	6.36	02/10/09	14	6.36	
12WW20-020409	02/04/09	02/06/09	02/10/09	14	6.33	02/10/09	14	6.33	
12WW21-020409-FD	02/04/09	02/06/09	02/10/09	14	6.15	02/10/09	14	6.15	
12WW21-020409	02/04/09	02/06/09	02/10/09	14	6.13	02/10/09	14	6.13	
12WW23-020409	02/04/09	02/06/09	02/10/09	14	6.17	02/10/09	14	6.17	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

Microbac®

Microbac Laboratories Inc.
SURROGATE STANDARDS

00115667

Login Number: L09020136
Instrument Id: HPMS11
Workgroup (AAB#): WG294549

Method: 8260
CAL ID: HPMS11-06-FEB-09
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L09020136-01	1.00	01	91.6	97.8	107	97.8
L09020136-02	1.00	01	92.4	98.5	110	98.3
L09020136-03	2.00	DL01	88.8	96.9	110	97.9
L09020136-04	1.00	01	91.9	98.9	109	98.4
L09020136-05	1.00	01	91.5	98.0	110	98.2
L09020136-06	1.00	01	91.1	98.1	108	99.3
WG294549-01	1.00	01	88.1	96.1	110	98.6
WG294549-02	1.00	01	91.2	99.1	105	97.0
WG294549-03	1.00	01	89.4	97.9	106	98.4

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1318577
Report generated: 02/12/2009 13:59

Microbac®

Microbac Laboratories Inc.

00115668

METHOD BLANK SUMMARY

Login Number: L09020136
Work Group: WG294549
Blank File ID: 11M56993
Blank Sample ID: WG294549-01
Prep Date: 02/10/09 12:27
Instrument ID: HPMS11
Analyzed Date: 02/10/09 12:27
Method: 8260B
Analyst: WTD

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG294549-02	11M56994	02/10/09 12:57	01
LCS2	WG294549-03	11M56995	02/10/09 13:27	01
12WW22-020409	L09020136-01	11M57002	02/10/09 16:58	01
12WW20-020409	L09020136-02	11M57003	02/10/09 17:29	01
12WW23-020409	L09020136-04	11M57004	02/10/09 17:59	01
12WW21-020409	L09020136-05	11M57005	02/10/09 18:29	01
12WW21-020409-FD	L09020136-06	11M57006	02/10/09 18:59	01
12WW24-020409	L09020136-03	11M57007	02/10/09 19:29	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1318570
Report generated 02/12/2009 13:59

Microbac®

Microbac Laboratories Inc.

METHOD BLANK REPORT

00115669

Login Number:L09020136 Prep Date:02/10/09 12:27 Sample ID:WG294549-01

Instrument ID:HPMS11 Run Date:02/10/09 12:27 Prep Method:5030B

File ID:11M56993 Analyst:WTD Method:8260B

Workgroup (AAB#):WG294549 Matrix:Water Units:ug/L

Contract #:DACA56-94-D-0020 Cal ID:HPMS11-06-FEB-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

Report Name:BLANK

PDF ID: 1318571

12-FEB-2009 13:59

Microbac®

Microbac Laboratories Inc.

METHOD BLANK REPORT

00115670

Login Number:L09020136 Prep Date:02/10/09 12:27 Sample ID:WG294549-01

Instrument ID:HPMS11 Run Date:02/10/09 12:27 Prep Method:5030B

File ID:11M56993 Analyst:WTD Method:8260B

Workgroup (AAB#):WG294549 Matrix:Water Units:ug/L

Contract #:DACA56-94-D-0020 Cal ID:HPMS11-06-FEB-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	96.1	86 - 118	PASS
1,2-Dichloroethane-d4	88.1	80 - 120	PASS
Toluene-d8	98.6	88 - 110	PASS
4-Bromofluorobenzene	110	86 - 115	PASS

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name:BLANK

PDF ID: 1318571

12-FEB-2009 13:59

Microbac®

Microbac Laboratories Inc.

LABORATORY CONTROL SAMPLE (LCS)

00115671

Login Number: L09020136 Analyst: WTD Prep Method: 5030B

Instrument ID: HPMS11 Matrix: Water Method: 8260B

Workgroup (AAB#): WG294549 Units: ug/L

QC Key: STD Lot #: STD31090

Sample ID: WG294549-02 LCS File ID: 11M56994 Run Date: 02/10/2009 12:57

Sample ID: WG294549-03 LCS2 File ID: 11M56995 Run Date: 02/10/2009 13:27

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	19.2	96.1	20.0	19.9	99.4	3.38	40 - 142	20	
Benzene	20.0	19.6	97.9	20.0	19.5	97.7	0.247	80 - 121	20	
Bromobenzene	20.0	19.9	99.4	20.0	19.9	99.6	0.205	80 - 120	20	
Bromochloromethane	20.0	21.5	107	20.0	21.1	105	1.95	65 - 130	20	
Bromodichloromethane	20.0	20.4	102	20.0	20.3	102	0.672	80 - 131	20	
Bromoform	20.0	17.8	89.2	20.0	17.6	88.2	1.10	70 - 130	20	
Bromomethane	20.0	23.8	119	20.0	23.2	116	2.58	30 - 145	20	
2-Butanone	20.0	23.9	120	20.0	24.1	120	0.700	30 - 150	20	
n-Butylbenzene	20.0	19.8	98.8	20.0	19.8	99.1	0.296	80 - 131	20	
sec-Butylbenzene	20.0	19.7	98.6	20.0	20.0	99.8	1.22	80 - 127	20	
tert-Butylbenzene	20.0	20.2	101	20.0	20.4	102	1.26	80 - 126	20	
Carbon disulfide	20.0	19.2	96.1	20.0	19.1	95.5	0.637	58 - 138	20	
Carbon tetrachloride	20.0	20.9	105	20.0	20.6	103	1.71	65 - 140	20	
Chlorobenzene	20.0	18.8	94.1	20.0	18.9	94.6	0.473	80 - 120	20	
Chlorodibromomethane	20.0	20.2	101	20.0	19.9	99.7	1.35	60 - 135	20	
Chloroethane	20.0	21.4	107	20.0	21.5	107	0.324	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	19.7	98.4	20.0	19.3	96.3	2.24	58 - 151	20	
Chloroform	20.0	19.8	98.8	20.0	19.9	99.5	0.729	80 - 125	20	
Chloromethane	20.0	18.0	90.1	20.0	19.1	95.7	5.97	40 - 125	20	
2-Chlorotoluene	20.0	19.9	99.5	20.0	20.1	100	0.958	80 - 127	20	
4-Chlorotoluene	20.0	19.0	94.8	20.0	18.8	93.8	1.08	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	17.9	89.6	20.0	18.2	90.9	1.49	50 - 130	20	
1,2-Dibromoethane	20.0	20.2	101	20.0	19.9	99.7	1.17	80 - 125	20	
Dibromomethane	20.0	20.8	104	20.0	20.2	101	2.47	75 - 125	20	
1,2-Dichlorobenzene	20.0	19.4	96.9	20.0	19.5	97.6	0.727	80 - 125	20	
1,3-Dichlorobenzene	20.0	19.0	95.0	20.0	19.3	96.4	1.51	80 - 120	20	
1,4-Dichlorobenzene	20.0	18.5	92.5	20.0	18.6	92.8	0.321	80 - 120	20	
Dichlorodifluoromethane	20.0	23.1	116	20.0	22.7	114	1.88	50 - 133	20	
1,1-Dichloroethane	20.0	20.2	101	20.0	20.2	101	0.310	80 - 125	20	
1,2-Dichloroethane	20.0	19.8	99.0	20.0	19.2	96.0	3.09	80 - 129	20	
1,1-Dichloroethene	20.0	19.8	99.2	20.0	19.5	97.7	1.43	80 - 132	20	
cis-1,2-Dichloroethene	20.0	20.7	104	20.0	20.2	101	2.55	70 - 125	20	
trans-1,2-Dichloroethene	20.0	19.4	97.1	20.0	19.4	97.1	0.0057	80 - 127	20	
1,2-Dichloropropane	20.0	20.1	101	20.0	20.1	100	0.122	80 - 120	20	
1,3-Dichloropropane	20.0	19.8	99.1	20.0	19.5	97.7	1.43	80 - 120	20	
2,2-Dichloropropane	20.0	21.0	105	20.0	20.6	103	1.71	80 - 133	20	
cis-1,3-Dichloropropene	20.0	19.8	99.0	20.0	19.4	97.0	2.05	70 - 130	20	
trans-1,3-Dichloropropene	20.0	17.9	89.5	20.0	17.9	89.3	0.230	80 - 130	20	
1,1-Dichloropropene	20.0	20.3	102	20.0	20.0	100	1.43	75 - 130	20	
Ethylbenzene	20.0	19.8	99.0	20.0	20.1	100	1.26	80 - 122	20	

LCS_LCS2 - Modified 03/06/2008

PDF File ID: 1318196

Report generated: 02/12/2009 13:59

Microbac®

Microbac Laboratories Inc.

LABORATORY CONTROL SAMPLE (LCS)

00115672

Login Number: L09020136 Analyst: WTD Prep Method: 5030B

Instrument ID: HPMS11 Matrix: Water Method: 8260B

Workgroup (AAB#): WG294549 Units: ug/L

QC Key: STD Lot #: STD31090

Sample ID: WG294549-02 LCS File ID: 11M56994 Run Date: 02/10/2009 12:57

Sample ID: WG294549-03 LCS2 File ID: 11M56995 Run Date: 02/10/2009 13:27

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	17.7	88.7	20.0	17.2	85.8	3.29	55 - 130	20	
Hexachlorobutadiene	20.0	19.1	95.7	20.0	19.6	97.8	2.23	72 - 132	20	
Isopropylbenzene	20.0	17.2	85.9	20.0	17.4	87.2	1.49	80 - 122	20	
p-Isopropyltoluene	20.0	19.2	96.1	20.0	19.4	96.8	0.672	80 - 122	20	
4-Methyl-2-pentanone	20.0	18.6	93.1	20.0	18.3	91.6	1.67	64 - 140	20	
Methylene chloride	20.0	19.7	98.7	20.0	19.7	98.5	0.212	80 - 123	20	
Naphthalene	20.0	19.5	97.7	20.0	19.4	97.0	0.687	59 - 149	20	
n-Propylbenzene	20.0	20.3	102	20.0	20.4	102	0.330	80 - 129	20	
Styrene	20.0	19.2	96.0	20.0	19.6	97.8	1.78	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	19.4	97.0	20.0	19.8	98.8	1.83	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	20.0	100	20.0	19.3	96.6	3.69	79 - 125	20	
Tetrachloroethene	20.0	19.2	95.9	20.0	19.3	96.6	0.776	80 - 124	20	
Toluene	20.0	19.6	98.2	20.0	19.7	98.5	0.364	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	18.8	94.1	20.0	18.7	93.3	0.809	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	19.7	98.7	20.0	19.5	97.5	1.31	65 - 135	20	
1,1,1-Trichloroethane	20.0	20.3	101	20.0	19.7	98.6	2.88	80 - 134	20	
1,1,2-Trichloroethane	20.0	20.4	102	20.0	20.0	100	1.91	80 - 125	20	
Trichloroethene	20.0	18.5	92.5	20.0	18.2	90.9	1.78	80 - 122	20	
Trichlorofluoromethane	20.0	20.3	102	20.0	20.1	101	1.17	62 - 151	20	
1,2,3-Trichloropropane	20.0	20.9	105	20.0	20.0	100	4.38	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	19.9	99.4	20.0	20.1	101	1.38	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	19.9	99.5	20.0	20.1	100	0.882	80 - 127	20	
Vinyl acetate	20.0	29.4	147	20.0	28.3	141	3.81	10 - 150	20	
Vinyl chloride	20.0	21.5	107	20.0	17.4	86.9	21.1	65 - 140	20	#
o-Xylene	20.0	19.5	97.6	20.0	19.6	98.2	0.690	80 - 122	20	
m-,p-Xylene	40.0	38.5	96.2	40.0	39.0	97.4	1.22	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	91.2	89.4	80 - 120	PASS
Dibromofluoromethane	99.1	97.9	86 - 118	PASS
4-Bromofluorobenzene	105	106	86 - 115	PASS
Toluene-d8	97.0	98.4	88 - 110	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008

PDF File ID: 1318196

Report generated: 02/12/2009 13:59

Microbac®

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

00115673

BFB

Login Number: L09020136
Instrument: HPMS11
Analyst: wtd
Workgroup: WG294332

Tune ID: WG294332-01
Run Date: 02/06/2009
Run Time: 09:21
File ID: 11M56945
Cal ID: HPMS11 -

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	28.2	10611	PASS
75.0	95.0	30.0	60.0	49.5	18606	PASS
95.0	95.0	100	100	100	37578	PASS
96.0	95.0	5.00	9.00	6.87	2581	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	75.5	28357	PASS
175	174	5.00	9.00	7.36	2087	PASS
176	174	95.0	101	98.1	27807	PASS
177	176	5.00	9.00	6.43	1788	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG294332-02	STD	01	02/06/2009 10:22	
WG294332-03	STD	01	02/06/2009 10:52	
WG294332-04	STD	01	02/06/2009 11:22	
WG294332-05	STD	01	02/06/2009 11:52	
WG294332-06	STD	01	02/06/2009 12:22	
WG294332-07	STD	01	02/06/2009 12:52	
WG294332-08	STD-CCV	01	02/06/2009 13:22	
WG294332-09	STD	01	02/06/2009 13:52	
WG294332-10	STD	01	02/06/2009 14:22	
WG294332-11	STD	01	02/06/2009 14:52	
WG294332-12	SSCV	01	02/06/2009 16:54	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1318574
Report generated 02/12/2009 13:59

Microbac®

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

00115674

BFB

Login Number: L09020136
Instrument: HPMS11
Analyst: WTD
Workgroup: WG294548

Tune ID: WG294548-01
Run Date: 02/10/2009
Run Time: 10:29
File ID: 11M56989
Cal ID: HPMS11-06-FEB-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	27.4	7156	PASS
75.0	95.0	30.0	60.0	49.6	12923	PASS
95.0	95.0	100	100	100	26072	PASS
96.0	95.0	5.00	9.00	6.94	1809	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	77.4	20179	PASS
175	174	5.00	9.00	7.47	1507	PASS
176	174	95.0	101	98.7	19916	PASS
177	176	5.00	9.00	6.47	1288	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG294332-12	SSCV	02	02/10/2009 10:53	
WG294548-02	CCV	01	02/10/2009 11:23	
WG294549-01	BLANK	01	02/10/2009 12:27	
WG294549-02	LCS	01	02/10/2009 12:57	
WG294549-03	LCS2	01	02/10/2009 13:27	
L09020136-01	12WW22-020409	01	02/10/2009 16:58	
L09020136-02	12WW20-020409	01	02/10/2009 17:29	
L09020136-04	12WW23-020409	01	02/10/2009 17:59	
L09020136-05	12WW21-020409	01	02/10/2009 18:29	
L09020136-06	12WW21-020409-FD	01	02/10/2009 18:59	
L09020136-03	12WW24-020409	DL01	02/10/2009 19:29	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1318574
Report generated 02/12/2009 13:59

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

00115675

Login Number:L09020136 Instrument ID:HPMS11

Analytical Method:8260B Initial Calibration Date:06-FEB-09 14:52

ICAL Workgroup:WG294332 Column ID:F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.4455	6.21		
1,2-Dichloropropane	CCC	0.2846	4.90		
Chloroform	CCC	0.4109	4.09		
Ethylbenzene	CCC	0.4506	8.60		
Toluene	CCC	1.226	5.85		
Vinyl Chloride	CCC	0.2472	14.2	0.99600	
1,1,2,2-Tetrachloroethane	SPCC	0.3687	3.36		
1,1-Dichloroethane	SPCC	0.5234	4.27		
Bromoform	SPCC	0.1634	15.6		0.99900
Chlorobenzene	SPCC	0.8457	5.39		
Chloromethane	SPCC	0.5168	11.4		
1,1,1,2-Tetrachloroethane		0.2863	7.94		
1,1,1-Trichloroethane		0.3545	5.95		
1,1,2-Trichloroethane		0.1839	8.54		
1,1-Dichloropropene		0.3262	6.84		
1,2,3-Trichlorobenzene		0.6031	7.52		
1,2,3-Trichloropropane		0.1053	11.8		
1,2,4-Trichlorobenzene		0.6985	7.64		
1,2,4-Trimethylbenzene		2.027	5.85		
1,2-Dibromo-3-Chloropropane		0.07360	4.54		
1,2-Dibromoethane		0.1887	13.8		
1,2-Dichlorobenzene		1.000	4.77		
1,2-Dichloroethane		0.3542	7.55		
1,3,5-Trimethylbenzene		1.938	5.31		
1,3-Dichlorobenzene		1.119	5.68		
1,3-Dichloropropane		0.3677	5.00		
1,4-Dichlorobenzene		1.169	6.66		
2,2-Dichloropropane		0.3552	6.77		
2-Butanone		0.09892	3.26		
2-Chloroethyl Vinyl Ether		0.1283	6.84		
2-Chlorotoluene		1.782	5.91		
2-Hexanone		0.1891	7.59		
4-Chlorotoluene		1.667	6.17		
4-Methyl-2-Pentanone		0.07762	6.49		
Acetone		0.07110	13.6		
Benzene		0.9540	6.77		
Bromobenzene		0.5799	4.58		
Bromochloromethane		0.1225	14.2		
Bromodichloromethane		0.3012	7.00		
Bromomethane		0.1338	7.42		
Carbon Disulfide		0.7471	8.01		
Carbon Tetrachloride		0.3146	11.0		
Chloroethane		0.1963	9.22		
Dibromochloromethane		0.2386	12.3		
Dibromomethane		0.1064	12.9		

INT_CAL - Modified 03/06/2008

PDF File ID: 1318572

Report generated 02/12/2009 13:59

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

00115676

Login Number: L09020136 **Instrument ID:** HPMS11

Analytical Method: 8260B **Initial Calibration Date:** 06-FEB-09 14:52

ICAL Workgroup: WG294332 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
Dichlorodifluoromethane		0.2647	8.80		
Hexachlorobutadiene		0.3027	5.33		
Isopropylbenzene		1.376	7.51		
Methylene Chloride		0.3087	43.7		0.99900
Naphthalene		1.135	12.2		
Styrene		0.9276	11.1		
Tetrachloroethene		0.2468	5.64		
Trichloroethene		0.2465	8.53		
Trichlorofluoromethane		0.3702	7.35		
Vinyl Acetate		0.2825	11.7		
cis-1,2-Dichloroethene		0.2357	5.02		
cis-1,3-Dichloropropene		0.3677	8.00		
m-,p-Xylene		0.5692	6.80		
n-Butylbenzene		1.803	6.52		
n-Propylbenzene		2.680	6.68		
o-Xylene		0.5392	8.08		
p-Isopropyltoluene		1.976	6.62		
sec-Butylbenzene		2.360	7.32		
tert-Butylbenzene		0.3938	8.67		
trans-1,2-Dichloroethene		0.2239	6.88		
trans-1,3-Dichloropropene		0.3997	10.3		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

If the %RSD is greater than the limit specified by the method or project QAP, then linear or quadratic equations will be used.

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115677

Login Number: L09020136 **Instrument ID:** HPMS11

Analytical Method: 8260B **Initial Calibration Date:** 06-FEB-09 14:52

Column ID: F

Analyte	WG294332-02			WG294332-03			WG294332-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	6259.00000	0.4627	1.00	13231.0000	0.3975
1,2-Dichloropropane	0.300	2886.00000	0.2771	0.400	3911.00000	0.2891	1.00	8518.00000	0.2559
Chloroform	0.300	4337.00000	0.4164	0.400	5399.00000	0.3991	1.00	12531.0000	0.3765
Ethylbenzene	0.300	3522.00000	0.4415	0.400	4225.00000	0.3992	1.00	10472.0000	0.4024
Toluene	0.300	10806.0000	1.355	0.400	12995.0000	1.228	1.00	28945.0000	1.112
Vinyl Chloride	NA	NA	NA	0.400	3991.00000	0.2950	1.00	9273.00000	0.2786
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	2210.00000	0.3709	1.00	5142.00000	0.3500
1,1-Dichloroethane	0.300	5417.00000	0.5201	0.400	6761.00000	0.4998	1.00	16498.0000	0.4956
Bromoform	NA	NA	NA	NA	NA	NA	1.00	3263.00000	0.1254
Chlorobenzene	0.300	7258.00000	0.9098	0.400	8892.00000	0.8403	1.00	20478.0000	0.7869
Chloromethane	NA	NA	NA	0.400	8453.00000	0.6249	1.00	17629.0000	0.5296
1,1,1,2-Tetrachloroethane	0.300	2174.00000	0.2725	0.400	2869.00000	0.2711	1.00	6647.00000	0.2554
1,1,1-Trichloroethane	0.300	3639.00000	0.3494	0.400	4371.00000	0.3231	1.00	10999.0000	0.3304
1,1,2-Trichloroethane	0.300	1264.00000	0.1584	0.400	1836.00000	0.1735	1.00	4179.00000	0.1606
1,1-Dichloropropene	0.300	3187.00000	0.3060	0.400	4420.00000	0.3268	1.00	9641.00000	0.2896
1,2,3-Trichlorobenzene	0.300	2410.00000	0.5437	0.400	3513.00000	0.5896	1.00	8149.00000	0.5547
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	1185.00000	0.08070
1,2,4-Trichlorobenzene	0.300	2923.00000	0.6595	0.400	3984.00000	0.6687	1.00	9377.00000	0.6383
1,2,4-Trimethylbenzene	0.300	9750.00000	2.200	0.400	11789.0000	1.979	1.00	27300.0000	1.858
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	0.300	1030.00000	0.1291	0.400	1944.00000	0.1837	1.00	4411.00000	0.1695
1,2-Dichlorobenzene	0.300	4295.00000	0.9690	0.400	6018.00000	1.010	1.00	13393.0000	0.9117
1,2-Dichloroethane	0.300	3599.00000	0.3455	0.400	4425.00000	0.3271	1.00	10218.0000	0.3070
1,3,5-Trimethylbenzene	0.300	8994.00000	2.029	0.400	11291.0000	1.895	1.00	25812.0000	1.757
1,3-Dichlorobenzene	0.300	5354.00000	1.208	0.400	6494.00000	1.090	1.00	15171.0000	1.033
1,3-Dichloropropane	NA	NA	NA	0.400	3709.00000	0.3505	1.00	8678.00000	0.3335
1,4-Dichlorobenzene	0.300	5763.00000	1.300	0.400	7275.00000	1.221	1.00	15621.0000	1.063
2,2-Dichloropropane	NA	NA	NA	0.400	4410.00000	0.3260	1.00	10512.0000	0.3158
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	0.300	8964.00000	2.022	0.400	10681.0000	1.793	1.00	25178.0000	1.714
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	0.300	8244.00000	1.860	0.400	10437.0000	1.752	1.00	22227.0000	1.513
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	0.300	11231.0000	1.078	0.400	13354.0000	0.9872	1.00	28914.0000	0.8687
Bromobenzene	0.300	2676.00000	0.6038	0.400	3628.00000	0.6089	1.00	7795.00000	0.5306
Bromochloromethane	NA	NA	NA	0.400	1184.00000	0.08750	1.00	3740.00000	0.1124
Bromodichloromethane	0.300	3049.00000	0.2927	0.400	3833.00000	0.2834	1.00	8713.00000	0.2618
Bromomethane	NA	NA	NA	0.400	1661.00000	0.1228	1.00	4550.00000	0.1367
Carbon Disulfide	NA	NA	NA	0.400	10401.0000	0.7689	1.00	20171.0000	0.6060
Carbon Tetrachloride	0.300	3078.00000	0.2955	0.400	3656.00000	0.2703	1.00	8892.00000	0.2671

INT_CAL - Modified 03/06/2008

PDF File ID: 1318572

Report generated 02/12/2009 13:59

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115678

Login Number: L09020136

Analytical Method: 8260B

Instrument ID: HPMS11

Initial Calibration Date: 06-FEB-09 14:52

Column ID: F

Analyte	WG294332-05			WG294332-06			WG294332-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	27343.0000	0.4092	5.00	77998.0000	0.4779	20.0	300224.000	0.4473
1,2-Dichloropropane	2.00	18189.0000	0.2722	5.00	47482.0000	0.2909	20.0	193319.000	0.2880
Chloroform	2.00	26462.0000	0.3960	5.00	69446.0000	0.4255	20.0	278771.000	0.4153
Ethylbenzene	2.00	21932.0000	0.4221	5.00	58874.0000	0.4672	20.0	241422.000	0.4526
Toluene	2.00	59100.0000	1.137	5.00	160878.000	1.277	20.0	644741.000	1.209
Vinyl Chloride	2.00	14891.0000	0.2228	5.00	44908.0000	0.2752	20.0	157075.000	0.2340
1,1,2,2-Tetrachloroethane	2.00	11152.0000	0.3732	5.00	28629.0000	0.3910	20.0	116249.000	0.3688
1,1-Dichloroethane	2.00	32924.0000	0.4927	5.00	88718.0000	0.5436	20.0	353385.000	0.5265
Bromoform	2.00	6876.00000	0.1323	5.00	21073.0000	0.1672	20.0	87630.0000	0.1643
Chlorobenzene	2.00	40479.0000	0.7790	5.00	109597.000	0.8696	20.0	438050.000	0.8212
Chloromethane	2.00	29532.0000	0.4419	5.00	76919.0000	0.4713	20.0	308241.000	0.4592
1,1,1,2-Tetrachloroethane	2.00	13572.0000	0.2612	5.00	38120.0000	0.3025	20.0	152616.000	0.2861
1,1,1-Trichloroethane	2.00	22236.0000	0.3327	5.00	61755.0000	0.3784	20.0	246575.000	0.3674
1,1,2-Trichloroethane	2.00	9748.00000	0.1876	5.00	24885.0000	0.1975	20.0	101467.000	0.1902
1,1-Dichloropropene	2.00	20066.0000	0.3003	5.00	58025.0000	0.3555	20.0	228679.000	0.3407
1,2,3-Trichlorobenzene	2.00	16760.0000	0.5608	5.00	47993.0000	0.6555	20.0	190849.000	0.6054
1,2,3-Trichloropropane	2.00	2925.00000	0.09790	5.00	8629.00000	0.1179	20.0	35245.0000	0.1118
1,2,4-Trichlorobenzene	2.00	19020.0000	0.6364	5.00	52416.0000	0.7159	20.0	224072.000	0.7108
1,2,4-Trimethylbenzene	2.00	55754.0000	1.866	5.00	153475.000	2.096	20.0	637302.000	2.022
1,2-Dibromo-3-Chloropropane	2.00	2015.00000	0.06740	5.00	5517.00000	0.07540	20.0	23919.0000	0.07590
1,2-Dibromoethane	2.00	9842.00000	0.1894	5.00	26741.0000	0.2122	20.0	105991.000	0.1987
1,2-Dichlorobenzene	2.00	29254.0000	0.9789	5.00	74344.0000	1.016	20.0	310085.000	0.9836
1,2-Dichloroethane	2.00	22380.0000	0.3349	5.00	62905.0000	0.3854	20.0	245207.000	0.3653
1,3,5-Trimethylbenzene	2.00	53969.0000	1.806	5.00	149512.000	2.042	20.0	621928.000	1.973
1,3-Dichlorobenzene	2.00	30767.0000	1.030	5.00	83474.0000	1.140	20.0	346444.000	1.099
1,3-Dichloropropane	2.00	18651.0000	0.3589	5.00	48268.0000	0.3830	20.0	199189.000	0.3734
1,4-Dichlorobenzene	2.00	31989.0000	1.070	5.00	84905.0000	1.160	20.0	352988.000	1.120
2,2-Dichloropropane	2.00	22891.0000	0.3425	5.00	62006.0000	0.3799	20.0	244254.000	0.3639
2-Butanone	NA	NA	NA	5.00	15846.0000	0.09710	20.0	63637.0000	0.09480
2-Chloroethyl Vinyl Ether	2.00	7331.00000	0.1097	5.00	20829.0000	0.1276	20.0	85389.0000	0.1272
2-Chlorotoluene	2.00	51259.0000	1.715	5.00	134857.000	1.842	20.0	561188.000	1.780
2-Hexanone	NA	NA	NA	5.00	20715.0000	0.1644	20.0	95436.0000	0.1789
4-Chlorotoluene	2.00	46695.0000	1.563	5.00	125906.000	1.720	20.0	511542.000	1.623
4-Methyl-2-Pentanone	NA	NA	NA	5.00	11266.0000	0.06900	20.0	49786.0000	0.07420
Acetone	NA	NA	NA	5.00	14117.0000	0.08650	20.0	51259.0000	0.07640
Benzene	2.00	57505.0000	0.8605	5.00	155443.000	0.9524	20.0	629606.000	0.9380
Bromobenzene	2.00	16548.0000	0.5537	5.00	43837.0000	0.5988	20.0	184109.000	0.5840
Bromochloromethane	2.00	7473.00000	0.1118	5.00	21622.0000	0.1325	20.0	86786.0000	0.1293
Bromodichloromethane	2.00	19102.0000	0.2858	5.00	51895.0000	0.3180	20.0	208649.000	0.3109
Bromomethane	2.00	8187.00000	0.1225	5.00	23974.0000	0.1469	20.0	86660.0000	0.1291
Carbon Disulfide	2.00	49544.0000	0.7414	5.00	127308.000	0.7800	20.0	497125.000	0.7406
Carbon Tetrachloride	2.00	19109.0000	0.2860	5.00	57826.0000	0.3543	20.0	225780.000	0.3364

INT_CAL - Modified 03/06/2008

PDF File ID: 1318572

Report generated 02/12/2009 13:59

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115679

Login Number: L09020136

Analytical Method: 8260B

Instrument ID: HPMS11

Initial Calibration Date: 06-FEB-09 14:52

Column ID: F

Analyte	WG294332-08			WG294332-09			WG294332-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	766575.000	0.4596	100	1394316.00	0.4518	200	2971163.00	0.4578
1,2-Dichloropropane	50.0	488836.000	0.2931	100	905811.000	0.2935	200	1959453.00	0.3019
Chloroform	50.0	706043.000	0.4233	100	1300584.00	0.4214	200	2755047.00	0.4245
Ethylbenzene	50.0	625055.000	0.4750	100	1195313.00	0.4773	200	2745930.00	0.5182
Toluene	50.0	1650330.00	1.254	100	3105824.00	1.240	200	6486412.00	1.224
Vinyl Chloride	50.0	367787.000	0.2205	100	629652.000	0.2040	NA	NA	NA
1,1,2,2-Tetrachloroethane	50.0	306374.000	0.3741	100	603516.000	0.3558	200	1302999.00	0.3655
1,1-Dichloroethane	50.0	910009.000	0.5456	100	1666717.00	0.5401	200	3545393.00	0.5463
Bromoform	50.0	233873.000	0.1777	100	461186.000	0.1842	200	1020872.00	0.1926
Chlorobenzene	50.0	1117019.00	0.8488	100	2133232.00	0.8519	200	4789023.00	0.9037
Chloromethane	50.0	863887.000	0.5179	100	1665813.00	0.5398	200	3570536.00	0.5501
1,1,1,2-Tetrachloroethane	50.0	398137.000	0.3025	100	758143.000	0.3028	200	1710895.00	0.3229
1,1,1-Trichloroethane	50.0	627541.000	0.3762	100	1129250.00	0.3659	200	2382778.00	0.3671
1,1,2-Trichloroethane	50.0	259938.000	0.1975	100	484193.000	0.1934	200	1042008.00	0.1966
1,1-Dichloropropene	50.0	566953.000	0.3399	100	1042969.00	0.3380	200	2200746.00	0.3391
1,2,3-Trichlorobenzene	50.0	502003.000	0.6129	100	1070567.00	0.6312	200	2402374.00	0.6738
1,2,3-Trichloropropane	50.0	91783.0000	0.1121	100	184886.000	0.1090	200	385164.000	0.1080
1,2,4-Trichlorobenzene	50.0	583791.000	0.7128	100	1263740.00	0.7451	200	2848176.00	0.7989
1,2,4-Trimethylbenzene	50.0	1742125.00	2.127	100	3594229.00	2.119	200	7042338.00	1.975
1,2-Dibromo-3-Chloropropane	50.0	62606.0000	0.07640	100	125446.000	0.07400	200	258411.000	0.07250
1,2-Dibromoethane	50.0	273457.000	0.2078	100	505739.000	0.2020	200	1090585.00	0.2058
1,2-Dichlorobenzene	50.0	831029.000	1.015	100	1753899.00	1.034	200	3864868.00	1.084
1,2-Dichloroethane	50.0	630473.000	0.3780	100	1144088.00	0.3707	200	2425189.00	0.3737
1,3,5-Trimethylbenzene	50.0	1664720.00	2.033	100	3376470.00	1.991	200	6817853.00	1.912
1,3-Dichlorobenzene	50.0	925202.000	1.130	100	1946012.00	1.147	200	4274129.00	1.199
1,3-Dichloropropane	50.0	503268.000	0.3824	100	942028.000	0.3762	200	2034465.00	0.3839
1,4-Dichlorobenzene	50.0	952642.000	1.163	100	2011853.00	1.186	200	4417818.00	1.239
2,2-Dichloropropane	50.0	625513.000	0.3750	100	1132131.00	0.3668	200	2412609.00	0.3717
2-Butanone	50.0	170436.000	0.1022	100	315270.000	0.1022	200	654892.000	0.1009
2-Chloroethyl Vinyl Ether	50.0	222441.000	0.1334	100	406256.000	0.1316	200	862548.000	0.1329
2-Chlorotoluene	50.0	1469319.00	1.794	100	2884183.00	1.701	200	5973661.00	1.676
2-Hexanone	50.0	259688.000	0.1973	100	502298.000	0.2006	200	1040518.00	0.1964
4-Chlorotoluene	50.0	1359749.00	1.660	100	2833230.00	1.671	200	5842330.00	1.639
4-Methyl-2-Pentanone	50.0	132761.000	0.07960	100	253158.000	0.08200	200	528437.000	0.08140
Acetone	50.0	119123.000	0.07140	100	215438.000	0.06980	200	411692.000	0.06340
Benzene	50.0	1604847.00	0.9622	100	2976517.00	0.9645	200	6324928.00	0.9745
Bromobenzene	50.0	477255.000	0.5827	100	948682.000	0.5593	200	2131096.00	0.5977
Bromochloromethane	50.0	224902.000	0.1348	100	413419.000	0.1340	200	895656.000	0.1380
Bromodichloromethane	50.0	530111.000	0.3178	100	978356.000	0.3170	200	2096143.00	0.3230
Bromomethane	50.0	248244.000	0.1488	100	411727.000	0.1334	200	844739.000	0.1302
Carbon Disulfide	50.0	1308587.00	0.7845	100	2366687.00	0.7669	200	5118605.00	0.7886
Carbon Tetrachloride	50.0	571266.000	0.3425	100	1044737.00	0.3385	200	2212967.00	0.3410

INT_CAL - Modified 03/06/2008

PDF File ID: 1318572

Report generated 02/12/2009 13:59

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115680

Login Number: L09020136
Analytical Method: 8260B
Instrument ID: HPMS11
Initial Calibration Date: 06-FEB-09 14:52
Column ID: F

Analyte	WG294332-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	922665.000	0.09630
2-Chloroethyl Vinyl Ether	300	1300859.00	0.1358
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	1480720.00	0.1970
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	761464.000	0.07950
Acetone	300	566341.000	0.05910
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1318572
Report generated 02/12/2009 13:59

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115681

Login Number: L09020136
Analytical Method: 8260B
Instrument ID: HPMS11
Initial Calibration Date: 06-FEB-09 14:52
Column ID: F

Analyte	WG294332-02			WG294332-03			WG294332-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	6020.00000	0.1809
Dibromochloromethane	0.300	1578.00000	0.1978	0.400	2087.00000	0.1972	1.00	5703.00000	0.2191
Dibromomethane	NA	NA	NA	0.400	1067.00000	0.07890	1.00	3150.00000	0.09460
Dichlorodifluoromethane	NA	NA	NA	0.400	3627.00000	0.2681	1.00	8445.00000	0.2537
Hexachlorobutadiene	0.300	1364.00000	0.3077	0.400	1727.00000	0.2899	1.00	4085.00000	0.2781
Isopropylbenzene	0.300	11847.0000	1.485	0.400	13799.0000	1.304	1.00	31303.0000	1.203
Methylene Chloride	NA	NA	NA	0.400	8384.00000	0.6198	1.00	12347.0000	0.3709
Naphthalene	NA	NA	NA	0.400	5537.00000	0.9293	1.00	13961.0000	0.9504
Styrene	0.300	7396.00000	0.9271	0.400	8714.00000	0.8234	1.00	20417.0000	0.7845
Tetrachloroethene	0.300	2107.00000	0.2641	0.400	2607.00000	0.2463	1.00	5831.00000	0.2241
Trichloroethene	NA	NA	NA	0.400	4005.00000	0.2961	1.00	8009.00000	0.2406
Trichlorofluoromethane	NA	NA	NA	0.400	4805.00000	0.3552	1.00	11606.0000	0.3487
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	0.300	2323.00000	0.2230	0.400	3260.00000	0.2410	1.00	7208.00000	0.2165
cis-1,3-Dichloropropene	NA	NA	NA	0.400	4407.00000	0.3258	1.00	10853.0000	0.3261
m-,p-Xylene	0.600	9236.00000	0.5789	0.800	11330.0000	0.5353	2.00	27275.0000	0.5240
n-Butylbenzene	0.300	8727.00000	1.969	0.400	10580.0000	1.776	1.00	23493.0000	1.599
n-Propylbenzene	0.300	12647.0000	2.853	0.400	16192.0000	2.718	1.00	37036.0000	2.521
o-Xylene	0.300	4039.00000	0.5063	0.400	5430.00000	0.5131	1.00	12508.0000	0.4806
p-Isopropyltoluene	0.300	9503.00000	2.144	0.400	11116.0000	1.866	1.00	25942.0000	1.766
sec-Butylbenzene	0.300	11948.0000	2.696	0.400	13334.0000	2.238	1.00	31517.0000	2.146
tert-Butylbenzene	0.300	1841.00000	0.4154	0.400	1919.00000	0.3221	1.00	5327.00000	0.3626
trans-1,2-Dichloroethene	0.300	2589.00000	0.2486	0.400	2806.00000	0.2074	1.00	7083.00000	0.2128
trans-1,3-Dichloropropene	NA	NA	NA	0.400	3555.00000	0.3359	1.00	9098.00000	0.3496

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115682

Login Number: L09020136
Analytical Method: 8260B

Instrument ID: HPMS11
Initial Calibration Date: 06-FEB-09 14:52
Column ID: F

Analyte	WG294332-05			WG294332-06			WG294332-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	10943.0000	0.1638	5.00	33805.0000	0.2071	20.0	135298.000	0.2016
Dibromochloromethane	2.00	11645.0000	0.2241	5.00	32723.0000	0.2597	20.0	134921.000	0.2529
Dibromomethane	2.00	6783.00000	0.1015	5.00	18959.0000	0.1162	20.0	75354.0000	0.1123
Dichlorodifluoromethane	2.00	14724.0000	0.2203	5.00	48173.0000	0.2952	20.0	181835.000	0.2709
Hexachlorobutadiene	2.00	8506.00000	0.2846	5.00	23258.0000	0.3177	20.0	95552.0000	0.3031
Isopropylbenzene	2.00	64969.0000	1.250	5.00	178016.000	1.413	20.0	729773.000	1.368
Methylene Chloride	2.00	19588.0000	0.2931	5.00	43390.0000	0.2659	20.0	153964.000	0.2294
Naphthalene	2.00	31534.0000	1.055	5.00	86213.0000	1.178	20.0	377071.000	1.196
Styrene	2.00	42577.0000	0.8194	5.00	118700.000	0.9419	20.0	494866.000	0.9277
Tetrachloroethene	2.00	11836.0000	0.2278	5.00	32883.0000	0.2609	20.0	128820.000	0.2415
Trichloroethene	2.00	15144.0000	0.2266	5.00	40544.0000	0.2484	20.0	159095.000	0.2370
Trichlorofluoromethane	2.00	21607.0000	0.3233	5.00	66247.0000	0.4059	20.0	254864.000	0.3797
Vinyl Acetate	NA	NA	NA	5.00	38279.0000	0.2345	20.0	177158.000	0.2639
cis-1,2-Dichloroethene	2.00	14819.0000	0.2218	5.00	40413.0000	0.2476	20.0	160543.000	0.2392
cis-1,3-Dichloropropene	2.00	23428.0000	0.3506	5.00	62640.0000	0.3838	20.0	253155.000	0.3772
m-,p-Xylene	4.00	53707.0000	0.5168	10.0	145122.000	0.5758	40.0	594808.000	0.5575
n-Butylbenzene	2.00	49178.0000	1.646	5.00	135595.000	1.852	20.0	572263.000	1.815
n-Propylbenzene	2.00	77249.0000	2.585	5.00	210949.000	2.881	20.0	871792.000	2.766
o-Xylene	2.00	25978.0000	0.5000	5.00	70669.0000	0.5607	20.0	285466.000	0.5352
p-Isopropyltoluene	2.00	54371.0000	1.819	5.00	150017.000	2.049	20.0	626615.000	1.988
sec-Butylbenzene	2.00	65603.0000	2.195	5.00	181258.000	2.476	20.0	749187.000	2.377
tert-Butylbenzene	2.00	11291.0000	0.3778	5.00	31058.0000	0.4242	20.0	126458.000	0.4011
trans-1,2-Dichloroethene	2.00	13358.0000	0.1999	5.00	39098.0000	0.2396	20.0	148662.000	0.2215
trans-1,3-Dichloropropene	2.00	19267.0000	0.3708	5.00	53172.0000	0.4219	20.0	222961.000	0.4180

INT_CAL - Modified 03/06/2008
PDF File ID: 1318572
Report generated 02/12/2009 13:59

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115683

Login Number: L09020136
Analytical Method: 8260B
Instrument ID: HPMS11
Initial Calibration Date: 06-FEB-09 14:52
Column ID: F

Analyte	WG294332-08			WG294332-09			WG294332-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	359984.000	0.2158	100	642599.000	0.2082	200	1277346.00	0.1968
Dibromochloromethane	50.0	350096.000	0.2660	100	650658.000	0.2598	200	1435564.00	0.2709
Dibromomethane	50.0	192406.000	0.1154	100	355699.000	0.1153	200	759859.000	0.1171
Dichlorodifluoromethane	50.0	480270.000	0.2879	100	832634.000	0.2698	200	1635405.00	0.2520
Hexachlorobutadiene	50.0	250365.000	0.3057	100	524031.000	0.3090	200	1172567.00	0.3289
Isopropylbenzene	50.0	1909398.00	1.451	100	3737320.00	1.493	200	7532161.00	1.421
Methylene Chloride	50.0	387954.000	0.2326	100	702068.000	0.2275	200	1494366.00	0.2302
Naphthalene	50.0	1018518.00	1.244	100	2128249.00	1.255	200	4537987.00	1.273
Styrene	50.0	1313842.00	0.9983	100	2626299.00	1.049	200	5706947.00	1.077
Tetrachloroethene	50.0	331383.000	0.2518	100	618965.000	0.2472	200	1365424.00	0.2577
Trichloroethene	50.0	398219.000	0.2387	100	739042.000	0.2395	200	1589710.00	0.2449
Trichlorofluoromethane	50.0	665958.000	0.3993	100	1172234.00	0.3798	200	2400643.00	0.3699
Vinyl Acetate	50.0	526333.000	0.3156	100	934522.000	0.3028	200	2039174.00	0.3142
cis-1,2-Dichloroethene	50.0	408392.000	0.2448	100	747892.000	0.2423	200	1589844.00	0.2450
cis-1,3-Dichloropropene	50.0	651841.000	0.3908	100	1201049.00	0.3892	200	2583825.00	0.3981
m-,p-Xylene	100	1568382.00	0.5959	200	3104042.00	0.6198	400	6561610.00	0.6191
n-Butylbenzene	50.0	1529513.00	1.867	100	3222303.00	1.900	200	6420950.00	1.801
n-Propylbenzene	50.0	2304799.00	2.814	100	4509235.00	2.659	200	8297217.00	2.327
o-Xylene	50.0	743309.000	0.5648	100	1442386.00	0.5760	200	3266372.00	0.6164
p-Isopropyltoluene	50.0	1694614.00	2.069	100	3547606.00	2.092	200	7086831.00	1.988
sec-Butylbenzene	50.0	2008769.00	2.453	100	4099194.00	2.417	200	8013735.00	2.248
tert-Butylbenzene	50.0	336101.000	0.4104	100	682590.000	0.4025	200	1525197.00	0.4278
trans-1,2-Dichloroethene	50.0	381839.000	0.2289	100	699209.000	0.2266	200	1491033.00	0.2297
trans-1,3-Dichloropropene	50.0	573678.000	0.4359	100	1072109.00	0.4281	200	2316901.00	0.4372

Microbac®

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00115684

Login Number: L09020136
Analytical Method: 8260B
Instrument ID: HPMS11
Initial Calibration Date: 06-FEB-09 14:52
Column ID: F

Analyte	WG294332-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	300	2529460.00	0.2640
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

Microbac®

Microbac Laboratories Inc.

ALTERNATE SOURCE CALIBRATION REPORT

00115685

Login Number:L09020136 Run Date:02/06/2009 Sample ID:WG294332-12

Instrument ID:HPMS11 Run Time:16:54 Method:8260B

File ID:11M56960 Analyst:wtd QC Key:STD

ICal Workgroup:WG294332 Cal ID:HPMS11 - 06-FEB-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	20.1	ug/L	0.413	0.400	30	
1,1-Dichloroethene	CCC	20.0	20.5	ug/L	0.456	2.40	30	
1,2-Dichloropropane	CCC	20.0	19.8	ug/L	0.282	0.800	30	
Ethylbenzene	CCC	20.0	20.7	ug/L	0.467	3.50	30	
Toluene	CCC	20.0	20.4	ug/L	1.25	1.80	30	
Vinyl Chloride	CCC	20.0	18.5	ug/L	0.229	7.50	30	
Bromoform	SPCC	20.0	17.1	ug/L	0.147	14.4	30	
Chlorobenzene	SPCC	20.0	19.5	ug/L	0.826	2.30	30	
Chloromethane	SPCC	20.0	19.5	ug/L	0.504	2.50	30	
1,1-Dichloroethane	SPCC	20.0	20.3	ug/L	0.531	1.50	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	17.8	ug/L	0.329	10.8	30	
Acetone		20.0	20.2	ug/L	0.0718	1.00	30	
Benzene		20.0	19.6	ug/L	0.935	2.00	30	
Bromobenzene		20.0	20.1	ug/L	0.583	0.600	30	
Bromochloromethane		20.0	20.3	ug/L	0.125	1.70	30	
Bromodichloromethane		20.0	19.9	ug/L	0.300	0.400	30	
Bromomethane		20.0	23.6	ug/L	0.158	17.9	30	
2-Butanone		20.0	20.3	ug/L	0.101	1.60	30	
n-Butylbenzene		20.0	20.3	ug/L	1.83	1.50	30	
sec-Butylbenzene		20.0	20.6	ug/L	2.43	2.90	30	
tert-Butylbenzene		20.0	21.4	ug/L	0.421	6.90	30	
Carbon Disulfide		20.0	18.1	ug/L	0.676	9.60	30	
Carbon Tetrachloride		20.0	21.0	ug/L	0.330	5.00	30	
Dibromochloromethane		20.0	19.5	ug/L	0.233	2.60	30	
Chloroethane		20.0	21.7	ug/L	0.213	8.60	30	
2-Chloroethyl Vinyl Ether		20.0	17.3	ug/L	0.111	13.4	30	
2-Chlorotoluene		20.0	20.4	ug/L	1.81	1.80	30	
4-Chlorotoluene		20.0	19.7	ug/L	1.64	1.50	30	
1,2-Dibromo-3-Chloropropane		20.0	17.6	ug/L	0.0647	12.1	30	
1,2-Dibromoethane		20.0	19.0	ug/L	0.179	5.10	30	
Dibromomethane		20.0	19.5	ug/L	0.104	2.70	30	
1,2-Dichlorobenzene		20.0	19.4	ug/L	0.972	2.90	30	
1,3-Dichlorobenzene		20.0	19.5	ug/L	1.09	2.60	30	
1,4-Dichlorobenzene		20.0	18.9	ug/L	1.11	5.30	30	
Dichlorodifluoromethane		20.0	24.5	ug/L	0.324	22.5	30	
1,2-Dichloroethane		20.0	18.7	ug/L	0.331	6.50	30	
cis-1,2-Dichloroethene		20.0	20.4	ug/L	0.241	2.10	30	
trans-1,2-Dichloroethene		20.0	19.7	ug/L	0.221	1.40	30	
1,3-Dichloropropane		20.0	18.9	ug/L	0.348	5.30	30	
2,2-Dichloropropane		20.0	18.8	ug/L	0.334	6.00	30	
cis-1,3-Dichloropropene		20.0	18.8	ug/L	0.345	6.20	30	
trans-1,3-Dichloropropene		20.0	17.1	ug/L	0.341	14.7	30	

Microbac®

Microbac Laboratories Inc.

ALTERNATE SOURCE CALIBRATION REPORT

00115686

Login Number: L09020136 Run Date: 02/06/2009 Sample ID: WG294332-12

Instrument ID: HPMS11 Run Time: 16:54 Method: 8260B

File ID: 11M56960 Analyst: wtd QC Key: STD

ICal Workgroup: WG294332 Cal ID: HPMS11 - 06-FEB-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	20.4	ug/L	0.332	1.80	30	
2-Hexanone		20.0	17.2	ug/L	0.163	13.9	30	
Hexachlorobutadiene		20.0	20.3	ug/L	0.307	1.30	30	
Isopropylbenzene		20.0	18.2	ug/L	1.25	9.20	30	
p-Isopropyltoluene		20.0	20.1	ug/L	1.98	0.400	30	
4-Methyl-2-Pentanone		20.0	16.9	ug/L	0.0657	15.3	30	
Methylene Chloride		20.0	19.5	ug/L	0.227	2.60	30	
Naphthalene		20.0	19.0	ug/L	1.08	5.00	30	
n-Propylbenzene		20.0	20.9	ug/L	2.80	4.60	30	
Styrene		20.0	20.0	ug/L	0.927	0	30	
1,1,1,2-Tetrachloroethane		20.0	20.6	ug/L	0.295	2.80	30	
Tetrachloroethene		20.0	20.3	ug/L	0.251	1.50	30	
1,2,3-Trichlorobenzene		20.0	19.5	ug/L	0.588	2.40	30	
1,2,4-Trichlorobenzene		20.0	20.3	ug/L	0.708	1.40	30	
1,1,1-Trichloroethane		20.0	20.6	ug/L	0.366	3.20	30	
1,1,2-Trichloroethane		20.0	19.3	ug/L	0.177	3.70	30	
Trichloroethene		20.0	19.4	ug/L	0.240	2.80	30	
Trichlorofluoromethane		20.0	21.0	ug/L	0.389	5.00	30	
1,2,3-Trichloropropane		20.0	19.1	ug/L	0.100	4.70	30	
1,2,4-Trimethylbenzene		20.0	21.0	ug/L	2.13	5.10	30	
1,3,5-Trimethylbenzene		20.0	20.8	ug/L	2.02	4.20	30	
Vinyl Acetate		20.0	8.63	ug/L	0.122	56.8	40	*
o-Xylene		20.0	20.2	ug/L	0.546	1.20	30	
m-,p-Xylene		40.0	40.2	ug/L	0.572	0.400	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

Microbac®

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115687

Login Number: L09020136 Run Date: 02/10/2009 Sample ID: WG294548-02

Instrument ID: HPMS11 Run Time: 11:23 Method: 8260B

File ID: 11M56991 Analyst: WTD QC Key: STD

Workgroup (AAB#): WG294549 Cal ID: HPMS11 - 06-FEB-09

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	51.0	ug/L	0.419	2.00	20	
1,1-Dichloroethene	CCC	50.0	50.6	ug/L	0.451	1.20	20	
1,2-Dichloropropane	CCC	50.0	51.1	ug/L	0.291	2.27	20	
Ethylbenzene	CCC	50.0	51.6	ug/L	0.465	3.10	20	
Toluene	CCC	50.0	50.7	ug/L	1.24	1.44	20	
Vinyl Chloride	CCC	50.0	43.2	ug/L	0.214	13.6	20	
Bromoform	SPCC	50.0	46.5	ug/L	0.165	6.98	40	
Chlorobenzene	SPCC	50.0	49.2	ug/L	0.833	1.51	40	
Chloromethane	SPCC	50.0	45.3	ug/L	0.468	9.48	40	
1,1-Dichloroethane	SPCC	50.0	51.6	ug/L	0.540	3.16	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	49.7	ug/L	0.366	0.688	40	
Acetone		50.0	41.8	ug/L	0.0594	16.4	40	
Benzene		50.0	50.6	ug/L	0.966	1.28	40	
Bromobenzene		50.0	49.4	ug/L	0.573	1.29	40	
Bromochloromethane		50.0	53.8	ug/L	0.132	7.50	40	
Bromodichloromethane		50.0	52.2	ug/L	0.314	4.37	40	
Bromomethane		50.0	55.4	ug/L	0.148	10.9	40	
2-Butanone		50.0	44.2	ug/L	0.0874	11.7	40	
n-Butylbenzene		50.0	50.7	ug/L	1.83	1.46	40	
sec-Butylbenzene		50.0	51.5	ug/L	2.43	2.94	40	
tert-Butylbenzene		50.0	52.5	ug/L	0.414	5.07	40	
Carbon Disulfide		50.0	52.2	ug/L	0.780	4.41	40	
Carbon Tetrachloride		50.0	53.9	ug/L	0.339	7.75	40	
Dibromochloromethane		50.0	53.4	ug/L	0.255	6.76	40	
Chloroethane		50.0	52.9	ug/L	0.208	5.87	40	
2-Chloroethyl Vinyl Ether		50.0	50.0	ug/L	0.128	0.0554	40	
2-Chlorotoluene		50.0	47.5	ug/L	1.69	5.01	40	
4-Chlorotoluene		50.0	49.7	ug/L	1.66	0.643	40	
1,2-Dibromo-3-Chloropropane		50.0	47.0	ug/L	0.0692	6.01	40	
1,2-Dibromoethane		50.0	51.7	ug/L	0.195	3.36	40	
Dibromomethane		50.0	52.8	ug/L	0.112	5.57	40	
1,2-Dichlorobenzene		50.0	49.2	ug/L	0.985	1.51	40	
1,3-Dichlorobenzene		50.0	50.0	ug/L	1.12	0.0806	40	
1,4-Dichlorobenzene		50.0	48.5	ug/L	1.13	3.06	40	
Dichlorodifluoromethane		50.0	51.8	ug/L	0.274	3.53	40	
1,2-Dichloroethane		50.0	50.7	ug/L	0.359	1.34	40	
cis-1,2-Dichloroethene		50.0	51.3	ug/L	0.242	2.65	40	
trans-1,2-Dichloroethene		50.0	50.3	ug/L	0.225	0.563	40	
1,3-Dichloropropane		50.0	50.4	ug/L	0.371	0.852	40	
2,2-Dichloropropane		50.0	53.9	ug/L	0.383	7.86	40	
cis-1,3-Dichloropropene		50.0	52.3	ug/L	0.385	4.66	40	
trans-1,3-Dichloropropene		50.0	52.6	ug/L	0.420	5.11	40	

CCV - Modified 03/05/2008

PDF File ID: 1318575

Report generated 02/12/2009 13:59

Microbac®

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115688

Login Number: L09020136 Run Date: 02/10/2009 Sample ID: WG294548-02

Instrument ID: HPMS11 Run Time: 11:23 Method: 8260B

File ID: 11M56991 Analyst: WTD QC Key: STD

Workgroup (AAB#): WG294549 Cal ID: HPMS11 - 06-FEB-09

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	52.5	ug/L	0.342	4.91	40	
2-Hexanone		50.0	45.6	ug/L	0.172	8.83	40	
Hexachlorobutadiene		50.0	48.7	ug/L	0.295	2.54	40	
Isopropylbenzene		50.0	51.5	ug/L	1.42	2.95	40	
p-Isopropyltoluene		50.0	51.4	ug/L	2.03	2.79	40	
4-Methyl-2-Pentanone		50.0	47.1	ug/L	0.0731	5.86	40	
Methylene Chloride		50.0	49.2	ug/L	0.226	1.52	40	
Naphthalene		50.0	48.3	ug/L	1.10	3.38	40	
n-Propylbenzene		50.0	52.6	ug/L	2.82	5.27	40	
Styrene		50.0	51.7	ug/L	0.959	3.38	40	
1,1,1,2-Tetrachloroethane		50.0	51.6	ug/L	0.295	3.17	40	
Tetrachloroethene		50.0	50.5	ug/L	0.249	0.971	40	
1,2,3-Trichlorobenzene		50.0	46.8	ug/L	0.565	6.39	40	
1,2,4-Trichlorobenzene		50.0	49.7	ug/L	0.695	0.561	40	
1,1,1-Trichloroethane		50.0	51.7	ug/L	0.367	3.46	40	
1,1,2-Trichloroethane		50.0	51.2	ug/L	0.188	2.38	40	
Trichloroethene		50.0	48.0	ug/L	0.237	4.06	40	
Trichlorofluoromethane		50.0	52.8	ug/L	0.391	5.56	40	
1,2,3-Trichloropropane		50.0	51.1	ug/L	0.108	2.23	40	
1,2,4-Trimethylbenzene		50.0	50.9	ug/L	2.06	1.87	40	
1,3,5-Trimethylbenzene		50.0	51.7	ug/L	2.00	3.41	40	
Vinyl Acetate		50.0	60.7	ug/L	0.343	21.4	40	
o-Xylene		50.0	51.3	ug/L	0.553	2.53	40	
m-,p-Xylene		100	103	ug/L	0.584	2.53	40	
1,2-Dichloroethene		100	102	ug/L	0.234	1.61	40	
Xylenes		150	154	ug/L	0.568	2.53	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1318575
Report generated 02/12/2009 13:59

Microbac®

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00115689

Login Number: L09020136
Instrument ID: HPMS11
Workgroup (AAB#): WG294549

CCV Number: WG294548-02
CAL ID: HPMS11-06-FEB-09
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG294548-02	NA	NA	424844	706544	889598
Upper Limit	NA	NA	849688	1413088	1779196
Lower Limit	NA	NA	212422	353272	444799
L09020136-01	1.00	01	348152	618379	780475
L09020136-02	1.00	01	344107	604792	770639
L09020136-03	2.00	DL01	327674	587404	750026
L09020136-04	1.00	01	338158	600962	760394
L09020136-05	1.00	01	331780	594295	755738
L09020136-06	1.00	01	333979	584171	750273
WG294549-01	1.00	01	372620	661705	844732
WG294549-02	1.00	01	403488	692322	867125
WG294549-03	1.00	01	410697	699459	882379

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

Microbac®

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

00115690

Login Number:L09020136
Instrument ID:HPMS11
Workgroup (AAB#):WG294549

CCV Number:WG294548-02
CAL ID: HPMS11-06-FEB-09
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG294548-02	NA	NA	16.48	13.68	10.07
Upper Limit	NA	NA	16.98	14.18	10.57
Lower Limit	NA	NA	15.98	13.18	9.57
L09020136-01	1.00	01	16.481	13.679	10.071
L09020136-02	1.00	01	16.481	13.679	10.071
L09020136-03	2.00	DL01	16.482	13.679	10.071
L09020136-04	1.00	01	16.481	13.679	10.071
L09020136-05	1.00	01	16.481	13.679	10.071
L09020136-06	1.00	01	16.481	13.679	10.071
WG294549-01	1.00	01	16.481	13.679	10.071
WG294549-02	1.00	01	16.481	13.679	10.071
WG294549-03	1.00	01	16.482	13.68	10.071

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

Microbac®

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
February 12, 2009

ADC – ANTHONY D. CANTER	AJF – AMANDA J. FICKIESEN	ALB – ANNIE L. BROWN
AM – ALISON J. MILLER	AML – ANTHONY M. LONG	BRG – BRENDA R. GREGORY
CAA – CASSIE A. AUGENSTEIN	CAF – CHERYL A. FLOWERS	CAH – CHARLES A. HALL
CEB – CHAD E. BARNES	CLC – CHRYS L. CRAWFORD	CLW – CHARISSA L. WINTERS
CMS – CRYSTAL M. STEPHENS	CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL
CTB – CHRIS T. BUCINA	DDE – DEBRA D. ELLIOTT	DEL – DON E. LIGHTFRITZ
DEV – DAVID E. VANDENBERG	DGB – DOUGLAS G. BUTCHER	DIH – DEANNA I. HESSON
DLB – DAVID L. BUMGARNER	DLP – DOROTHY L. PAYNE	DLR – DIANNA L. RAUCH
DR – DEANNA ROBERTS	DSF – DEBRA S. FREDERICK	EAB – EDDIE A. BYERS
ECL – ERIC C. LAWSON	ED – EMILY E. DECKER	EDA – ERIN D. AGEE
EDH – ETHAN D. MORRIS	ERP – ERIN R. PORTER	FJB – FRANCES J. BOLDEN
HAV – HEMA VILASAGAR	HJR – HOLLY J. REED	JBK – JEREMY B. KINNEY
JC – JOHN L. CONLEY	JDH – JUSTIN D. HESSON	JKP – JACQUELINE K. PARSONS
JKT – JANE K. THOMPSON	JWR – JOHN W. RICHARDS	JWS – JACK W. SHEAVES
JYH – JI Y. HU	KEB – KATHRYN E. BARNES	KHR – KIM H. RHODES
KJW – KATIE J. WIEFERICH	KRA – KATHY R. ALBERTSON	LHT – LANCE H. THOMPSON
LKN – LINDA K. NEDEFF	LSB – LESLIE S. BUCINA	MDA – MIKE D. ALBERTSON
MDC – MICHAEL D. COCHRAN	MES – MARY E. SCHILLING	MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR	MSW – MATT S. WILSON	NPM – NATHANIEL P. MILLER
PDM – PIERCE D. MORRIS	RAH – ROY A. HALSTEAD	RB – ROBERT BUCHANAN
REK – ROBERT E. KYER	RLK – ROBIN L. KLINGER	RWC – RODNEY W. CAMPBELL
SAV – SARAH A. VANDENBERG	SDH – SHANA D. HINYARD	SDL – SHELLY D. LENT
SLM – STEPHANIE L. MOSSBURG	SLP – SHERI L. PFALZGRAF	SMH – SHAUNA M. HYDE
TDH – TRICIA D. HUCK	TIP – TAE I. PARRISH	TMB – TIFFANY M. BAILEY
TMM – TAMMY M. MORRIS	VC – VICKI COLLIER	WTD – WADE T. DELONG

Microbac Laboratories Inc.
List of Valid Qualifiers
February 12, 2009

00115693

Qualkey: STD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
B3	Target analyte detected in calibration blank at or above the method reporting limit
C	Confirmed by GC/MS
CG	Confluent growth
D1	Sample required dilution due to matrix.
D2	Sample required dilution due to high concenration of target analyte.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E1	Concentration estimated. Analyte exceeded calibration range. Insufficient sample for reanalysis.
E2	Concentration estimated. Analyte exceeded calibration range. Reanalysis not performed due to matrix.
E3	Concentration estimated. Analyte exceeded calibration range. Reanalysis not performed due to holding time requirements
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
FL	Free Liquid
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
M1	Matrix spike recovery was high; the assocated blank spike recovery was acceptable.
M2	Matrix spike recovery was low; the assocated blank spike recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration is disproportionate to the spike level.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria fail. See narrative.
Q1	Sample integraity was not maintained. See report narrative.
QNS	Quantity of sample not sufficient to perform analysis
R1	Duplicate RPD/RSD exceeded the method acceptance limit.
R2	Duplicate RPD/RSD exceeded the laboratory acceptance limit.
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Undetected; the concentration is below the reported MDL.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.
V2	CCV recovery was above method acceptance limits. Insufficient volume for sample reanalysis.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

Microbac®

Microbac Laboratories Inc.
List of Valid Qualifiers
February 12, 2009

00115694

Qualkey: STD

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

Microbac®

00115695

NO. 5770

Chain of Custody

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Microbac Address: 158 Starlite DR. Marietta, OH Contact: Stephanie Mossburg

Project Name: LHAAP Project Location: Karnack, TX.

Project No.: 117591.0008A105 Project Contact: Kay Everett Project Telephone No.: 713-996-4421

Point of Contact: Scott Beesinger Telephone No.: 903-679-3448

Project Manager/Supervisor: Praveen Srivastav

Analysis and Method Desired (Indicate separate containers)

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOA						Remarks
1	12WW22-020409	2/4/09	8:31		✓	W	Site 12	2	✓						
2	12WW20-020409	2/4/09	9:33		✓	W	Site 12	2	✓						
3	12WW24-020409	2/4/09	10:44		✓	W	Site 12	2	✓						
4	12WW23-020409	2/4/09	13:48		✓	W	Site 12	2	✓						
5	12WW21-020409	2/4/09	15:21		✓	W	Site 12	2	✓						
6	12WW21-020409-FD	2/4/09	15:21		✓	W	Site 12	2	✓						
7															
8															
9															
10															

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
	2/5/09 8:00			
				FedEx Airbill No.:
		Laboratory	2-6-09 0915	Sampler's Signature

TAT: ____ Standard ____ Rush Date ____ Seals Intact? ____ Y ____ N Received Good Condition ____ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_2
Rev. 10-19-07

Microbac Laboratories, Inc. **SAMPLE RECEIPT FORM** 00115696

198 Starlite Drive
Marietta, OH 45750
(740) 373-4071

Client:	S LIAW longhorn
Workorder Number:	B see coc
Date Received:	2-6-08
Delivered by:	( ) Fedx ( ) UPS ( ) Client ( ) Courier Time:
Opened by:	ERC
IR Temp Gun:	(✓) G ( ) H
Logged by:	ERP/JKT 4090201.36

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
3129	3	1Z66V7250199500189		

Inspection Checklist	**Y**	**N**	**NA**	**Discrepancy ID**
Were shipping coolers sealed?	✓			
Were custody seals intact?				
Were cooler temperatures in range of 0 - 6?	✓			
Was ice present?				
Were COC's received/ information complete/signed and dated?	✓			
Were sample containers and labels intact and match COC?	✓			
Were the correct containers and volumes received?	✓			
Were correct preservatives used? (water only)	✓			
Were pH ranges acceptable? (voa's excluded)			✓	
Were VOA samples free of headspace (< 6mm)?	✓			
Were samples received within EPA hold times?	✓			

Discrepancy/Comments/Other Problems

Distribution

Name of Microbac representative:	
Client/Company:	
Person Contacted:	
Date contacted:	

Resolution/other comments:

Microbac Laboratories Inc.

00115697

Internal Chain of Custody Report

Login: L09020136
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 17-FEB-2009

Samplenum	Container ID	Products
L09020136-03	549927	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-FEB-2009 13:43	ERE	
2	ANALYZ	V1	ORG4	09-FEB-2009 11:50	MRT	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-FEB-2009 13:43	ERE	
2	ANALYZ	V1	ORG4	09-FEB-2009 11:50	MRT	ERE

Samplenum	Container ID	Products
L09020136-05	549929	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-FEB-2009 13:43	ERE	
2	ANALYZ	V1	ORG4	09-FEB-2009 11:50	MRT	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-FEB-2009 13:43	ERE	
2	ANALYZ	V1	ORG4	09-FEB-2009 11:50	MRT	ERE

Samplenum	Container ID	Products
L09020136-04	549928	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-FEB-2009 13:43	ERE	
2	ANALYZ	V1	ORG4	09-FEB-2009 11:50	MRT	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-FEB-2009 13:43	ERE	
2	ANALYZ	V1	ORG4	09-FEB-2009 11:50	MRT	ERE

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac®

Microbac Laboratories Inc.

00115698

Internal Chain of Custody Report

Login: L09020136
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 17-FEB-2009

Samplenum	Container ID	Products
L09020136-02	549926	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-FEB-2009 13:43	ERE	
2	ANALYZ	V1	ORG4	09-FEB-2009 11:50	MRT	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-FEB-2009 13:43	ERE	
2	ANALYZ	V1	ORG4	09-FEB-2009 11:50	MRT	ERE

Samplenum	Container ID	Products
L09020136-01	549925	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-FEB-2009 13:43	ERE	
2	ANALYZ	V1	ORG4	09-FEB-2009 11:50	MRT	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-FEB-2009 13:43	ERE	
2	ANALYZ	V1	ORG4	09-FEB-2009 11:50	MRT	ERE

Samplenum	Container ID	Products
L09020136-06	549930	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-FEB-2009 13:43	ERE	
2	ANALYZ	V1	ORG4	09-FEB-2009 11:50	MRT	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-FEB-2009 13:43	ERE	
2	ANALYZ	V1	ORG4	09-FEB-2009 11:50	MRT	ERE

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac®

158 Starlite Drive, Marietta, OH 45750 ● T:740-373-4071 ● F:740-373-4835 ● http://www.microbac.com

Laboratory Report Number: L09050034

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	*Team Chemist/Data Specialist*	kalbertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	smossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	tlong@microbac.com
Amanda Fickiesen	*Client Services Specialist*	afickiesen@microbac.com
Annie Brown	*Client Services Specialist*	abrown@microbac.com

This report was reviewed on May 06, 2009.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

This report was certified on May 06, 2009.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac OVD
This report contains a total of 84 pages.

Look closer. Go further. Do more.

Microbac REPORT L09050034
PREPARED FOR Shaw E I, Inc.
WORK ID:

1.0 Introduction 3
2.1 Volatiles Data 9
2.1.1 Volatiles GCMS Data (8260) 10
2.1.1.1 Summary Data 11
2.1.1.2 QC Summary Data 29
3.0 Attachments 77

1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09050034

CHAIN OF CUSTODY: The chain of custody number was 5729

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 4 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 04-MAY-09
Stephanie Moissing

Laboratory Data Package Cover Page

00115703

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	May 6, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09050034
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	301425, 301310
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	May 06, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		✓			1
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?					2
Was the ICAL curve verified for each analyte?					3
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT

ER# - Description

#1: Carbon disulfide exceeded the upper advisory limit in the LCS analyzed 05/01/09 on HPMS-10. Carbon disulfide exceeded the upper advisory limit in the LCS/LCSD analyzed 05/04/09 on HPMS-10.

#2: Carbon disulfide exceeded the upper control limit in the CCV analyzed 05/01/09 on HPMS-10. Chloromethane and bromomethane were below the lower control limits and carbon disulfide exceeded the upper control limit in the CCV analyzed 05/04/09 on HPMS-10.

#3: Carbon disulfide exceeded the upper control limit in the alternate source analyzed 04/27/09 on HPMS-10.

Footnotes:

(1) NA = Not applicable to method or project

(2) NR = Not reviewed

(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

00115710

L09050034

05/06/09 13:23

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW22 042909	L09050034-01	8260B	1	01-MAY-09
12WW20 042909	L09050034-02	8260B	1	01-MAY-09
12WW24 042909	L09050034-03	8260B	2	01-MAY-09
12WW24 042909	L09050034-03	8260B	1	01-MAY-09
12WW23 042909	L09050034-04	8260B	1	01-MAY-09
12WW21 042909	L09050034-05	8260B	1	01-MAY-09
12WW20 042909 FD	L09050034-06	8260B	1	01-MAY-09
TRIP BLANK	L09050034-07	8260B	1	01-MAY-09

Report Number: **L09050034**
Report Date : **May 6, 2009**

00115711

Sample Number: **L09050034-01**
Client ID: **12WW22 042909**
Matrix: **Water**
Workgroup Number: **WG301310**
Collect Date: **04/29/2009 09:36**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **05/01/2009 17:11**
Cal Date: **04/27/2009 16:53**
Run Date: **05/01/2009 17:11**
File ID: **10M72131**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3	0.567	J	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	0.291	J	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Sample Number: L09050034-01
Client ID: 12WW22 042909
Matrix: Water
Workgroup Number: WG301310
Collect Date: 04/29/2009 09:36
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 5030B
Analytical Method: 8260B
Analyst: TMB
Dilution: 1
Units: ug/L

Instrument: HPMS10
Prep Date: 05/01/2009 17:11
Cal Date: 04/27/2009 16:53
Run Date: 05/01/2009 17:11
File ID: 10M72131

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	104	86	118	
1,2-Dichloroethane-d4	93.6	80	120	
Toluene-d8	97.2	88	110	
4-Bromofluorobenzene	97.4	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09050034**
Report Date : **May 6, 2009**

00115713

Sample Number: **L09050034-02**
Client ID: **12WW20 042909**
Matrix: **Water**
Workgroup Number: **WG301310**
Collect Date: **04/29/2009 11:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **05/01/2009 17:43**
Cal Date: **04/27/2009 16:53**
Run Date: **05/01/2009 17:43**
File ID: **10M72132**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3	0.729	J	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	0.288	J	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.700	J	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	0.997	J	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Microbac®

Report Number: **L09050034**
Report Date : **May 6, 2009**

00115714

Sample Number:	L09050034-02	PrePrep Method:	NONE	Instrument:	HPMS10
Client ID:	12WW20 042909	Prep Method:	5030B	Prep Date:	05/01/2009 17:43
Matrix:	Water	Analytical Method:	8260B	Cal Date:	04/27/2009 16:53
Workgroup Number:	WG301310	Analyst:	TMB	Run Date:	05/01/2009 17:43
Collect Date:	04/29/2009 11:01	Dilution:	1	File ID:	10M72132
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	111	86	118	
1,2-Dichloroethane-d4	96.2	80	120	
Toluene-d8	97.0	88	110	
4-Bromofluorobenzene	99.7	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09050034**
Report Date : **May 6, 2009**

00115715

Sample Number: **L09050034-03**
Client ID: **12WW24 042909**
Matrix: **Water**
Workgroup Number: **WG301310**
Collect Date: **04/29/2009 11:51**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **2**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **05/01/2009 23:00**
Cal Date: **04/27/2009 16:53**
Run Date: **05/01/2009 23:00**
File ID: **10M72142**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	20.0	5.00
Benzene	71-43-2	0.745	J	2.00	0.250
Bromobenzene	108-86-1		U	2.00	0.250
Bromochloromethane	74-97-5		U	2.00	0.400
Bromodichloromethane	75-27-4		U	2.00	0.500
Bromoform	75-25-2		U	2.00	1.00
Bromomethane	74-83-9		U	2.00	1.00
2-Butanone	78-93-3		U	20.0	5.00
n-Butylbenzene	104-51-8		U	2.00	0.500
sec-Butylbenzene	135-98-8		U	2.00	0.500
tert-Butylbenzene	98-06-6		U	2.00	0.500
Carbon disulfide	75-15-0	1.33	J	2.00	1.00
Carbon tetrachloride	56-23-5		U	2.00	0.500
Chlorobenzene	108-90-7	9.44		2.00	0.250
Chlorodibromomethane	124-48-1		U	2.00	0.500
Chloroethane	75-00-3		U	2.00	1.00
2-Chloroethyl vinyl ether	110-75-8		U	20.0	4.00
Chloroform	67-66-3	0.333	J	2.00	0.250
Chloromethane	74-87-3		U	2.00	0.500
2-Chlorotoluene	95-49-8		U	2.00	0.250
4-Chlorotoluene	106-43-4		U	2.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	10.0	2.00
1,2-Dibromoethane	106-93-4		U	2.00	0.500
Dibromomethane	74-95-3		U	2.00	0.500
1,2-Dichlorobenzene	95-50-1		U	2.00	0.250
1,3-Dichlorobenzene	541-73-1		U	2.00	0.500
1,4-Dichlorobenzene	106-46-7	3.81		2.00	0.250
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
1,1-Dichloroethane	75-34-3	0.740	J	2.00	0.250
1,2-Dichloroethane	107-06-2		U	2.00	0.500
1,1-Dichloroethene	75-35-4		U	2.00	1.00
cis-1,2-Dichloroethene	156-59-2	44.5		2.00	0.500
trans-1,2-Dichloroethene	156-60-5	3.34		2.00	0.500
1,2-Dichloropropane	78-87-5		U	2.00	0.400
1,3-Dichloropropane	142-28-9		U	2.00	0.400
2,2-Dichloropropane	594-20-7		U	2.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	2.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	2.00	1.00
1,1-Dichloropropene	563-58-6		U	2.00	0.500
Ethylbenzene	100-41-4		U	2.00	0.500
2-Hexanone	591-78-6		U	20.0	5.00
Hexachlorobutadiene	87-68-3		U	2.00	0.500
Isopropylbenzene	98-82-8		U	2.00	0.500
p-Isopropyltoluene	99-87-6		U	2.00	0.500
4-Methyl-2-pentanone	108-10-1		U	20.0	5.00
Methylene chloride	75-09-2		U	10.0	0.500
Naphthalene	91-20-3		U	2.00	0.400
n-Propylbenzene	103-65-1		U	2.00	0.250
Styrene	100-42-5		U	2.00	0.250
1,1,1,2-Tetrachloroethane	630-20-6		U	2.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	2.00	0.250
Tetrachloroethene	127-18-4	0.616	J	2.00	0.500
Toluene	108-88-3		U	2.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	2.00	0.300
1,2,4-Trichlorobenzene	120-82-1		U	2.00	0.400
1,1,1-Trichloroethane	71-55-6		U	2.00	0.500
1,1,2-Trichloroethane	79-00-5		U	2.00	0.500
Trichloroethene	79-01-6	197		2.00	0.500
Trichlorofluoromethane	75-69-4		U	2.00	0.500

Report Number: **L09050034**
Report Date : **May 6, 2009**

00115716

Sample Number: **L09050034-03**
Client ID: **12WW24 042909**
Matrix: **Water**
Workgroup Number: **WG301310**
Collect Date: **04/29/2009 11:51**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **2**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **05/01/2009 23:00**
Cal Date: **04/27/2009 16:53**
Run Date: **05/01/2009 23:00**
File ID: **10M72142**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	2.00	1.00
1,2,4-Trimethylbenzene	95-63-6		U	2.00	0.500
1,3,5-Trimethylbenzene	108-67-8		U	2.00	0.500
Vinyl acetate	108-05-4		U	20.0	5.00
Vinyl chloride	75-01-4		U	2.00	0.500
o-Xylene	95-47-6		U	2.00	0.500
m-,p-Xylene	136777-61-2		U	2.00	1.00

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	117	86	118	
1,2-Dichloroethane-d4	97.3	80	120	
Toluene-d8	95.2	88	110	
4-Bromofluorobenzene	95.8	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09050034**
Report Date : **May 6, 2009**

00115717

Sample Number: **L09050034-03**
Client ID: **12WW24 042909**
Matrix: **Water**
Workgroup Number: **WG301425**
Collect Date: **04/29/2009 11:51**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **05/04/2009 16:50**
Cal Date: **04/27/2009 16:53**
Run Date: **05/04/2009 16:50**
File ID: **10M72167**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	7.50	J	10.0	2.50
Benzene	71-43-2	0.761	J	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7	10.2		1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3	0.388	J	1.00	0.125
Chloromethane	74-87-3	0.325	J	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	3.80		1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3	0.819	J	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	0.575	J	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	56.5		1.00	0.250
trans-1,2-Dichloroethene	156-60-5	1.12		1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4	0.698	J	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	232	I	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L09050034**
Report Date : **May 6, 2009**

00115718

Sample Number:	L09050034-03	PrePrep Method:	NONE	Instrument:	HPMS10
Client ID:	12WW24 042909	Prep Method:	5030B	Prep Date:	05/04/2009 16:50
Matrix:	Water	Analytical Method:	8260B	Cal Date:	04/27/2009 16:53
Workgroup Number:	WG301425	Analyst:	TMB	Run Date:	05/04/2009 16:50
Collect Date:	04/29/2009 11:51	Dilution:	1	File ID:	10M72167
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4	1.46		1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	111	86	118	
1,2-Dichloroethane-d4	97.0	80	120	
Toluene-d8	96.4	88	110	
4-Bromofluorobenzene	97.7	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL
I Semiquantitative result (out of instrument calibration range)

Report Number: **L09050034**
Report Date : **May 6, 2009**

00115719

Sample Number: **L09050034-04**
Client ID: **12WW23 042909**
Matrix: **Water**
Workgroup Number: **WG301310**
Collect Date: **04/29/2009 14:21**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **05/01/2009 18:15**
Cal Date: **04/27/2009 16:53**
Run Date: **05/01/2009 18:15**
File ID: **10M72133**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	6.65	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L09050034**
Report Date : **May 6, 2009**

00115720

Sample Number:	L09050034-04	PrePrep Method:	NONE	Instrument:	HPMS10
Client ID:	12WW23 042909	Prep Method:	5030B	Prep Date:	05/01/2009 18:15
Matrix:	Water	Analytical Method:	8260B	Cal Date:	04/27/2009 16:53
Workgroup Number:	WG301310	Analyst:	TMB	Run Date:	05/01/2009 18:15
Collect Date:	04/29/2009 14:21	Dilution:	1	File ID:	10M72133
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	117	86	118	
1,2-Dichloroethane-d4	97.5	80	120	
Toluene-d8	97.4	88	110	
4-Bromofluorobenzene	97.4	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09050034**
Report Date : **May 6, 2009**

00115721

Sample Number: **L09050034-05**
Client ID: **12WW21 042909**
Matrix: **Water**
Workgroup Number: **WG301310**
Collect Date: **04/29/2009 15:28**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **05/01/2009 18:46**
Cal Date: **04/27/2009 16:53**
Run Date: **05/01/2009 18:46**
File ID: **10M72134**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L09050034**
Report Date : **May 6, 2009**

00115722

Sample Number: **L09050034-05**
Client ID: **12WW21 042909**
Matrix: **Water**
Workgroup Number: **WG301310**
Collect Date: **04/29/2009 15:28**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **05/01/2009 18:46**
Cal Date: **04/27/2009 16:53**
Run Date: **05/01/2009 18:46**
File ID: **10M72134**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	117	86	118	
1,2-Dichloroethane-d4	99.8	80	120	
Toluene-d8	95.0	88	110	
4-Bromofluorobenzene	97.2	86	115	

U Not detected at or above adjusted sample detection limit

Report Number: **L09050034**
Report Date : **May 6, 2009**

00115723

Sample Number: **L09050034-06**
Client ID: **12WW20 042909 FD**
Matrix: **Water**
Workgroup Number: **WG301310**
Collect Date: **04/29/2009 11:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **05/01/2009 19:18**
Cal Date: **04/27/2009 16:53**
Run Date: **05/01/2009 19:18**
File ID: **10M72135**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	2.62	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	0.276	J	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.752	J	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	1.01		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Microbac®

Sample Number: L09050034-06
Client ID: 12WW20 042909 FD
Matrix: Water
Workgroup Number: WG301310
Collect Date: 04/29/2009 11:01
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 5030B
Analytical Method: 8260B
Analyst: TMB
Dilution: 1
Units: ug/L

Instrument: HPMS10
Prep Date: 05/01/2009 19:18
Cal Date: 04/27/2009 16:53
Run Date: 05/01/2009 19:18
File ID: 10M72135

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	117	86	118	
1,2-Dichloroethane-d4	98.4	80	120	
Toluene-d8	96.4	88	110	
4-Bromofluorobenzene	99.4	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09050034**
Report Date : **May 6, 2009**

00115725

Sample Number: **L09050034-07**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG301310**
Collect Date: **04/29/2009 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **05/01/2009 16:08**
Cal Date: **04/27/2009 16:53**
Run Date: **05/01/2009 16:08**
File ID: **10M72129**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	3.60	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2	0.468	J	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L09050034**
Report Date : **May 6, 2009**

00115726

Sample Number:	L09050034-07	PrePrep Method:	NONE	Instrument:	HPMS10
Client ID:	TRIP BLANK	Prep Method:	5030B	Prep Date:	05/01/2009 16:08
Matrix:	Water	Analytical Method:	8260B	Cal Date:	04/27/2009 16:53
Workgroup Number:	WG301310	Analyst:	TMB	Run Date:	05/01/2009 16:08
Collect Date:	04/29/2009 00:01	Dilution:	1	File ID:	10M72129
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	109	86	118	
1,2-Dichloroethane-d4	98.2	80	120	
Toluene-d8	96.1	88	110	
4-Bromofluorobenzene	97.6	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**
Dry weight correction:	
Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a\left(c - y\right)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS10 Dataset: 042709
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 12
Method: 5030B/5035 SOP: PAT01 Rev: 11
Method: 624 SOP: MSV10 Rev: 7
Maintenance Log ID: 28505

Internal Standard: STD32440 Surrogate Standard: STD32449
CCV: STD32480 LCS: STD32485 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG300755

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M72008	SYSTEM BLANK	NA	1	1		04/27/09 08:59
2	10M72009	SYSTEM BLANK	NA	1	1		04/27/09 09:31
3	10M72010	WG300755-01 50ng BFB STD 8260	NA	1	1	STD32213	04/27/09 10:00
4	10M72011	WG300755-02 0.3ug/L STD 8260	NA	1	1	STD32480	04/27/09 10:27
5	10M72012	WG300755-03 0.4ug/L STD 8260	NA	1	1	STD32480	04/27/09 10:58
6	10M72013	WG300755-04 1ug/L STD 8260	NA	1	1	STD32480	04/27/09 11:30
7	10M72014	WG300755-05 2ug/L STD 8260	NA	1	1	STD32480	04/27/09 12:01
8	10M72015	WG300755-04 1ug/L STD 8260	NA	1	1	STD32480	04/27/09 12:33
9	10M72016	WG300755-06 5ug/L STD 8260	NA	1	1	STD32480	04/27/09 13:07
10	10M72017	WG300755-07 20ug/L STD 8260	NA	1	1	STD32480	04/27/09 13:38
11	10M72018	WG300755-08 50ug/L STD 8260	NA	1	1	STD32480	04/27/09 14:15
12	10M72019	system blank	NA	1	1	STD32480	04/27/09 14:47
13	10M72020	WG300755-03 0.4ug/L STD 8260	NA	1	1	STD32480	04/27/09 15:19
14	10M72021	WG300755-09 100ug/L STD 8260	NA	1	1	STD32480	04/27/09 15:50
15	10M72022	WG300755-10 200ug/L STD 8260	NA	1	1	STD32480	04/27/09 16:22
16	10M72023	WG300755-11 300ug/L STD 8260	NA	1	1	STD32480	04/27/09 16:53
17	10M72024	SYSTEM BLANK	NA	1	1		04/27/09 17:25
18	10M72025	SYSTEM BLANK	NA	1	1		04/27/09 17:56
19	10M72026	WG300755-12 20ug/L ALT SRC STD 8260	NA	1	1	STD32485	04/27/09 18:28
20	10M72027	WG300755-12 20ug/L OXY ALT SRC STD 8	NA	1	1	STD32485	04/27/09 19:00
21	10M72028	SYSTEM BLANK	NA	1	1		04/27/09 19:32

Comments

Seq.	Rerun	Dil.	Reason	Analytes
5	X		Over Linear Range	HEXABUT
File ID: 10M72012				
hEXABUT. was low. DNR.				
6	X		Over Linear Range	idome
File ID: 10M72013				
No idomethane. DNR.				

Approved: April 29, 2009

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS10 Dataset: 050109
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 12
Method: 5030B/5035 SOP: PAT01 Rev: 11

Maintenance Log ID: 28578

Internal Standard: STD32440 Surrogate Standard: STD32561
CCV: STD32569 LCS: STD32589 MS/MSD: STD32589

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG301310

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M72118	SYSTEM BLANK	NA	1	1		05/01/09 08:42
2	10M72119	SYSTEM BLANK	NA	1	1		05/01/09 11:16
3	10M72120	SYSTEM BLANK	NA	1	1		05/01/09 11:48
4	10M72121	WG301309-01 50ng BFB STD 8260	NA	1	1	STD32213	05/01/09 12:33
5	10M72122	WG301309-01 50ng BFB STD 8260	NA	1	1	STD32213	05/01/09 12:47
6	10M72123	WG301309-01 50ng BFB STD 8260	NA	1	1	STD32213	05/01/09 13:01
7	10M72124	WG301309-02 50ug/L CCV STD 8260	NA	1	1	STD32569	05/01/09 13:28
8	10M72125	WG301310-01 VBLK0501 BLANK STD 826	NA	1	1		05/01/09 14:01
9	10M72126	WG301310-01 VBLK0501 BLANK STD 826	NA	1	1		05/01/09 14:32
10	10M72127	WG301310-02 20ug/L LCS STD 8260	NA	1	1	STD32589	05/01/09 15:04
11	10M72128	WG301310-03 FBLK 10X STD 8260	NA	1	10		05/01/09 15:36
12	10M72129	L09050034-07 A 826-LOW	<2	1	1		05/01/09 16:08
13	10M72130	L09040677-01 B 826-SPE1 00	<2	1	1		05/01/09 16:39
14	10M72131	L09050034-01 A 826-LOW	<2	1	1		05/01/09 17:11
15	10M72132	L09050034-02 A 826-LOW	<2	1	1		05/01/09 17:43
16	10M72133	L09050034-04 A 826-LOW	<2	1	1		05/01/09 18:15
17	10M72134	L09050034-05 A 826-LOW	<2	1	1		05/01/09 18:46
18	10M72135	L09050034-06 A 826-LOW	<2	1	1		05/01/09 19:18
19	10M72136	L09040689-03 A 826-SPLP	NA	18	1		05/01/09 19:50
20	10M72137	L09040689-05 A 826-SPLP	NA	18	1		05/01/09 20:21
21	10M72138	L09040689-07 A 826-SPLP	NA	18	1		05/01/09 20:53
22	10M72139	L09040689-09 A 826-SPLP	NA	18	1		05/01/09 21:25
23	10M72140	L09040689-11 A MS 826-SPLP	NA	18	1		05/01/09 21:56
24	10M72141	L09040689-13 A MSD 826-SPLP	NA	18	1		05/01/09 22:28
25	10M72142	L09050034-03 A 2X 826-LOW	<2	1	2		05/01/09 23:00
26	10M72143	L09040716-05 A 826-LOW	<2	1	1		05/01/09 23:32
27	10M72144	L09040716-06 A 826-LOW	<2	1	1		05/02/09 00:03
28	10M72145	SYSTEM BLANK	NA	1	1		05/02/09 00:35
29	10M72146	SYSTEM BLANK	NA	1	1		05/02/09 01:07
30	10M72147	SYSTEM BLANK	NA	1	1		05/02/09 01:39
31	10M72148	SYSTEM BLANK	NA	1	1		05/02/09 02:11

Comments

Approved: May 05, 2009

Microbac

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS10 Dataset: 050109
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 12
Method: 5030B/5035 SOP: PAT01 Rev: 11

Maintenance Log ID: 28578

Internal Standard: STD32440 Surrogate Standard: STD32561
CCV: STD32569 LCS: STD32589 MS/MSD: STD32589

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG301310

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
4	X			
File ID: 10M72121				
	Tune failed. DNR.			
5	X			
File ID: 10M72122				
	Tune failed. DNR. Changed the septa.			
8	X	1	Carry-over contamination	
File ID: 10M72125				
	dnr.			
25	X	1	Analyzed too dilute	
File ID: 10M72142				

Approved: May 05, 2009

Page: 2

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS10 Dataset: 050409
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 12
Method: 5030B/5035 SOP: PAT01 Rev: 11

Maintenance Log ID: 28609

Internal Standard: STD32440 Surrogate Standard: STD32561
CCV: STD32569 LCS: STD32631 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG301425

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M72150	SYSTEM BLANK	NA	1	1		05/04/09 08:39
2	10M72151	SYSTEM BLANK	NA	1	1		05/04/09 09:11
3	10M72152	WG301424-01 50ng BFB STD 8260	NA	1	1	STD32213	05/04/09 09:40
4	10M72153	WG301424-01 50ng BFB STD 8260	NA	1	1	STD32213	05/04/09 09:53
5	10M72154	WG301424-01 50ng BFB STD 8260	NA	1	1	STD32213	05/04/09 10:06
6	10M72155	WG301424-02 50ug/L CCV STD 8260	NA	1	1	STD32569	05/04/09 10:31
7	10M72156	WG301424-01 50ng BFB STD 8260	NA	1	1	STD32213	05/04/09 11:09
8	10M72157	WG301424-02 50ug/L CCV STD 8260	NA	1	1	STD32569	05/04/09 11:34
9	10M72158	WG301425-01 VBLK0504 BLANK STD 826	NA	1	1		05/04/09 12:05
10	10M72159	WG301425-01 VBLK0504 BLANK STD 826	NA	1	1		05/04/09 12:37
11	10M72160	WG301425-02 20ug/L LCS STD 8260	NA	1	1	STD32631	05/04/09 13:09
12	10M72161	WG301425-03 20ug/L LCSDUP STD 8260	NA	1	1	STD32631	05/04/09 13:40
13	10M72162	WG301425-04 FBLK 10X STD 8260	NA	1	10		05/04/09 14:12
14	10M72163	L09040740-05 A 826-SPE	<2	1	1		05/04/09 14:44
15	10M72164	L09040740-04 A 826-SPE	<2	1	1		05/04/09 15:15
16	10M72165	L09040005-01 QMDL 826-SPE	NA	1	1	STD32132	05/04/09 15:47
17	10M72166	L09040682-02 B 100X 826-SPE	<2	1	100		05/04/09 16:19
18	10M72167	L09050034-03 B 826-LOW	<2	1	1		05/04/09 16:50
19	10M72168	SYSTEM BLANK	NA	1	1		05/04/09 17:22
20	10M72169	L09040739-01 10X 826-TC	NA	17	10		05/04/09 17:54
21	10M72170	L09040740-01 100X 826-SPE	<2	1	100		05/04/09 18:26
22	10M72171	L09040740-02 5000X 826-SPE	<2	1	5000		05/04/09 18:57
23	10M72172	L09040740-03 1000X 826-SPE	<2	1	1000		05/04/09 19:29
24	10M72173	system blank	NA	1	1		05/04/09 20:01
25	10M72174	system blank	NA	1	1		05/04/09 20:33
26	10M72175	system blank	NA	1	1		05/04/09 21:05
27	10M72176	system blank	NA	1	1		05/04/09 21:37
28	10M72177	test vial 5/1/09	NA	1	1		05/04/09 22:08
29	10M72178	test vial 5/1/09	NA	1	1		05/04/09 22:40

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X			

Approved: May 05, 2009

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS10 Dataset: 050409
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 12
Method: 5030B/5035 SOP: PAT01 Rev: 11

Maintenance Log ID: 28609

Internal Standard: STD32440 Surrogate Standard: STD32561
CCV: STD32569 LCS: STD32631 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG301425

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 10M72152				
	Tune failed. DNR.			
4	X			
File ID: 10M72153				
	Tune failed. DNR. Changed the septa.			
9	X	1	Carry-over contamination	
File ID: 10M72158				
	DNR.			
15	X	5	Over Calibration Range	BEN
File ID: 10M72164				
21	X	50	Analyzed too dilute	
File ID: 10M72170				

Approved: May 05, 2009

Page: 2

Microbac Laboratories Inc.

Data Checklist

Date: 27-APR-2009
Analyst: TMB
Analyst: NA
Method: 8260/624
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 27778
Analytical Workgroups: WG300755

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	NA
Project/Client Specific Requirements	NA
Special Standards	NA
Blanks	NA
TCL's	NA
Surrogates	NA
LCS (Laboratory Control Sample)	NA
Recoveries	NA
Surrogates	NA
MS/MSD/Duplicates	NA
Samples	NA
TCL Hits	NA
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Library Searches	NA
Calculations & Correct Factors	NA
Dilutions Run	NA
Reruns	NA
Manual Integrations	NA
Case Narrative	NA
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	MES
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
28-APR-2009

Tiffany Bailey

Secondary Reviewer:
29-APR-2009

CHECKLIST1 - Modified 03/05/2008
Generated: APR-29-2009 12:13:42

Microbac Laboratories Inc.

Data Checklist

Date: 01-MAY-2009
Analyst: TMB
Analyst: NA
Method: 8260
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 27880
Analytical Workgroups: WG301310

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
04-MAY-2009

Tiffany Bailey

Secondary Reviewer:
05-MAY-2009

CHECKLIST1 - Modified 03/05/2008
Generated: MAY-05-2009 08:34:14

Microbac Laboratories Inc.

Data Checklist

Date: 04-MAY-2009
Analyst: TMB
Analyst: NA
Method: 8260
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 27924
Analytical Workgroups: WG301425

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	FJB
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
05-MAY-2009
Tiffany Bailey

Secondary Reviewer:
05-MAY-2009

CHECKLIST1 - Modified 03/05/2008
Generated: MAY-06-2009 08:11:34

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00115738

Analytical Method: 8260B AAB#: WG301310

Login Number: L09050034

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW20 042909 FD	04/29/09	05/01/09	05/01/09	14	2.35	05/01/09	14	2.35	
TRIP BLANK	04/29/09	05/01/09	05/01/09	14	2.67	05/01/09	14	2.67	
12WW20 042909	04/29/09	05/01/09	05/01/09	14	2.28	05/01/09	14	2.28	
12WW24 042909	04/29/09	05/01/09	05/01/09	14	2.46	05/01/09	14	2.46	
12WW21 042909	04/29/09	05/01/09	05/01/09	14	2.14	05/01/09	14	2.14	
12WW23 042909	04/29/09	05/01/09	05/01/09	14	2.16	05/01/09	14	2.16	
12WW22 042909	04/29/09	05/01/09	05/01/09	14	2.32	05/01/09	14	2.32	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1384679
Report generated 05/06/2009 12:44

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00115739

Analytical Method: 8260B AAB#: WG301425

Login Number: L09050034

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW24 042909	04/29/09	05/01/09	05/04/09	14	5.21	05/04/09	14	5.21	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1384679
Report generated 05/06/2009 12:44

Login Number: L09050034
Instrument Id: HPMS10
Workgroup (AAB#): WG301425

Method: 8260
CAL ID: HPMS10-27-APR-09
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L09050034-03	1.00	01	97.0	111	97.7	96.4
WG301425-01	1.00	01	97.0	115	99.3	97.8
WG301425-02	1.00	01	90.9	98.6	89.2	98.5
WG301425-03	1.00	01	91.5	99.0	98.9	92.3
WG301425-04	10.0	DL01	92.2	112	98.6	96.6

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1384687
Report generated: 05/06/2009 12:44

Microbac Laboratories Inc.
SURROGATE STANDARDS

Login Number: L09050034
Instrument Id: HPMS10
Workgroup (AAB#): WG301310

Method: 8260
CAL ID: HPMS10-27-APR-09
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L09050034-01	1.00	01	93.6	104	97.4	97.2
L09050034-02	1.00	01	96.2	111	99.7	97.0
L09050034-03	2.00	DL01	97.3	117	95.8	95.2
L09050034-04	1.00	01	97.5	117	97.4	97.4
L09050034-05	1.00	01	99.8	117	97.2	95.0
L09050034-06	1.00	01	98.4	117	99.4	96.4
L09050034-07	1.00	01	98.2	109	97.6	96.1
WG301310-01	1.00	01	93.7	108	96.0	97.4
WG301310-02	1.00	01	94.2	93.0	92.3	91.9
WG301310-03	10.0	DL01	96.3	110	99.6	96.3

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1384687
Report generated: 05/06/2009 12:44

METHOD BLANK SUMMARY

Login Number: L09050034
Work Group: WG301310
Blank File ID: 10M72126
Blank Sample ID: WG301310-01
Prep Date: 05/01/09 14:32
Instrument ID: HPMS10
Analyzed Date: 05/01/09 14:32
Method: 8260B
Analyst: TMB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG301310-02	10M72127	05/01/09 15:04	01
FBLK	WG301310-03	10M72128	05/01/09 15:36	DL01
TRIP BLANK	L09050034-07	10M72129	05/01/09 16:08	01
12WW22 042909	L09050034-01	10M72131	05/01/09 17:11	01
12WW20 042909	L09050034-02	10M72132	05/01/09 17:43	01
12WW23 042909	L09050034-04	10M72133	05/01/09 18:15	01
12WW21 042909	L09050034-05	10M72134	05/01/09 18:46	01
12WW20 042909 FD	L09050034-06	10M72135	05/01/09 19:18	01
12WW24 042909	L09050034-03	10M72142	05/01/09 23:00	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1384680
Report generated 05/06/2009 12:44

METHOD BLANK SUMMARY

Login Number: L09050034
Work Group: WG301425
Blank File ID: 10M72159
Blank Sample ID: WG301425-01
Prep Date: 05/04/09 12:37
Instrument ID: HPMS10
Analyzed Date: 05/04/09 12:37
Method: 8260B
Analyst: TMB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG301425-02	10M72160	05/04/09 13:09	01
LCS2	WG301425-03	10M72161	05/04/09 13:40	01
FBLK	WG301425-04	10M72162	05/04/09 14:12	DL01
12WW24 042909	L09050034-03	10M72167	05/04/09 16:50	01

Report Name: BLANK_SUMMARY
PDF File ID: 1384680
Report generated 05/06/2009 12:44

Login Number:L09050034 Prep Date:05/01/09 14:32 Sample ID:WG301310-01
Instrument ID:HPMS10 Run Date:05/01/09 14:32 Prep Method:5030B
File ID:10M72126 Analyst:TMB Method:8260B
Workgroup (AAB#):WG301310 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS10-27-APR-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

Report Name:BLANK
PDF ID: 1384681
06-MAY-2009 12:44

Login Number:L09050034 Prep Date:05/01/09 14:32 Sample ID:WG301310-01
Instrument ID:HPMS10 Run Date:05/01/09 14:32 Prep Method:5030B
File ID:10M72126 Analyst:TMB Method:8260B
Workgroup (AAB#):WG301310 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS10-27-APR-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	108	86 - 118	PASS
1,2-Dichloroethane-d4	93.7	80 - 120	PASS
Toluene-d8	97.4	88 - 110	PASS
4-Bromofluorobenzene	96.0	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1384681
06-MAY-2009 12:44

Login Number:L09050034 Prep Date:05/04/09 12:37 Sample ID:WG301425-01
Instrument ID:HPMS10 Run Date:05/04/09 12:37 Prep Method:5030B
File ID:10M72159 Analyst:TMB Method:8260B
Workgroup (AAB#):WG301425 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS10-27-APR-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

Report Name:BLANK
PDF ID: 1384681
06-MAY-2009 12:44

Login Number:L09050034 Prep Date:05/04/09 12:37 Sample ID:WG301425-01
Instrument ID:HPMS10 Run Date:05/04/09 12:37 Prep Method:5030B
File ID:10M72159 Analyst:TMB Method:8260B
Workgroup (AAB#):WG301425 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS10-27-APR-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	115	86 - 118	PASS
1,2-Dichloroethane-d4	97.0	80 - 120	PASS
Toluene-d8	97.8	88 - 110	PASS
4-Bromofluorobenzene	99.3	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1384681
06-MAY-2009 12:44

Login Number: L09050034 Run Date: 05/01/2009 Sample ID: WG301310-02
Instrument ID: HPMS10 Run Time: 15:04 Prep Method: 5030B
File ID: 10M72127 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG301310 Matrix: Water Units: ug/L
QC Key: STD Lot#: STD32485 Cal ID: HPMS10-27-APR-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Acetone	20.0	20.5	102	40 - 142	
Benzene	20.0	20.4	102	80 - 121	
Bromobenzene	20.0	21.5	107	80 - 120	
Bromochloromethane	20.0	20.1	100	65 - 130	
Bromodichloromethane	20.0	21.1	106	80 - 131	
Bromoform	20.0	21.8	109	70 - 130	
Bromomethane	20.0	14.7	73.5	30 - 145	
2-Butanone	20.0	27.8	139	30 - 150	
n-Butylbenzene	20.0	21.2	106	80 - 131	
sec-Butylbenzene	20.0	22.5	112	80 - 127	
tert-Butylbenzene	20.0	22.4	112	80 - 126	
Carbon disulfide	20.0	29.4	147	58 - 138	*
Carbon tetrachloride	20.0	20.5	103	65 - 140	
Chlorobenzene	20.0	20.5	102	80 - 120	
Chlorodibromomethane	20.0	22.1	110	60 - 135	
Chloroethane	20.0	22.3	112	60 - 135	
2-Chloroethyl vinyl ether	20.0	20.0	99.8	58 - 151	
Chloroform	20.0	20.5	102	80 - 125	
Chloromethane	20.0	11.5	57.5	40 - 125	
2-Chlorotoluene	20.0	20.5	102	80 - 127	
4-Chlorotoluene	20.0	20.2	101	80 - 126	
1,2-Dibromo-3-chloropropane	20.0	19.0	95.2	50 - 130	
1,2-Dibromoethane	20.0	21.7	108	80 - 125	
Dibromomethane	20.0	21.3	106	75 - 125	
1,2-Dichlorobenzene	20.0	20.9	105	80 - 125	
1,3-Dichlorobenzene	20.0	20.6	103	80 - 120	
1,4-Dichlorobenzene	20.0	19.8	99.0	80 - 120	
Dichlorodifluoromethane	20.0	12.6	63.0	50 - 133	
1,1-Dichloroethane	20.0	21.0	105	80 - 125	
1,2-Dichloroethane	20.0	20.7	104	80 - 129	
1,1-Dichloroethene	20.0	20.9	104	80 - 132	
cis-1,2-Dichloroethene	20.0	21.5	108	70 - 125	
trans-1,2-Dichloroethene	20.0	24.0	120	80 - 127	
1,2-Dichloropropane	20.0	21.4	107	80 - 120	
1,3-Dichloropropane	20.0	21.1	106	80 - 120	
2,2-Dichloropropane	20.0	18.7	93.5	80 - 133	
cis-1,3-Dichloropropene	20.0	20.4	102	70 - 130	
trans-1,3-Dichloropropene	20.0	19.1	95.6	80 - 130	
1,1-Dichloropropene	20.0	20.5	103	75 - 130	
Ethylbenzene	20.0	22.1	110	80 - 122	
2-Hexanone	20.0	19.1	95.4	55 - 130	

LCS - Modified 03/06/2008
PDF File ID: 1381887
Report generated: 05/06/2009 12:58

Login Number: L09050034 Run Date: 05/01/2009 Sample ID: WG301310-02
Instrument ID: HPMS10 Run Time: 15:04 Prep Method: 5030B
File ID: 10M72127 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG301310 Matrix: Water Units: ug/L
QC Key: STD Lot#: STD32485 Cal ID: HPMS10-27-APR-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Hexachlorobutadiene	20.0	21.9	110	72 - 132	
Isopropylbenzene	20.0	17.8	88.9	80 - 122	
p-Isopropyltoluene	20.0	21.2	106	80 - 122	
4-Methyl-2-pentanone	20.0	19.9	99.3	64 - 140	
Methylene chloride	20.0	20.2	101	80 - 123	
Naphthalene	20.0	20.3	102	59 - 149	
n-Propylbenzene	20.0	20.3	101	80 - 129	
Styrene	20.0	21.9	109	80 - 123	
1,1,1,2-Tetrachloroethane	20.0	21.6	108	80 - 130	
1,1,2,2-Tetrachloroethane	20.0	18.9	94.3	79 - 125	
Tetrachloroethene	20.0	20.2	101	80 - 124	
Toluene	20.0	20.3	101	80 - 124	
1,2,3-Trichlorobenzene	20.0	20.5	102	55 - 140	
1,2,4-Trichlorobenzene	20.0	20.0	99.9	65 - 135	
1,1,1-Trichloroethane	20.0	20.8	104	80 - 134	
1,1,2-Trichloroethane	20.0	22.2	111	80 - 125	
Trichloroethene	20.0	21.1	106	80 - 122	
Trichlorofluoromethane	20.0	18.0	89.9	62 - 151	
1,2,3-Trichloropropane	20.0	20.9	104	75 - 125	
1,2,4-Trimethylbenzene	20.0	22.3	112	80 - 125	
1,3,5-Trimethylbenzene	20.0	22.2	111	80 - 127	
Vinyl acetate	20.0	11.8	58.9	10 - 150	
Vinyl chloride	20.0	16.2	80.8	65 - 140	
o-Xylene	20.0	20.7	104	80 - 122	
m-,p-Xylene	40.0	42.1	105	80 - 122	

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	93.0	86 - 118	PASS
1,2-Dichloroethane-d4	94.2	80 - 120	PASS
Toluene-d8	91.9	88 - 110	PASS
4-Bromofluorobenzene	92.3	86 - 115	PASS

* FAILS %REC LIMIT

LCS - Modified 03/06/2008
PDF File ID: 1381887
Report generated: 05/06/2009 12:58

Login Number:L09050034 Analyst:TMB Prep Method:5030B
Instrument ID:HPMS10 Matrix:Water Method:8260B
Workgroup (AAB#):WG301425 Units:ug/L
QC Key:STD Lot #:STD32589

Sample ID:WG301425-02 LCS File ID:10M72160 Run Date:05/04/2009 13:09
Sample ID:WG301425-03 LCS2 File ID:10M72161 Run Date:05/04/2009 13:40

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	20.8	104	20.0	21.7	108	4.38	40 - 142	20	
Benzene	20.0	20.8	104	20.0	20.7	104	0.617	80 - 121	20	
Bromobenzene	20.0	20.1	100	20.0	22.6	113	11.9	80 - 120	20	
Bromochloromethane	20.0	20.0	99.9	20.0	20.1	101	0.643	65 - 130	20	
Bromodichloromethane	20.0	20.3	101	20.0	20.6	103	1.52	80 - 131	20	
Bromoform	20.0	21.8	109	20.0	21.3	107	2.47	70 - 130	20	
Bromomethane	20.0	11.2	55.9	20.0	11.6	57.9	3.39	30 - 145	20	
2-Butanone	20.0	20.7	104	20.0	21.3	106	2.72	30 - 150	20	
n-Butylbenzene	20.0	21.1	106	20.0	21.8	109	3.32	80 - 131	20	
sec-Butylbenzene	20.0	22.2	111	20.0	22.6	113	1.92	80 - 127	20	
tert-Butylbenzene	20.0	22.2	111	20.0	22.7	113	2.18	80 - 126	20	
Carbon disulfide	20.0	31.5	158	20.0	30.5	153	3.19	58 - 138	20	*
Carbon tetrachloride	20.0	19.3	96.4	20.0	20.3	102	5.27	65 - 140	20	
Chlorobenzene	20.0	20.4	102	20.0	20.4	102	0.0494	80 - 120	20	
Chlorodibromomethane	20.0	21.5	108	20.0	20.5	103	4.66	60 - 135	20	
Chloroethane	20.0	23.8	119	20.0	23.0	115	3.42	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	19.7	98.5	20.0	19.5	97.7	0.831	58 - 151	20	
Chloroform	20.0	20.6	103	20.0	20.6	103	0.0675	80 - 125	20	
Chloromethane	20.0	12.9	64.5	20.0	13.8	68.9	6.58	40 - 125	20	
2-Chlorotoluene	20.0	19.1	95.7	20.0	20.9	104	8.60	80 - 127	20	
4-Chlorotoluene	20.0	19.9	99.4	20.0	19.8	99.1	0.268	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	18.6	93.0	20.0	19.9	99.4	6.68	50 - 130	20	
1,2-Dibromoethane	20.0	21.6	108	20.0	20.9	105	3.19	80 - 125	20	
Dibromomethane	20.0	20.9	105	20.0	21.1	106	0.992	75 - 125	20	
1,2-Dichlorobenzene	20.0	20.1	101	20.0	20.9	104	3.66	80 - 125	20	
1,3-Dichlorobenzene	20.0	20.6	103	20.0	20.9	105	1.76	80 - 120	20	
1,4-Dichlorobenzene	20.0	19.6	97.8	20.0	20.1	100	2.56	80 - 120	20	
Dichlorodifluoromethane	20.0	25.7	129	20.0	25.6	128	0.588	50 - 133	20	
1,1-Dichloroethane	20.0	20.6	103	20.0	20.5	102	0.400	80 - 125	20	
1,2-Dichloroethane	20.0	20.3	101	20.0	20.7	103	2.12	80 - 129	20	
1,1-Dichloroethene	20.0	21.6	108	20.0	22.0	110	2.17	80 - 132	20	
cis-1,2-Dichloroethene	20.0	21.9	109	20.0	22.2	111	1.40	70 - 125	20	
trans-1,2-Dichloroethene	20.0	24.4	122	20.0	23.9	120	1.90	80 - 127	20	
1,2-Dichloropropane	20.0	21.5	107	20.0	21.3	107	0.621	80 - 120	20	
1,3-Dichloropropane	20.0	20.9	105	20.0	19.8	99.1	5.38	80 - 120	20	
2,2-Dichloropropane	20.0	18.6	93.1	20.0	18.6	92.9	0.189	80 - 133	20	
cis-1,3-Dichloropropene	20.0	19.6	97.9	20.0	20.0	100	2.28	70 - 130	20	
trans-1,3-Dichloropropene	20.0	18.7	93.6	20.0	18.0	90.1	3.81	80 - 130	20	
1,1-Dichloropropene	20.0	21.0	105	20.0	20.8	104	1.20	75 - 130	20	
Ethylbenzene	20.0	20.5	102	20.0	21.5	108	5.02	80 - 122	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1384195
Report generated: 05/06/2009 12:44

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number:L09050034 Analyst:TMB Prep Method:5030B
Instrument ID:HPMS10 Matrix:Water Method:8260B
Workgroup (AAB#):WG301425 Units:ug/L
QC Key:STD Lot #:STD32589

Sample ID:WG301425-02 LCS File ID:10M72160 Run Date:05/04/2009 13:09
Sample ID:WG301425-03 LCS2 File ID:10M72161 Run Date:05/04/2009 13:40

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	17.4	86.9	20.0	19.3	96.7	10.6	55 - 130	20	
Hexachlorobutadiene	20.0	22.1	111	20.0	22.5	112	1.72	72 - 132	20	
Isopropylbenzene	20.0	16.5	82.6	20.0	17.3	86.7	4.75	80 - 122	20	
p-Isopropyltoluene	20.0	21.0	105	20.0	21.5	107	2.48	80 - 122	20	
4-Methyl-2-pentanone	20.0	19.3	96.3	20.0	21.0	105	8.56	64 - 140	20	
Methylene chloride	20.0	20.4	102	20.0	20.5	103	0.736	80 - 123	20	
Naphthalene	20.0	20.0	100	20.0	21.4	107	6.67	59 - 149	20	
n-Propylbenzene	20.0	19.8	98.8	20.0	20.5	103	3.68	80 - 129	20	
Styrene	20.0	21.1	105	20.0	21.2	106	0.690	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	21.8	109	20.0	20.4	102	6.72	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	17.8	88.9	20.0	19.9	99.4	11.2	79 - 125	20	
Tetrachloroethene	20.0	21.4	107	20.0	19.7	98.4	8.26	80 - 124	20	
Toluene	20.0	21.1	105	20.0	19.7	98.5	6.89	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	20.1	100	20.0	20.9	105	4.14	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	19.9	99.6	20.0	20.4	102	2.58	65 - 135	20	
1,1,1-Trichloroethane	20.0	20.2	101	20.0	20.8	104	2.95	80 - 134	20	
1,1,2-Trichloroethane	20.0	22.1	110	20.0	21.2	106	4.00	80 - 125	20	
Trichloroethene	20.0	21.3	106	20.0	21.3	107	0.280	80 - 122	20	
Trichlorofluoromethane	20.0	19.9	99.6	20.0	20.2	101	1.53	62 - 151	20	
1,2,3-Trichloropropane	20.0	18.3	91.4	20.0	21.4	107	15.6	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	22.2	111	20.0	22.2	111	0.0937	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	21.6	108	20.0	21.9	109	1.48	80 - 127	20	
Vinyl acetate	20.0	18.8	94.2	20.0	18.8	93.9	0.291	10 - 150	20	
Vinyl chloride	20.0	19.3	96.7	20.0	19.3	96.6	0.0683	65 - 140	20	
o-Xylene	20.0	19.6	98.2	20.0	19.5	97.3	0.877	80 - 122	20	
m-,p-Xylene	40.0	39.7	99.4	40.0	40.1	100	0.871	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	90.9	91.5	80 - 120	PASS
Dibromofluoromethane	98.6	99.0	86 - 118	PASS
4-Bromofluorobenzene	89.2	98.9	86 - 115	PASS
Toluene-d8	98.5	92.3	88 - 110	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1384195
Report generated: 05/06/2009 12:44

BFB

Login Number: L09050034
Instrument: HPMS10
Analyst: TMB
Workgroup: WG300755

Tune ID: WG300755-01
Run Date: 04/27/2009
Run Time: 10:00
File ID: 10M72010
Cal ID: HPMS10-27-APR-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	24.3	4226	PASS
75.0	95.0	30.0	60.0	47.2	8232	PASS
95.0	95.0	100	100	100	17424	PASS
96.0	95.0	5.00	9.00	7.44	1297	PASS
173	174	0	2.00	1.73	278	PASS
174	95.0	50.0	100	92.5	16110	PASS
175	174	5.00	9.00	7.64	1231	PASS
176	174	95.0	101	96.5	15553	PASS
177	176	5.00	9.00	6.58	1023	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG300755-02	STD	01	04/27/2009 10:27	
WG300755-05	STD	01	04/27/2009 12:01	
WG300755-04	STD	01	04/27/2009 12:33	
WG300755-06	STD	01	04/27/2009 13:07	
WG300755-07	STD	01	04/27/2009 13:38	
WG300755-08	STD-CCV	01	04/27/2009 14:15	
WG300755-03	STD	01	04/27/2009 15:19	
WG300755-09	STD	01	04/27/2009 15:50	
WG300755-10	STD	01	04/27/2009 16:22	
WG300755-11	STD	01	04/27/2009 16:53	
WG300755-12	SSCV	01	04/27/2009 18:28	
WG300755-12	SSCV	02	04/27/2009 19:00	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1384684
Report generated 05/06/2009 12:44

BFB

Login Number: L09050034
Instrument: HPMS10
Analyst: TMB
Workgroup: WG301309

Tune ID: WG301309-01
Run Date: 05/01/2009
Run Time: 13:01
File ID: 10M72123
Cal ID: HPMS10-27-APR-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	23.7	4785	PASS
75.0	95.0	30.0	60.0	48.7	9853	PASS
95.0	95.0	100	100	100	20213	PASS
96.0	95.0	5.00	9.00	6.62	1339	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	91.6	18523	PASS
175	174	5.00	9.00	8.02	1486	PASS
176	174	95.0	101	97.6	18080	PASS
177	176	5.00	9.00	7.36	1331	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG301309-02	CCV	01	05/01/2009 13:28	
WG301310-01	BLANK	01	05/01/2009 14:32	
WG301310-02	LCS	01	05/01/2009 15:04	
WG301310-03	FBLK	DL01	05/01/2009 15:36	
L09050034-07	TRIP BLANK	01	05/01/2009 16:08	
L09050034-01	12WW22 042909	01	05/01/2009 17:11	
L09050034-02	12WW20 042909	01	05/01/2009 17:43	
L09050034-04	12WW23 042909	01	05/01/2009 18:15	
L09050034-05	12WW21 042909	01	05/01/2009 18:46	
L09050034-06	12WW20 042909 FD	01	05/01/2009 19:18	
WG301310-04	REF	01	05/01/2009 21:25	
WG301310-05	MS	01	05/01/2009 21:56	
WG301310-06	MSD	01	05/01/2009 22:28	
L09050034-03	12WW24 042909	DL01	05/01/2009 23:00	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1384684
Report generated 05/06/2009 12:44

BFB

Login Number: L09050034
Instrument: HPMS10
Analyst: TMB
Workgroup: WG301424

Tune ID: WG301424-01
Run Date: 05/04/2009
Run Time: 11:09
File ID: 10M72156
Cal ID: HPMS10-27-APR-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	23.6	3320	PASS
75.0	95.0	30.0	60.0	47.9	6754	PASS
95.0	95.0	100	100	100	14093	PASS
96.0	95.0	5.00	9.00	6.95	979	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	89.8	12657	PASS
175	174	5.00	9.00	7.23	915	PASS
176	174	95.0	101	96.5	12214	PASS
177	176	5.00	9.00	7.52	919	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG301424-02	CCV	01	05/04/2009 11:34	
WG301425-01	BLANK	01	05/04/2009 12:37	
WG301425-02	LCS	01	05/04/2009 13:09	
WG301425-03	LCS2	01	05/04/2009 13:40	
WG301425-04	FBLK	DL01	05/04/2009 14:12	
L09050034-03	12WW24 042909	01	05/04/2009 16:50	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1384684
Report generated 05/06/2009 12:44

Login Number: L09050034 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 27-APR-09 16:53
ICAL Workgroup: WG300755 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.1681	11.8		
1,2-Dichloropropane	CCC	0.2336	5.03		
Chloroform	CCC	0.3494	5.61		
Ethylbenzene	CCC	0.3604	7.94		
Toluene	CCC	1.068	5.52		
Vinyl Chloride	CCC	0.2339	10.2		
1,1,2,2-Tetrachloroethane	SPCC	0.5256	12.3		
1,1-Dichloroethane	SPCC	0.4172	5.45		
Bromoform	SPCC	0.1606	11.9		
Chlorobenzene	SPCC	0.7114	4.90		
Chloromethane	SPCC	0.3157	6.54		
1,1,1,2-Tetrachloroethane		0.2828	5.10		
1,1,1-Trichloroethane		0.2890	5.62		
1,1,2-Trichloroethane		0.1983	8.85		
1,1-Dichloropropene		0.2710	4.91		
1,2,3-Trichlorobenzene		0.7751	6.10		
1,2,3-Trichloropropane		0.1469	15.4		0.99900
1,2,4-Trichlorobenzene		0.8268	9.43		
1,2,4-Trimethylbenzene		2.066	11.6		
1,2-Dibromo-3-Chloropropane		0.09972	11.8		
1,2-Dibromoethane		0.1981	8.21		
1,2-Dichlorobenzene		1.174	8.38		
1,2-Dichloroethane		0.2678	4.27		
1,3,5-Trimethylbenzene		2.153	11.0		
1,3-Dichlorobenzene		1.180	6.53		
1,3-Dichloropropane		0.3507	8.43		
1,4-Dichlorobenzene		1.156	6.96		
2,2-Dichloropropane		0.2642	7.17		
2-Butanone		0.08205	6.98		
2-Chloroethyl Vinyl Ether		0.08236	11.3		
2-Chlorotoluene		1.757	9.51		
2-Hexanone		0.1350	3.24		
4-Chlorotoluene		1.439	3.29		
4-Methyl-2-Pentanone		0.05623	4.07		
Acetone		0.04982	9.93		
Benzene		0.7992	5.80		
Bromobenzene		0.6601	6.78		
Bromochloromethane		0.1027	8.28		
Bromodichloromethane		0.2420	5.96		
Bromomethane		0.1522	20.6		1.00000
Carbon Disulfide		0.3879	3.34		
Carbon Tetrachloride		0.2238	12.4		
Chloroethane		0.1175	19.9		0.99900
Dibromochloromethane		0.2581	8.60		
Dibromomethane		0.1026	7.44		

INT_CAL - Modified 03/06/2008
PDF File ID: 1384682
Report generated 05/06/2009 12:44

Login Number: L09050034 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 27-APR-09 16:53
ICAL Workgroup: WG300755 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
Dichlorodifluoromethane		0.1771	3.38		
Hexachlorobutadiene		0.3294	14.5		
Isopropylbenzene		0.9983	6.78		
Methylene Chloride		0.2697	50.7		1.00000
Naphthalene		1.328	10.8		
Styrene		0.6154	14.2		
Tetrachloroethene		0.2501	5.07		
Trichloroethene		0.2211	4.71		
Trichlorofluoromethane		0.3055	6.46		
Vinyl Acetate		0.4886	40.0		0.99300
cis-1,2-Dichloroethene		0.2149	4.34		
cis-1,3-Dichloropropene		0.2647	5.04		
m-,p-Xylene		0.4263	6.06		
n-Butylbenzene		1.545	10.1		
n-Propylbenzene		2.255	6.01		
o-Xylene		0.4364	4.99		
p-Isopropyltoluene		1.891	10.1		
sec-Butylbenzene		2.144	12.1		
tert-Butylbenzene		0.4224	13.9		
trans-1,2-Dichloroethene		0.1902	7.85		
trans-1,3-Dichloropropene		0.3158	9.95		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

If the %RSD is greater than the limit specified by the method or project QAP, then linear or quadratic equations will be used.

INT_CAL - Modified 03/06/2008
PDF File ID: 1384682
Report generated 05/06/2009 12:44

Login Number: L09050034
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 27-APR-09 16:53
Column ID: F

Analyte	WG300755-02			WG300755-03			WG300755-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	1447.00000	0.1210	1.00	5232.00000	0.1739
1,2-Dichloropropane	NA	NA	NA	0.400	2611.00000	0.2183	1.00	6841.00000	0.2273
Chloroform	0.300	3445.00000	0.3492	0.400	4597.00000	0.3844	1.00	10477.0000	0.3481
Ethylbenzene	NA	NA	NA	0.400	2744.00000	0.3424	1.00	6233.00000	0.3067
Toluene	NA	NA	NA	0.400	9231.00000	1.152	1.00	21855.0000	1.076
Vinyl Chloride	NA	NA	NA	0.400	3102.00000	0.2594	1.00	7530.00000	0.2502
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	1872.00000	0.5880	1.00	4610.00000	0.5511
1,1-Dichloroethane	NA	NA	NA	0.400	5009.00000	0.4189	1.00	12787.0000	0.4249
Bromoform	NA	NA	NA	NA	NA	NA	1.00	2636.00000	0.1297
Chlorobenzene	NA	NA	NA	0.400	6186.00000	0.7718	1.00	14054.0000	0.6916
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	9871.00000	0.3280
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	2185.00000	0.2726	1.00	5705.00000	0.2808
1,1,1-Trichloroethane	NA	NA	NA	0.400	3097.00000	0.2590	1.00	8681.00000	0.2885
1,1,2-Trichloroethane	NA	NA	NA	0.400	1362.00000	0.1699	1.00	4156.00000	0.2045
1,1-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	7870.00000	0.2615
1,2,3-Trichlorobenzene	0.300	2129.00000	0.7699	0.400	2352.00000	0.7388	1.00	6326.00000	0.7562
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	1056.00000	0.1262
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	2892.00000	0.9084	1.00	5867.00000	0.7013
1,2,4-Trimethylbenzene	NA	NA	NA	NA	NA	NA	1.00	15459.0000	1.848
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	1727.00000	0.2155	1.00	3956.00000	0.1947
1,2-Dichlorobenzene	0.300	3534.00000	1.278	0.400	3964.00000	1.245	1.00	8898.00000	1.064
1,2-Dichloroethane	NA	NA	NA	0.400	3231.00000	0.2702	1.00	8215.00000	0.2730
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	6625.00000	2.081	1.00	16758.0000	2.003
1,3-Dichlorobenzene	NA	NA	NA	0.400	3983.00000	1.251	1.00	9250.00000	1.106
1,3-Dichloropropane	NA	NA	NA	0.400	3051.00000	0.3807	1.00	7615.00000	0.3748
1,4-Dichlorobenzene	0.300	2932.00000	1.060	0.400	4274.00000	1.343	1.00	9701.00000	1.160
2,2-Dichloropropane	NA	NA	NA	0.400	3142.00000	0.2627	1.00	8373.00000	0.2782
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	NA	NA	NA	0.400	6209.00000	1.950	1.00	14196.0000	1.697
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	4775.00000	1.500	1.00	11816.0000	1.413
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	10515.0000	0.8793	1.00	24642.0000	0.8188
Bromobenzene	0.300	1695.00000	0.6130	0.400	2348.00000	0.7376	1.00	5396.00000	0.6450
Bromochloromethane	NA	NA	NA	0.400	1361.00000	0.1138	1.00	3163.00000	0.1051
Bromodichloromethane	NA	NA	NA	0.400	2735.00000	0.2287	1.00	7088.00000	0.2355
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	5544.00000	0.1842
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	11579.0000	0.3848
Carbon Tetrachloride	NA	NA	NA	0.400	2394.00000	0.2002	1.00	7214.00000	0.2397

INT_CAL - Modified 03/06/2008
PDF File ID: 1384682
Report generated 05/06/2009 12:44

Login Number:L09050034
Analytical Method:8260B
Instrument ID:HPMS10
Initial Calibration Date:27-APR-09 16:53
Column ID:F

Analyte	WG300755-05			WG300755-06			WG300755-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	10239.0000	0.1659	5.00	27570.0000	0.1815	20.0	110776.000	0.1771
1,2-Dichloropropane	2.00	13481.0000	0.2184	5.00	37947.0000	0.2498	20.0	153991.000	0.2461
Chloroform	2.00	20832.0000	0.3374	5.00	56962.0000	0.3750	20.0	218369.000	0.3490
Ethylbenzene	2.00	14171.0000	0.3350	5.00	39529.0000	0.3790	20.0	160550.000	0.3797
Toluene	2.00	42124.0000	0.9957	5.00	115196.000	1.104	20.0	456841.000	1.080
Vinyl Chloride	2.00	15202.0000	0.2462	5.00	38434.0000	0.2530	20.0	144393.000	0.2308
1,1,2,2-Tetrachloroethane	2.00	9354.00000	0.5362	5.00	25463.0000	0.5937	20.0	98292.0000	0.5305
1,1-Dichloroethane	2.00	24574.0000	0.3981	5.00	69942.0000	0.4604	20.0	265987.000	0.4251
Bromoform	2.00	5983.00000	0.1414	5.00	18084.0000	0.1734	20.0	76624.0000	0.1812
Chlorobenzene	2.00	28030.0000	0.6626	5.00	77523.0000	0.7432	20.0	305671.000	0.7228
Chloromethane	2.00	18883.0000	0.3059	5.00	47300.0000	0.3114	20.0	178667.000	0.2856
1,1,1,2-Tetrachloroethane	2.00	11238.0000	0.2656	5.00	31314.0000	0.3002	20.0	129117.000	0.3053
1,1,1-Trichloroethane	2.00	17687.0000	0.2865	5.00	48203.0000	0.3173	20.0	185797.000	0.2970
1,1,2-Trichloroethane	2.00	8098.00000	0.1914	5.00	23063.0000	0.2211	20.0	92487.0000	0.2187
1,1-Dichloropropene	2.00	15879.0000	0.2572	5.00	44816.0000	0.2950	20.0	175059.000	0.2798
1,2,3-Trichlorobenzene	2.00	12412.0000	0.7115	5.00	35060.0000	0.8174	20.0	157552.000	0.8503
1,2,3-Trichloropropane	2.00	2415.00000	0.1384	5.00	7837.00000	0.1827	20.0	30852.0000	0.1665
1,2,4-Trichlorobenzene	2.00	12610.0000	0.7228	5.00	35740.0000	0.8333	20.0	165606.000	0.8938
1,2,4-Trimethylbenzene	2.00	33222.0000	1.904	5.00	98038.0000	2.286	20.0	443678.000	2.395
1,2-Dibromo-3-Chloropropane	2.00	1719.00000	0.09850	5.00	5005.00000	0.1167	20.0	19578.0000	0.1057
1,2-Dibromoethane	2.00	7896.00000	0.1866	5.00	21790.0000	0.2089	20.0	92557.0000	0.2189
1,2-Dichlorobenzene	2.00	19090.0000	1.094	5.00	54109.0000	1.262	20.0	238483.000	1.287
1,2-Dichloroethane	2.00	16077.0000	0.2604	5.00	43765.0000	0.2881	20.0	170583.000	0.2727
1,3,5-Trimethylbenzene	2.00	36407.0000	2.087	5.00	104738.000	2.442	20.0	468254.000	2.527
1,3-Dichlorobenzene	2.00	18548.0000	1.063	5.00	53992.0000	1.259	20.0	232543.000	1.255
1,3-Dichloropropane	2.00	13710.0000	0.3241	5.00	39277.0000	0.3766	20.0	157889.000	0.3734
1,4-Dichlorobenzene	2.00	19276.0000	1.105	5.00	50683.0000	1.182	20.0	218403.000	1.179
2,2-Dichloropropane	2.00	17489.0000	0.2833	5.00	44641.0000	0.2939	20.0	160240.000	0.2561
2-Butanone	NA	NA	NA	5.00	12808.0000	0.08430	20.0	57432.0000	0.09180
2-Chloroethyl Vinyl Ether	NA	NA	NA	5.00	10586.0000	0.06970	20.0	48151.0000	0.07700
2-Chlorotoluene	2.00	29129.0000	1.670	5.00	86868.0000	2.025	20.0	339440.000	1.832
2-Hexanone	NA	NA	NA	5.00	13377.0000	0.1282	20.0	58875.0000	0.1392
4-Chlorotoluene	2.00	23456.0000	1.345	5.00	62007.0000	1.446	20.0	265910.000	1.435
4-Methyl-2-Pentanone	NA	NA	NA	5.00	8023.00000	0.05280	20.0	35078.0000	0.05610
Acetone	NA	NA	NA	5.00	8736.00000	0.05750	20.0	32994.0000	0.05270
Benzene	2.00	47311.0000	0.7664	5.00	127169.000	0.8371	20.0	503909.000	0.8054
Bromobenzene	2.00	11209.0000	0.6425	5.00	29774.0000	0.6942	20.0	131091.000	0.7075
Bromochloromethane	2.00	5419.00000	0.08780	5.00	17189.0000	0.1131	20.0	63950.0000	0.1022
Bromodichloromethane	2.00	14591.0000	0.2364	5.00	41845.0000	0.2754	20.0	153692.000	0.2457
Bromomethane	2.00	11499.0000	0.1863	5.00	26503.0000	0.1745	20.0	88203.0000	0.1410
Carbon Disulfide	2.00	24022.0000	0.3891	5.00	59367.0000	0.3908	20.0	243960.000	0.3899
Carbon Tetrachloride	2.00	15095.0000	0.2445	5.00	41733.0000	0.2747	20.0	141501.000	0.2262

INT_CAL - Modified 03/06/2008
PDF File ID: 1384682
Report generated 05/06/2009 12:44

Login Number: L09050034
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 27-APR-09 16:53
Column ID: F

Analyte	WG300755-08			WG300755-09			WG300755-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	311434.000	0.1811	100	607335.000	0.1770	200	1204768.00	0.1675
1,2-Dichloropropane	50.0	406582.000	0.2364	100	821257.000	0.2394	200	1676224.00	0.2330
Chloroform	50.0	580690.000	0.3376	100	1180630.00	0.3441	200	2300134.00	0.3198
Ethylbenzene	50.0	445376.000	0.3819	100	923732.000	0.3778	200	2067962.00	0.3804
Toluene	50.0	1257089.00	1.078	100	2659858.00	1.088	200	5260439.00	0.9677
Vinyl Chloride	50.0	388442.000	0.2258	100	754824.000	0.2200	200	1336890.00	0.1859
1,1,2,2-Tetrachloroethane	50.0	255908.000	0.4633	100	483992.000	0.4166	NA	NA	NA
1,1-Dichloroethane	50.0	709878.000	0.4127	100	1424535.00	0.4152	200	2748328.00	0.3821
Bromoform	50.0	205788.000	0.1765	100	404512.000	0.1654	200	850982.000	0.1565
Chlorobenzene	50.0	820707.000	0.7037	100	1744197.00	0.7134	200	3705505.00	0.6817
Chloromethane	50.0	518691.000	0.3015	100	1135001.00	0.3308	200	2492988.00	0.3466
1,1,1,2-Tetrachloroethane	50.0	336460.000	0.2885	100	687764.000	0.2813	200	1458830.00	0.2684
1,1,1-Trichloroethane	50.0	499276.000	0.2903	100	1001156.00	0.2918	200	2022646.00	0.2812
1,1,2-Trichloroethane	50.0	238651.000	0.2046	100	475624.000	0.1945	200	987529.000	0.1817
1,1-Dichloropropene	50.0	471668.000	0.2742	100	922561.000	0.2689	200	1872085.00	0.2603
1,2,3-Trichlorobenzene	50.0	447122.000	0.8094	100	930231.000	0.8007	200	1926750.00	0.7217
1,2,3-Trichloropropane	50.0	76701.0000	0.1389	100	149533.000	0.1287	NA	NA	NA
1,2,4-Trichlorobenzene	50.0	481315.000	0.8713	100	1018206.00	0.8764	200	2154045.00	0.8069
1,2,4-Trimethylbenzene	50.0	1218516.00	2.206	100	2400888.00	2.067	200	4684842.00	1.755
1,2-Dibromo-3-Chloropropane	50.0	56774.0000	0.1028	100	106952.000	0.09210	200	220336.000	0.08250
1,2-Dibromoethane	50.0	235729.000	0.2021	100	457530.000	0.1871	200	930546.000	0.1712
1,2-Dichlorobenzene	50.0	652294.000	1.181	100	1309085.00	1.127	200	2754234.00	1.032
1,2-Dichloroethane	50.0	449519.000	0.2613	100	917267.000	0.2674	200	1792009.00	0.2491
1,3,5-Trimethylbenzene	50.0	1228008.00	2.223	100	2385066.00	2.053	200	4824857.00	1.807
1,3-Dichlorobenzene	50.0	667930.000	1.209	100	1377047.00	1.185	200	2968980.00	1.112
1,3-Dichloropropane	50.0	400258.000	0.3432	100	803720.000	0.3287	200	1651353.00	0.3038
1,4-Dichlorobenzene	50.0	631867.000	1.144	100	1313595.00	1.131	200	2934860.00	1.099
2,2-Dichloropropane	50.0	426497.000	0.2479	100	861611.000	0.2511	200	1728559.00	0.2403
2-Butanone	50.0	139803.000	0.08130	100	272270.000	0.07940	200	537139.000	0.07470
2-Chloroethyl Vinyl Ether	50.0	144864.000	0.08420	100	298636.000	0.08700	200	675240.000	0.09390
2-Chlorotoluene	50.0	944753.000	1.710	100	1916088.00	1.649	200	4062287.00	1.522
2-Hexanone	50.0	160868.000	0.1379	100	324314.000	0.1326	200	724759.000	0.1333
4-Chlorotoluene	50.0	818310.000	1.481	100	1696129.00	1.460	200	3819342.00	1.431
4-Methyl-2-Pentanone	50.0	94932.0000	0.05520	100	191177.000	0.05570	200	419910.000	0.05840
Acetone	50.0	85558.0000	0.04970	100	170525.000	0.04970	200	325023.000	0.04520
Benzene	50.0	1351365.00	0.7856	100	2638901.00	0.7692	200	5261901.00	0.7315
Bromobenzene	50.0	367887.000	0.6660	100	728282.000	0.6269	200	1623574.00	0.6082
Bromochloromethane	50.0	174451.000	0.1014	100	350822.000	0.1023	200	691552.000	0.09610
Bromodichloromethane	50.0	402741.000	0.2341	100	827714.000	0.2413	200	1717470.00	0.2388
Bromomethane	50.0	252060.000	0.1465	100	453151.000	0.1321	200	726158.000	0.1009
Carbon Disulfide	50.0	700411.000	0.4072	100	1338124.00	0.3900	200	2613245.00	0.3633
Carbon Tetrachloride	50.0	356189.000	0.2071	100	695103.000	0.2026	200	1406705.00	0.1956

INT_CAL - Modified 03/06/2008
PDF File ID: 1384682
Report generated 05/06/2009 12:44

Login Number: L09050034
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 27-APR-09 16:53
Column ID: F

Analyte	WG300755-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	838006.000	0.08080
2-Chloroethyl Vinyl Ether	NA	NA	NA
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	975619.000	0.1389
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	613764.000	0.05920
Acetone	300	457046.000	0.04410
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1384682
Report generated 05/06/2009 12:44

Login Number: L09050034
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 27-APR-09 16:53
Column ID: F

Analyte	WG300755-02			WG300755-03			WG300755-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	3976.00000	0.1321
Dibromochloromethane	NA	NA	NA	0.400	1788.00000	0.2231	1.00	5159.00000	0.2539
Dibromomethane	NA	NA	NA	0.400	1092.00000	0.09130	1.00	2855.00000	0.09490
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	5032.00000	0.1672
Hexachlorobutadiene	NA	NA	NA	0.400	802.000000	0.2519	1.00	2463.00000	0.2944
Isopropylbenzene	NA	NA	NA	0.400	7936.00000	0.9902	1.00	19079.0000	0.9389
Methylene Chloride	NA	NA	NA	0.400	6917.00000	0.5784	1.00	10076.0000	0.3348
Naphthalene	NA	NA	NA	0.400	4455.00000	1.399	1.00	9384.00000	1.122
Styrene	NA	NA	NA	0.400	4240.00000	0.5290	1.00	10521.0000	0.5178
Tetrachloroethene	NA	NA	NA	0.400	1870.00000	0.2333	1.00	5235.00000	0.2576
Trichloroethene	NA	NA	NA	0.400	2567.00000	0.2147	1.00	6179.00000	0.2053
Trichlorofluoromethane	NA	NA	NA	0.400	3542.00000	0.2962	1.00	9204.00000	0.3058
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	2715.00000	0.2270	1.00	6239.00000	0.2073
cis-1,3-Dichloropropene	NA	NA	NA	0.400	3100.00000	0.2592	1.00	7803.00000	0.2593
m-,p-Xylene	NA	NA	NA	0.800	6803.00000	0.4244	2.00	15632.0000	0.3847
n-Butylbenzene	NA	NA	NA	NA	NA	NA	1.00	11501.0000	1.375
n-Propylbenzene	NA	NA	NA	0.400	7583.00000	2.382	1.00	17284.0000	2.066
o-Xylene	NA	NA	NA	NA	NA	NA	1.00	8586.00000	0.4225
p-Isopropyltoluene	NA	NA	NA	NA	NA	NA	1.00	15140.0000	1.810
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	1.00	17437.0000	2.084
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	1.00	3226.00000	0.3856
trans-1,2-Dichloroethene	NA	NA	NA	0.400	2087.00000	0.1745	1.00	5151.00000	0.1712
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	5413.00000	0.2664

INT_CAL - Modified 03/06/2008
PDF File ID: 1384682
Report generated 05/06/2009 12:44

Login Number: L09050034
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 27-APR-09 16:53
Column ID: F

Analyte	WG300755-05			WG300755-06			WG300755-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	8614.00000	0.1395	5.00	21108.0000	0.1389	20.0	71698.0000	0.1146
Dibromochloromethane	2.00	10563.0000	0.2497	5.00	29108.0000	0.2791	20.0	124381.000	0.2941
Dibromomethane	2.00	6233.00000	0.1010	5.00	17416.0000	0.1146	20.0	68901.0000	0.1101
Dichlorodifluoromethane	2.00	11244.0000	0.1821	5.00	27800.0000	0.1830	20.0	108473.000	0.1734
Hexachlorobutadiene	2.00	4965.00000	0.2846	5.00	15211.0000	0.3546	20.0	71611.0000	0.3865
Isopropylbenzene	2.00	39761.0000	0.9399	5.00	114320.000	1.096	20.0	390984.000	0.9246
Methylene Chloride	2.00	15783.0000	0.2557	5.00	38098.0000	0.2508	20.0	127377.000	0.2036
Naphthalene	2.00	20105.0000	1.153	5.00	59581.0000	1.389	20.0	281574.000	1.520
Styrene	2.00	21642.0000	0.5116	5.00	62900.0000	0.6030	20.0	271372.000	0.6417
Tetrachloroethene	2.00	9825.00000	0.2322	5.00	27060.0000	0.2594	20.0	109385.000	0.2587
Trichloroethene	2.00	13108.0000	0.2123	5.00	36252.0000	0.2386	20.0	142528.000	0.2278
Trichlorofluoromethane	2.00	19158.0000	0.3103	5.00	51434.0000	0.3386	20.0	196190.000	0.3136
Vinyl Acetate	2.00	45227.0000	0.7326	5.00	101141.000	0.6658	20.0	343074.000	0.5483
cis-1,2-Dichloroethene	2.00	12497.0000	0.2024	5.00	34311.0000	0.2259	20.0	136653.000	0.2184
cis-1,3-Dichloropropene	2.00	15326.0000	0.2483	5.00	43645.0000	0.2873	20.0	176342.000	0.2819
m-,p-Xylene	4.00	33340.0000	0.3940	10.0	93407.0000	0.4478	40.0	354335.000	0.4190
n-Butylbenzene	2.00	24254.0000	1.390	5.00	69766.0000	1.627	20.0	320750.000	1.731
n-Propylbenzene	2.00	37126.0000	2.128	5.00	106017.000	2.472	20.0	432365.000	2.334
o-Xylene	2.00	16807.0000	0.3973	5.00	48200.0000	0.4621	20.0	182098.000	0.4306
p-Isopropyltoluene	2.00	31486.0000	1.805	5.00	89895.0000	2.096	20.0	400789.000	2.163
sec-Butylbenzene	2.00	37805.0000	2.167	5.00	107385.000	2.504	20.0	460444.000	2.485
tert-Butylbenzene	2.00	7968.00000	0.4567	5.00	21693.0000	0.5058	20.0	90284.0000	0.4873
trans-1,2-Dichloroethene	2.00	10956.0000	0.1775	5.00	32333.0000	0.2128	20.0	124554.000	0.1991
trans-1,3-Dichloropropene	2.00	12354.0000	0.2920	5.00	35847.0000	0.3437	20.0	149285.000	0.3530

INT_CAL - Modified 03/06/2008
PDF File ID: 1384682
Report generated 05/06/2009 12:44

Login Number: L09050034
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 27-APR-09 16:53
Column ID: F

Analyte	WG300755-08			WG300755-09			WG300755-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	161897.000	0.09410	100	294241.000	0.08580	NA	NA	NA
Dibromochloromethane	50.0	314155.000	0.2694	100	618000.000	0.2528	200	1318760.00	0.2426
Dibromomethane	50.0	174790.000	0.1016	100	363845.000	0.1061	200	724912.000	0.1008
Dichlorodifluoromethane	50.0	315033.000	0.1831	100	604424.000	0.1762	200	1256971.00	0.1747
Hexachlorobutadiene	50.0	205088.000	0.3713	100	419619.000	0.3612	200	882415.000	0.3305
Isopropylbenzene	50.0	1273937.00	1.092	100	2509663.00	1.027	200	5315829.00	0.9779
Methylene Chloride	50.0	338954.000	0.1971	100	621045.000	0.1810	200	1121492.00	0.1559
Naphthalene	50.0	792807.000	1.435	100	1601958.00	1.379	200	3269117.00	1.225
Styrene	50.0	825336.000	0.7077	100	1709404.00	0.6992	200	3877646.00	0.7133
Tetrachloroethene	50.0	302115.000	0.2591	100	637511.000	0.2607	200	1301360.00	0.2394
Trichloroethene	50.0	381137.000	0.2216	100	780086.000	0.2274	200	1592629.00	0.2214
Trichlorofluoromethane	50.0	540273.000	0.3141	100	1013155.00	0.2953	200	1940408.00	0.2698
Vinyl Acetate	50.0	747165.000	0.4344	100	1073914.00	0.3130	200	1707902.00	0.2374
cis-1,2-Dichloroethene	50.0	372082.000	0.2163	100	744676.000	0.2171	200	1471060.00	0.2045
cis-1,3-Dichloropropene	50.0	458774.000	0.2667	100	878300.000	0.2560	200	1863343.00	0.2590
m-,p-Xylene	100	1056879.00	0.4531	200	2195168.00	0.4489	400	4766744.00	0.4384
n-Butylbenzene	50.0	924830.000	1.674	100	1902800.00	1.638	200	3688124.00	1.382
n-Propylbenzene	50.0	1238070.00	2.241	100	2607373.00	2.244	200	5796346.00	2.171
o-Xylene	50.0	529294.000	0.4539	100	1084059.00	0.4434	200	2420438.00	0.4453
p-Isopropyltoluene	50.0	1083616.00	1.962	100	2067480.00	1.780	200	4329693.00	1.622
sec-Butylbenzene	50.0	1105139.00	2.001	100	2182222.00	1.878	200	5051392.00	1.892
tert-Butylbenzene	50.0	206216.000	0.3733	100	429052.000	0.3693	200	1011577.00	0.3789
trans-1,2-Dichloroethene	50.0	345619.000	0.2009	100	681836.000	0.1987	200	1345231.00	0.1870
trans-1,3-Dichloropropene	50.0	395635.000	0.3392	100	769092.000	0.3146	200	1638408.00	0.3014

INT_CAL - Modified 03/06/2008
PDF File ID: 1384682
Report generated 05/06/2009 12:44

Login Number: L09050034
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 27-APR-09 16:53
Column ID: F

Analyte	WG300755-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1384682
Report generated 05/06/2009 12:44

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number:L09050034 Run Date:04/27/2009 Sample ID:WG300755-12
Instrument ID:HPMS10 Run Time:18:28 Method:8260B
File ID:10M72026 Analyst:TMB QC Key:STD
ICal Workgroup:WG300755 Cal ID:HPMS10 - 27-APR-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	20.1	ug/L	0.352	0.600	30	
1,1-Dichloroethene	CCC	20.0	20.6	ug/L	0.173	3.00	30	
1,2-Dichloropropane	CCC	20.0	20.9	ug/L	0.245	4.70	30	
Ethylbenzene	CCC	20.0	21.3	ug/L	0.383	6.40	30	
Toluene	CCC	20.0	19.5	ug/L	1.04	2.40	30	
Vinyl Chloride	CCC	20.0	17.6	ug/L	0.205	12.2	30	
Bromoform	SPCC	20.0	21.9	ug/L	0.176	9.60	30	
Chlorobenzene	SPCC	20.0	20.2	ug/L	0.720	1.10	30	
Chloromethane	SPCC	20.0	16.2	ug/L	0.255	19.1	30	
1,1-Dichloroethane	SPCC	20.0	20.4	ug/L	0.425	1.90	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	21.1	ug/L	0.554	5.40	30	
Acetone		20.0	22.5	ug/L	0.0559	12.3	30	
Benzene		20.0	20.1	ug/L	0.805	0.700	30	
Bromobenzene		20.0	23.0	ug/L	0.758	14.8	30	
Bromochloromethane		20.0	20.0	ug/L	0.103	0	30	
Bromodichloromethane		20.0	21.5	ug/L	0.260	7.40	30	
Bromomethane		20.0	16.0	ug/L	0.125	19.8	30	
2-Butanone		20.0	20.0	ug/L	0.0822	0.200	30	
n-Butylbenzene		20.0	21.0	ug/L	1.62	4.80	30	
sec-Butylbenzene		20.0	22.1	ug/L	2.37	10.4	30	
tert-Butylbenzene		20.0	22.1	ug/L	0.468	10.7	30	
Carbon Disulfide		20.0	29.6	ug/L	0.575	48.2	30	*
Carbon Tetrachloride		20.0	20.7	ug/L	0.232	3.70	30	
Dibromochloromethane		20.0	20.8	ug/L	0.269	4.10	30	
Chloroethane		20.0	23.9	ug/L	0.114	19.6	30	
2-Chloroethyl Vinyl Ether		20.0	22.3	ug/L	0.0918	11.5	30	
2-Chlorotoluene		20.0	20.5	ug/L	1.80	2.30	30	
4-Chlorotoluene		20.0	20.0	ug/L	1.44	0.100	30	
1,2-Dibromo-3-Chloropropane		20.0	21.8	ug/L	0.109	9.10	30	
1,2-Dibromoethane		20.0	20.2	ug/L	0.201	1.20	30	
Dibromomethane		20.0	20.5	ug/L	0.105	2.30	30	
1,2-Dichlorobenzene		20.0	20.7	ug/L	1.22	3.70	30	
1,3-Dichlorobenzene		20.0	20.6	ug/L	1.21	2.80	30	
1,4-Dichlorobenzene		20.0	19.5	ug/L	1.13	2.50	30	
Dichlorodifluoromethane		20.0	18.3	ug/L	0.162	8.60	30	
1,2-Dichloroethane		20.0	20.3	ug/L	0.271	1.40	30	
cis-1,2-Dichloroethene		20.0	20.9	ug/L	0.225	4.60	30	
trans-1,2-Dichloroethene		20.0	20.8	ug/L	0.198	4.00	30	
1,3-Dichloropropane		20.0	19.6	ug/L	0.344	1.80	30	
2,2-Dichloropropane		20.0	18.5	ug/L	0.245	7.40	30	
cis-1,3-Dichloropropene		20.0	19.7	ug/L	0.261	1.60	30	
trans-1,3-Dichloropropene		20.0	17.5	ug/L	0.277	12.3	30	

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1384683
Report generated 05/06/2009 12:44

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L09050034 Run Date: 04/27/2009 Sample ID: WG300755-12
Instrument ID: HPMS10 Run Time: 18:28 Method: 8260B
File ID: 10M72026 Analyst: TMB QC Key: STD
ICal Workgroup: WG300755 Cal ID: HPMS10 - 27-APR-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	19.6	ug/L	0.266	1.90	30	
2-Hexanone		20.0	20.5	ug/L	0.139	2.60	30	
Hexachlorobutadiene		20.0	22.2	ug/L	0.366	11.0	30	
Isopropylbenzene		20.0	16.2	ug/L	0.809	19.0	30	
p-Isopropyltoluene		20.0	21.0	ug/L	1.99	5.00	30	
4-Methyl-2-Pentanone		20.0	22.3	ug/L	0.0628	11.6	30	
Methylene Chloride		20.0	21.9	ug/L	0.209	9.60	30	
Naphthalene		20.0	22.3	ug/L	1.48	11.4	30	
n-Propylbenzene		20.0	19.4	ug/L	2.19	2.80	30	
Styrene		20.0	20.8	ug/L	0.639	3.80	30	
1,1,1,2-Tetrachloroethane		20.0	20.9	ug/L	0.295	4.30	30	
Tetrachloroethene		20.0	18.9	ug/L	0.237	5.30	30	
1,2,3-Trichlorobenzene		20.0	21.3	ug/L	0.826	6.60	30	
1,2,4-Trichlorobenzene		20.0	20.5	ug/L	0.848	2.50	30	
1,1,1-Trichloroethane		20.0	20.4	ug/L	0.295	2.00	30	
1,1,2-Trichloroethane		20.0	20.7	ug/L	0.205	3.50	30	
Trichloroethene		20.0	20.5	ug/L	0.227	2.50	30	
Trichlorofluoromethane		20.0	18.1	ug/L	0.276	9.50	30	
1,2,3-Trichloropropane		20.0	24.4	ug/L	0.169	22.1	30	
1,2,4-Trimethylbenzene		20.0	22.3	ug/L	2.30	11.3	30	
1,3,5-Trimethylbenzene		20.0	22.1	ug/L	2.38	10.4	30	
Vinyl Acetate		20.0	13.2	ug/L	0.352	34.2	40	
o-Xylene		20.0	19.7	ug/L	0.430	1.40	30	
m-,p-Xylene		40.0	39.6	ug/L	0.422	1.10	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115767

Login Number: L09050034 Run Date: 05/01/2009 Sample ID: WG301309-02

Instrument ID: HPMS10 Run Time: 13:28 Method: 8260B

File ID: 10M72124 Analyst: TMB QC Key: STD

Workgroup (AAB#): WG301310 Cal ID: HPMS10 - 27-APR-09

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	47.6	ug/L	0.333	4.78	20	
1,1-Dichloroethene	CCC	50.0	52.1	ug/L	0.175	4.14	20	
1,2-Dichloropropane	CCC	50.0	49.9	ug/L	0.233	0.252	20	
Ethylbenzene	CCC	50.0	51.6	ug/L	0.372	3.11	20	
Toluene	CCC	50.0	48.3	ug/L	1.03	3.34	20	
Vinyl Chloride	CCC	50.0	44.1	ug/L	0.207	11.7	20	
Bromoform	SPCC	50.0	50.4	ug/L	0.162	0.739	40	
Chlorobenzene	SPCC	50.0	48.3	ug/L	0.687	3.47	40	
Chloromethane	SPCC	50.0	37.4	ug/L	0.236	25.3	40	
1,1-Dichloroethane	SPCC	50.0	48.4	ug/L	0.404	3.26	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	36.4	ug/L	0.383	27.2	40	
Acetone		50.0	41.5	ug/L	0.0414	16.9	40	
Benzene		50.0	48.8	ug/L	0.780	2.35	40	
Bromobenzene		50.0	45.9	ug/L	0.606	8.19	40	
Bromochloromethane		50.0	46.5	ug/L	0.0955	7.06	40	
Bromodichloromethane		50.0	47.7	ug/L	0.231	4.56	40	
Bromomethane		50.0	43.7	ug/L	0.129	12.7	40	
2-Butanone		50.0	41.3	ug/L	0.0677	17.5	40	
n-Butylbenzene		50.0	50.8	ug/L	1.57	1.56	40	
sec-Butylbenzene		50.0	44.1	ug/L	1.89	11.8	40	
tert-Butylbenzene		50.0	41.2	ug/L	0.348	17.7	40	
Carbon Disulfide		50.0	79.5	ug/L	0.617	59.0	40	*
Carbon Tetrachloride		50.0	44.3	ug/L	0.198	11.3	40	
Dibromochloromethane		50.0	49.5	ug/L	0.255	1.10	40	
Chloroethane		50.0	52.3	ug/L	0.100	4.58	40	
2-Chloroethyl Vinyl Ether		50.0	46.4	ug/L	0.0765	7.17	40	
2-Chlorotoluene		50.0	44.9	ug/L	1.58	10.2	40	
4-Chlorotoluene		50.0	49.7	ug/L	1.43	0.630	40	
1,2-Dibromo-3-Chloropropane		50.0	39.7	ug/L	0.0792	20.6	40	
1,2-Dibromoethane		50.0	47.6	ug/L	0.189	4.87	40	
Dibromomethane		50.0	47.5	ug/L	0.0975	4.92	40	
1,2-Dichlorobenzene		50.0	46.8	ug/L	1.10	6.48	40	
1,3-Dichlorobenzene		50.0	49.2	ug/L	1.16	1.68	40	
1,4-Dichlorobenzene		50.0	47.8	ug/L	1.11	4.31	40	
Dichlorodifluoromethane		50.0	46.8	ug/L	0.166	6.33	40	
1,2-Dichloroethane		50.0	47.0	ug/L	0.252	6.02	40	
cis-1,2-Dichloroethene		50.0	49.7	ug/L	0.214	0.601	40	
trans-1,2-Dichloroethene		50.0	50.8	ug/L	0.193	1.61	40	
1,3-Dichloropropane		50.0	45.9	ug/L	0.322	8.25	40	
2,2-Dichloropropane		50.0	43.7	ug/L	0.231	12.5	40	
cis-1,3-Dichloropropene		50.0	47.0	ug/L	0.249	5.96	40	
trans-1,3-Dichloropropene		50.0	49.1	ug/L	0.310	1.77	40	

CCV - Modified 03/05/2008

PDF File ID: 1384685

Report generated 05/06/2009 12:44

Login Number: L09050034 Run Date: 05/01/2009 Sample ID: WG301309-02
Instrument ID: HPMS10 Run Time: 13:28 Method: 8260B
File ID: 10M72124 Analyst: TMB QC Key: STD
Workgroup (AAB#): WG301310 Cal ID: HPMS10 - 27-APR-09
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	49.4	ug/L	0.268	1.20	40	
2-Hexanone		50.0	41.8	ug/L	0.113	16.3	40	
Hexachlorobutadiene		50.0	52.7	ug/L	0.347	5.39	40	
Isopropylbenzene		50.0	54.7	ug/L	1.09	9.32	40	
p-Isopropyltoluene		50.0	50.5	ug/L	1.91	0.992	40	
4-Methyl-2-Pentanone		50.0	42.5	ug/L	0.0478	15.0	40	
Methylene Chloride		50.0	48.2	ug/L	0.189	3.56	40	
Naphthalene		50.0	44.2	ug/L	1.17	11.7	40	
n-Propylbenzene		50.0	46.0	ug/L	2.07	8.08	40	
Styrene		50.0	57.0	ug/L	0.702	14.1	40	
1,1,1,2-Tetrachloroethane		50.0	49.9	ug/L	0.282	0.279	40	
Tetrachloroethene		50.0	49.5	ug/L	0.248	0.907	40	
1,2,3-Trichlorobenzene		50.0	45.9	ug/L	0.711	8.24	40	
1,2,4-Trichlorobenzene		50.0	48.2	ug/L	0.797	3.55	40	
1,1,1-Trichloroethane		50.0	50.0	ug/L	0.289	0.0290	40	
1,1,2-Trichloroethane		50.0	48.5	ug/L	0.192	3.06	40	
Trichloroethene		50.0	50.2	ug/L	0.222	0.488	40	
Trichlorofluoromethane		50.0	49.1	ug/L	0.300	1.79	40	
1,2,3-Trichloropropane		50.0	40.3	ug/L	0.117	19.3	40	
1,2,4-Trimethylbenzene		50.0	51.8	ug/L	2.14	3.53	40	
1,3,5-Trimethylbenzene		50.0	50.2	ug/L	2.16	0.412	40	
Vinyl Acetate		50.0	38.6	ug/L	0.321	22.8	40	
o-Xylene		50.0	51.8	ug/L	0.452	3.65	40	
m-,p-Xylene		100	105	ug/L	0.449	5.30	40	
1,2-Dichloroethene		100	101	ug/L	0.203	0.505	40	
Xylenes		150	157	ug/L	0.451	4.75	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1384685
Report generated 05/06/2009 12:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115769

Login Number: L09050034 Run Date: 05/04/2009 Sample ID: WG301424-02

Instrument ID: HPMS10 Run Time: 11:34 Method: 8260B

File ID: 10M72157 Analyst: TMB QC Key: STD

Workgroup (AAB#): WG301425 Cal ID: HPMS10 - 27-APR-09

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	47.7	ug/L	0.334	4.50	20	
1,1-Dichloroethene	CCC	50.0	52.6	ug/L	0.177	5.29	20	
1,2-Dichloropropane	CCC	50.0	50.0	ug/L	0.234	0.0176	20	
Ethylbenzene	CCC	50.0	51.6	ug/L	0.372	3.16	20	
Toluene	CCC	50.0	48.1	ug/L	1.03	3.85	20	
Vinyl Chloride	CCC	50.0	41.9	ug/L	0.196	16.3	20	
Bromoform	SPCC	50.0	50.5	ug/L	0.162	1.07	40	
Chlorobenzene	SPCC	50.0	49.3	ug/L	0.701	1.42	40	
Chloromethane	SPCC	50.0	28.3	ug/L	0.179	43.4	40	*
1,1-Dichloroethane	SPCC	50.0	47.7	ug/L	0.398	4.51	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	39.8	ug/L	0.419	20.3	40	
Acetone		50.0	43.3	ug/L	0.0432	13.4	40	
Benzene		50.0	48.7	ug/L	0.779	2.56	40	
Bromobenzene		50.0	48.6	ug/L	0.642	2.78	40	
Bromochloromethane		50.0	46.7	ug/L	0.0959	6.63	40	
Bromodichloromethane		50.0	46.5	ug/L	0.225	7.02	40	
Bromomethane		50.0	27.1	ug/L	0.0830	45.7	40	*
2-Butanone		50.0	43.4	ug/L	0.0712	13.2	40	
n-Butylbenzene		50.0	52.0	ug/L	1.61	3.95	40	
sec-Butylbenzene		50.0	44.7	ug/L	1.92	10.6	40	
tert-Butylbenzene		50.0	41.9	ug/L	0.354	16.1	40	
Carbon Disulfide		50.0	82.4	ug/L	0.639	64.7	40	*
Carbon Tetrachloride		50.0	43.9	ug/L	0.196	12.3	40	
Dibromochloromethane		50.0	48.2	ug/L	0.249	3.68	40	
Chloroethane		50.0	45.8	ug/L	0.0893	8.37	40	
2-Chloroethyl Vinyl Ether		50.0	45.3	ug/L	0.0745	9.50	40	
2-Chlorotoluene		50.0	48.9	ug/L	1.72	2.30	40	
4-Chlorotoluene		50.0	46.9	ug/L	1.35	6.25	40	
1,2-Dibromo-3-Chloropropane		50.0	42.6	ug/L	0.0849	14.8	40	
1,2-Dibromoethane		50.0	47.0	ug/L	0.186	5.91	40	
Dibromomethane		50.0	46.2	ug/L	0.0947	7.67	40	
1,2-Dichlorobenzene		50.0	47.5	ug/L	1.12	4.98	40	
1,3-Dichlorobenzene		50.0	49.5	ug/L	1.17	0.971	40	
1,4-Dichlorobenzene		50.0	48.0	ug/L	1.11	3.95	40	
Dichlorodifluoromethane		50.0	48.4	ug/L	0.172	3.12	40	
1,2-Dichloroethane		50.0	45.8	ug/L	0.245	8.43	40	
cis-1,2-Dichloroethene		50.0	49.5	ug/L	0.213	1.04	40	
trans-1,2-Dichloroethene		50.0	50.7	ug/L	0.193	1.39	40	
1,3-Dichloropropane		50.0	44.8	ug/L	0.314	10.4	40	
2,2-Dichloropropane		50.0	43.9	ug/L	0.232	12.3	40	
cis-1,3-Dichloropropene		50.0	45.9	ug/L	0.243	8.28	40	
trans-1,3-Dichloropropene		50.0	46.5	ug/L	0.293	7.08	40	

CCV - Modified 03/05/2008

PDF File ID: 1384685

Report generated 05/06/2009 12:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115770

Login Number: L09050034 Run Date: 05/04/2009 Sample ID: WG301424-02

Instrument ID: HPMS10 Run Time: 11:34 Method: 8260B

File ID: 10M72157 Analyst: TMB QC Key: STD

Workgroup (AAB#): WG301425 Cal ID: HPMS10 - 27-APR-09

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	49.7	ug/L	0.270	0.537	40	
2-Hexanone		50.0	44.2	ug/L	0.119	11.7	40	
Hexachlorobutadiene		50.0	55.3	ug/L	0.364	10.6	40	
Isopropylbenzene		50.0	52.2	ug/L	1.04	4.48	40	
p-Isopropyltoluene		50.0	50.6	ug/L	1.91	1.24	40	
4-Methyl-2-Pentanone		50.0	46.5	ug/L	0.0523	7.05	40	
Methylene Chloride		50.0	48.3	ug/L	0.189	3.50	40	
Naphthalene		50.0	47.0	ug/L	1.25	5.93	40	
n-Propylbenzene		50.0	45.8	ug/L	2.06	8.44	40	
Styrene		50.0	56.0	ug/L	0.690	12.1	40	
1,1,1,2-Tetrachloroethane		50.0	49.6	ug/L	0.281	0.701	40	
Tetrachloroethene		50.0	49.2	ug/L	0.246	1.61	40	
1,2,3-Trichlorobenzene		50.0	48.0	ug/L	0.744	3.98	40	
1,2,4-Trichlorobenzene		50.0	50.3	ug/L	0.831	0.561	40	
1,1,1-Trichloroethane		50.0	49.6	ug/L	0.287	0.794	40	
1,1,2-Trichloroethane		50.0	47.3	ug/L	0.188	5.42	40	
Trichloroethene		50.0	50.4	ug/L	0.223	0.737	40	
Trichlorofluoromethane		50.0	49.2	ug/L	0.301	1.52	40	
1,2,3-Trichloropropane		50.0	43.0	ug/L	0.124	14.0	40	
1,2,4-Trimethylbenzene		50.0	51.3	ug/L	2.12	2.64	40	
1,3,5-Trimethylbenzene		50.0	49.4	ug/L	2.13	1.21	40	
Vinyl Acetate		50.0	37.8	ug/L	0.315	24.5	40	
o-Xylene		50.0	50.5	ug/L	0.441	0.979	40	
m-,p-Xylene		100	103	ug/L	0.439	2.93	40	
1,2-Dichloroethene		100	100	ug/L	0.203	0.173	40	
Xylenes		150	153	ug/L	0.440	2.28	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1384685
Report generated 05/06/2009 12:44

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number:L09050034
Instrument ID:HPMS10
Workgroup (AAB#):WG301310

CCV Number:WG301309-02
CAL ID: HPMS10-27-APR-09
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG301309-02	NA	NA	290830	576388	826053
Upper Limit	NA	NA	581660	1152776	1652106
Lower Limit	NA	NA	145415	288194	413027
L09050034-01	1.00	01	206853	497232	736563
L09050034-02	1.00	01	200951	499909	719265
L09050034-03	2.00	DL01	213825	514590	712746
L09050034-04	1.00	01	202716	501877	708335
L09050034-05	1.00	01	199338	497720	689747
L09050034-06	1.00	01	201759	496259	700084
L09050034-07	1.00	01	209262	516268	732817
WG301310-01	1.00	01	212021	526075	757521
WG301310-02	1.00	01	249706	543944	769517
WG301310-04	1.00	01	206421	501008	684411
WG301310-05	1.00	01	244926	499780	744346
WG301310-06	1.00	01	247469	510388	744570

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1384686
Report generated 05/06/2009 12:44

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00115772

Login Number:L09050034
Instrument ID:HPMS10
Workgroup (AAB#):WG301425

CCV Number:WG301424-02
CAL ID: HPMS10-27-APR-09
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG301424-02	NA	NA	310117	652212	899592
Upper Limit	NA	NA	620234	1304424	1799184
Lower Limit	NA	NA	155059	326106	449796
L09050034-03	1.00	01	217152	532445	726672
WG301425-01	1.00	01	229617	559055	772290
WG301425-02	1.00	01	270903	570339	809790
WG301425-03	1.00	01	270245	619610	823354

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1384686
Report generated 05/06/2009 12:44

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

00115773

Login Number:L09050034
Instrument ID:HPMS10
Workgroup (AAB#):WG301310

CCV Number:WG301309-02
CAL ID: HPMS10-27-APR-09
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG301309-02	NA	NA	17.45	14.45	10.59
Upper Limit	NA	NA	17.95	14.95	11.09
Lower Limit	NA	NA	16.95	13.95	10.09
L09050034-01	1.00	01	17.45	14.44	10.59
L09050034-02	1.00	01	17.45	14.44	10.59
L09050034-03	2.00	DL01	17.45	14.45	10.59
L09050034-04	1.00	01	17.45	14.45	10.59
L09050034-05	1.00	01	17.45	14.45	10.59
L09050034-06	1.00	01	17.45	14.45	10.59
L09050034-07	1.00	01	17.45	14.44	10.59
WG301310-01	1.00	01	17.45	14.44	10.59
WG301310-02	1.00	01	17.45	14.44	10.59
WG301310-04	1.00	01	17.45	14.45	10.58
WG301310-05	1.00	01	17.45	14.45	10.58
WG301310-06	1.00	01	17.45	14.45	10.59

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1384688
Report generated 05/06/2009 12:44

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

00115774

Login Number:L09050034
Instrument ID:HPMS10
Workgroup (AAB#):WG301425

CCV Number:WG301424-02
CAL ID: HPMS10-27-APR-09
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG301424-02	NA	NA	17.45	14.44	10.59
Upper Limit	NA	NA	17.95	14.94	11.09
Lower Limit	NA	NA	16.95	13.94	10.09
L09050034-03	1.00	01	17.45	14.45	10.59
WG301425-01	1.00	01	17.45	14.44	10.59
WG301425-02	1.00	01	17.45	14.45	10.59
WG301425-03	1.00	01	17.45	14.44	10.59

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1384688
Report generated 05/06/2009 12:44

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
May 6, 2009

ADC – ANTHONY D. CANTER	AJF – AMANDA J. FICKIESEN	ALB – ANNIE L. BROWN
AM – ALISON J. MILLER	AML – ANTHONY M. LONG	BRG – BRENDA R. GREGORY
CAA – CASSIE A. AUGENSTEIN	CAF – CHERYL A. FLOWERS	CAH – CHARLES A. HALL
CEB – CHAD E. BARNES	CLC – CHRYS L. CRAWFORD	CLW – CHARISSA L. WINTERS
CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL	CTB – CHRIS T. BUCINA
DDE – DEBRA D. ELLIOTT	DEL – DON E. LIGHTFRITZ	DEV – DAVID E. VANDENBERG
DGB – DOUGLAS G. BUTCHER	DIH – DEANNA I. HESSON	DLB – DAVID L. BUMGARNER
DLP – DOROTHY L. PAYNE	DLR – DIANNA L. RAUCH	DR – DEANNA ROBERTS
ECL – ERIC C. LAWSON	EDA – ERIN D. AGEE	ERP – ERIN R. PORTER
FJB – FRANCES J. BOLDEN	HAV – HEMA VILASAGAR	HJR – HOLLY J. REED
JBK – JEREMY B. KINNEY	JDH – JUSTIN D. HESSON	JKT – JANE K. THOMPSON
JWR – JOHN W. RICHARDS	JWS – JACK W. SHEAVES	JYH – JI Y. HU
KEB – KATHRYN E. BARNES	KHR – KIM H. RHODES	KRA – KATHY R. ALBERTSON
LKN – LINDA K. NEDEFF	LSB – LESLIE S. BUCINA	MDA – MIKE D. ALBERTSON
MDC – MICHAEL D. COCHRAN	MES – MARY E. SCHILLING	MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR	MSW – MATT S. WILSON	NPM – NATHANIEL P. MILLER
PDM – PIERCE D. MORRIS	RAH – ROY A. HALSTEAD	RB – ROBERT BUCHANAN
REK – ROBERT E. KYER	RLK – ROBIN L. KLINGER	RWC – RODNEY W. CAMPBELL
SDH – SHANA D. HINYARD	SLM – STEPHANIE L. MOSSBURG	SLP – SHERI L. PFALZGRAF
TIP – TAE I. PARRISH	TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS
VC – VICKI COLLIER	WTD – WADE T. DELONG	

Microbac Laboratories Inc.
List of Valid Qualifiers
May 06, 2009

Qualkey: STD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
C	Confirmed by GC/MS
CG	Confluent growth
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
FL	Free Liquid
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit (RL).
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria fail. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Undetected; the concentration is below the reported MDL.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

00115778

Chain of Custody

NO. 5729

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Microbac | Address: 158 Starlite Dr. Marietta, OH | Contact: Stephanie Moss Surg (740)373 4071

Project Name: USACE-LHAAP | Project Location: Karnack, TX

Project No.: 117591.0008RS105 | Project Contact: Jen Hoang | Project Telephone No.: 713 996 4408

Point of Contact: Jen Hoang | Telephone No.: 713 996 4408

Project Manager/Supervisor: Praveen Srivastav

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	Analysis and Method Desired (Indicate separate containers): VOC's							Remarks
1	12MW22 042909	04/29/09	0936		X	GW	LHAAP 12	3	3							
2	12MW20 042909	04/29/09	1101		X	GW	LHAAP 12	2	2							
3	12MW24 042909	04/29/09	1151		X	GW	LHAAP 12	3	3							
4	12MW23 042909	04/29/09	1421		X	GW	LHAAP 12	3	3							
5	12MW21 042909	04/29/09	1528		X	GW	LHAAP 12	3	3							
6	12MW20 042909 FD	04/29/09	1101		X	GW	LHAAP 12	1	1							
7	Trip Blank							2	2							
8																
9																
10																

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
	04-30-09/0930			
				FedEx Airbill No.:
		Laboratory	5-1-09 0930	Sampler's Signature

TAT: ____ Standard ____ Rush Date ____ Seals Intact? ____ Y ____ N Received Good Condition ____ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_2
Rev. 10-19-07

158 Starlite Drive
Marietta, OH 45750
(740) 373-4071

Client:	Shaw
Workorder Number:	B
Date Received:	5-1-09
Delivered by:	( ) Fedx (✓) UPS ( ) Client ( ) Courier **Time:** 0930
Opened by:	RLK
IR Temp Gun:	( ) G ( ) ~~H~~
Logged by:	JRT L 090500034

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
3341	4	J204 777 764 6	5729	water

Inspection Checklist	**Y**	**N**	**NA**	**Discrepancy ID**
Were shipping coolers sealed?	✓			
Were custody seals intact?	✓			
Were cooler temperatures in range of 0 - 6?	✓			
Was ice present?	✓			
Were COC's received/ information complete/signed and dated?	✓			
Were sample containers and labels intact and match COC?	✓			
Were the correct containers and volumes received?	✓			
Were correct preservatives used? (water only)	✓			
Were pH ranges acceptable? (voa's excluded)			✓	
Were VOA samples free of headspace (< 6mm)?	✓			
Were samples received within EPA hold times?	✓			

Discrepancy/Comments/Other Problems

Distribution

Name of Microbac representative:
Client/Company:
Person Contacted:
Date contacted:

Resolution/other comments:

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L09050034
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 12-MAY-2009

Samplenum	Container ID	Products
L09050034-03	577179	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

Samplenum	Container ID	Products
L09050034-04	577180	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

Samplenum	Container ID	Products
L09050034-02	577178	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L09050034
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 12-MAY-2009

Samplenum	Container ID	Products
L09050034-07	577183	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

Samplenum	Container ID	Products
L09050034-05	577181	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

Samplenum	Container ID	Products
L09050034-01	577177	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L09050034
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 12-MAY-2009

Samplenum	Container ID	Products
L09050034-06	577182	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	01-MAY-2009 15:04	JKT	
2	ANALYZ	V1	ORG4	01-MAY-2009 15:22	MRT	JKT

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

158 Starlite Drive, Marietta, OH 45750 ● T:740-373-4071 ● F:740-373-4835 ● http://www.microbac.com

Laboratory Report Number: L09070325

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	*Team Chemist/Data Specialist*	kalbertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	smossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	tlong@microbac.com
Amanda Fickiesen	*Client Services Specialist*	afickiesen@microbac.com
Annie Brown	*Client Services Specialist*	abrown@microbac.com

This report was reviewed on July 21, 2009.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

This report was certified on July 21, 2009.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac OVD
This report contains a total of 67 pages.

Look closer. Go further. Do more.

Microbac REPORT L09070325
PREPARED FOR Shaw E I, Inc.
WORK ID:

1.0 Introduction 3
2.1 Volatiles Data 9
2.1.1 Volatiles GCMS Data (8260) 10
2.1.1.1 Summary Data 11
2.1.1.2 QC Summary Data 27
3.0 Attachments 60

1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09070325

CHAIN OF CUSTODY: The chain of custody number was 5821

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 4 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 17-JUL-09
Stephanie Mossburg

Laboratory Data Package Cover Page

00115787

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	July 17, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09070325
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	WG307222
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	July 17, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT
ER# - Description
There were no exceptions.

Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

00115794

L09070325

07/17/09 15:10

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW24-071409	L09070325-01	8260B	2	16-JUL-09
12WW20-071509	L09070325-02	8260B	1	16-JUL-09
12WW22-071509	L09070325-03	8260B	1	16-JUL-09
12WW22-071509-FD	L09070325-04	8260B	1	16-JUL-09
12WW21-071509	L09070325-05	8260B	1	16-JUL-09
12WW23-071509	L09070325-06	8260B	1	16-JUL-09
TRIP BLANK	L09070325-07	8260B	1	16-JUL-09

Report Number: **L09070325**
Report Date : **July 17, 2009**

00115795

Sample Number: **L09070325-01**
Client ID: **12WW24-071409**
Matrix: **Water**
Workgroup Number: **WG307222**
Collect Date: **07/14/2009 01:25**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030C**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **2**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **07/16/2009 18:42**
Cal Date: **07/09/2009 20:36**
Run Date: **07/16/2009 18:42**
File ID: **10M73559**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	20.0	5.00
Benzene	71-43-2	0.684	J	2.00	0.250
Bromobenzene	108-86-1		U	2.00	0.250
Bromochloromethane	74-97-5		U	2.00	0.400
Bromodichloromethane	75-27-4		U	2.00	0.500
Bromoform	75-25-2		U	2.00	1.00
Bromomethane	74-83-9		U	2.00	1.00
2-Butanone	78-93-3		U	20.0	5.00
n-Butylbenzene	104-51-8		U	2.00	0.500
sec-Butylbenzene	135-98-8		U	2.00	0.500
tert-Butylbenzene	98-06-6		U	2.00	0.500
Carbon disulfide	75-15-0		U	2.00	1.00
Carbon tetrachloride	56-23-5		U	2.00	0.500
Chlorobenzene	108-90-7	9.74		2.00	0.250
Chlorodibromomethane	124-48-1		U	2.00	0.500
Chloroethane	75-00-3		U	2.00	1.00
2-Chloroethyl vinyl ether	110-75-8		U	20.0	4.00
Chloroform	67-66-3	0.352	J	2.00	0.250
Chloromethane	74-87-3		U	2.00	0.500
2-Chlorotoluene	95-49-8		U	2.00	0.250
4-Chlorotoluene	106-43-4		U	2.00	0.500
1,2-Dibromo-3-chloropropane	96-12-8		U	10.0	2.00
1,2-Dibromoethane	106-93-4		U	2.00	0.500
Dibromomethane	74-95-3		U	2.00	0.500
1,2-Dichlorobenzene	95-50-1		U	2.00	0.250
1,3-Dichlorobenzene	541-73-1		U	2.00	0.500
1,4-Dichlorobenzene	106-46-7	4.01		2.00	0.250
Dichlorodifluoromethane	75-71-8		U	2.00	0.500
1,1-Dichloroethane	75-34-3	0.410	J	2.00	0.250
1,2-Dichloroethane	107-06-2		U	2.00	0.500
1,1-Dichloroethene	75-35-4		U	2.00	1.00
cis-1,2-Dichloroethene	156-59-2	50.4		2.00	0.500
trans-1,2-Dichloroethene	156-60-5		U	2.00	0.500
1,2-Dichloropropane	78-87-5		U	2.00	0.400
1,3-Dichloropropane	142-28-9		U	2.00	0.400
2,2-Dichloropropane	594-20-7		U	2.00	0.500
cis-1,3-Dichloropropene	10061-01-5		U	2.00	0.500
trans-1,3-Dichloropropene	10061-02-6		U	2.00	1.00
1,1-Dichloropropene	563-58-6		U	2.00	0.500
Ethylbenzene	100-41-4		U	2.00	0.500
2-Hexanone	591-78-6		U	20.0	5.00
Hexachlorobutadiene	87-68-3		U	2.00	0.500
Isopropylbenzene	98-82-8		U	2.00	0.500
p-Isopropyltoluene	99-87-6		U	2.00	0.500
4-Methyl-2-pentanone	108-10-1		U	20.0	5.00
Methylene chloride	75-09-2		U	10.0	0.500
Naphthalene	91-20-3		U	2.00	0.400
n-Propylbenzene	103-65-1		U	2.00	0.250
Styrene	100-42-5		U	2.00	0.250
1,1,1,2-Tetrachloroethane	630-20-6		U	2.00	0.500
1,1,2,2-Tetrachloroethane	79-34-5		U	2.00	0.250
Tetrachloroethene	127-18-4	0.745	J	2.00	0.500
Toluene	108-88-3		U	2.00	0.500
1,2,3-Trichlorobenzene	87-61-6		U	2.00	0.300
1,2,4-Trichlorobenzene	120-82-1		U	2.00	0.400
1,1,1-Trichloroethane	71-55-6		U	2.00	0.500
1,1,2-Trichloroethane	79-00-5		U	2.00	0.500
Trichloroethene	79-01-6	204		2.00	0.500
Trichlorofluoromethane	75-69-4		U	2.00	0.500

Report Number: L09070325
Report Date : July 17, 2009

00115796

Sample Number: L09070325-01
Client ID: 12WW24-071409
Matrix: Water
Workgroup Number: WG307222
Collect Date: 07/14/2009 01:25
Sample Tag: DL01

PrePrep Method: NONE
Prep Method: 5030C
Analytical Method: 8260B
Analyst: TMB
Dilution: 2
Units: ug/L

Instrument: HPMS10
Prep Date: 07/16/2009 18:42
Cal Date: 07/09/2009 20:36
Run Date: 07/16/2009 18:42
File ID: 10M73559

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	2.00	1.00
1,2,4-Trimethylbenzene	95-63-6		U	2.00	0.500
1,3,5-Trimethylbenzene	108-67-8		U	2.00	0.500
Vinyl acetate	108-05-4		U	20.0	5.00
Vinyl chloride	75-01-4	0.681	J	2.00	0.500
o-Xylene	95-47-6		U	2.00	0.500
m-,p-Xylene	136777-61-2		U	2.00	1.00

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	102	86	118	
1,2-Dichloroethane-d4	97.1	80	120	
Toluene-d8	103	88	110	
4-Bromofluorobenzene	108	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09070325**
Report Date : **July 17, 2009**

00115797

Sample Number: **L09070325-02**
Client ID: **12WW20-071509**
Matrix: **Water**
Workgroup Number: **WG307222**
Collect Date: **07/15/2009 09:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **07/16/2009 16:04**
Cal Date: **07/09/2009 20:36**
Run Date: **07/16/2009 16:04**
File ID: **10M73554**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3	0.337	J	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	0.239	J	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.710	J	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	0.931	J	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Microbac®

Report Number: L09070325
Report Date : July 17, 2009

00115798

Sample Number: L09070325-02
Client ID: 12WW20-071509
Matrix: Water
Workgroup Number: WG307222
Collect Date: 07/15/2009 09:05
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 5030C
Analytical Method: 8260B
Analyst: TMB
Dilution: 1
Units: ug/L

Instrument: HPMS10
Prep Date: 07/16/2009 16:04
Cal Date: 07/09/2009 20:36
Run Date: 07/16/2009 16:04
File ID: 10M73554

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	100	86	118	
1,2-Dichloroethane-d4	95.0	80	120	
Toluene-d8	101	88	110	
4-Bromofluorobenzene	111	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09070325**
Report Date : **July 17, 2009**

00115799

Sample Number: **L09070325-03**
Client ID: **12WW22-071509**
Matrix: **Water**
Workgroup Number: **WG307222**
Collect Date: **07/15/2009 10:10**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **07/16/2009 16:35**
Cal Date: **07/09/2009 20:36**
Run Date: **07/16/2009 16:35**
File ID: **10M73555**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	0.294	J	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L09070325**
Report Date : **July 17, 2009**

00115800

Sample Number:	L09070325-03	PrePrep Method:	NONE	Instrument:	HPMS10
Client ID:	12WW22-071509	Prep Method:	5030C	Prep Date:	07/16/2009 16:35
Matrix:	Water	Analytical Method:	8260B	Cal Date:	07/09/2009 20:36
Workgroup Number:	WG307222	Analyst:	TMB	Run Date:	07/16/2009 16:35
Collect Date:	07/15/2009 10:10	Dilution:	1	File ID:	10M73555
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	101	86	118	
1,2-Dichloroethane-d4	97.6	80	120	
Toluene-d8	103	88	110	
4-Bromofluorobenzene	109	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09070325**
Report Date : **July 17, 2009**

00115801

Sample Number: **L09070325-04**
Client ID: **12WW22-071509-FD**
Matrix: **Water**
Workgroup Number: **WG307222**
Collect Date: **07/15/2009 10:10**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **07/16/2009 17:07**
Cal Date: **07/09/2009 20:36**
Run Date: **07/16/2009 17:07**
File ID: **10M73556**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	0.320	J	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L09070325**
Report Date : **July 17, 2009**

00115802

Sample Number:	L09070325-04	PrePrep Method:	NONE	Instrument:	HPMS10
Client ID:	12WW22-071509-FD	Prep Method:	5030C	Prep Date:	07/16/2009 17:07
Matrix:	Water	Analytical Method:	8260B	Cal Date:	07/09/2009 20:36
Workgroup Number:	WG307222	Analyst:	TMB	Run Date:	07/16/2009 17:07
Collect Date:	07/15/2009 10:10	Dilution:	1	File ID:	10M73556
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	104	86	118	
1,2-Dichloroethane-d4	99.5	80	120	
Toluene-d8	103	88	110	
4-Bromofluorobenzene	110	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09070325**
Report Date : **July 17, 2009**

00115803

Sample Number: **L09070325-05**
Client ID: **12WW21-071509**
Matrix: **Water**
Workgroup Number: **WG307222**
Collect Date: **07/15/2009 11:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **07/16/2009 17:38**
Cal Date: **07/09/2009 20:36**
Run Date: **07/16/2009 17:38**
File ID: **10M73557**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	0.293	J	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: L09070325
Report Date : July 17, 2009

00115804

Sample Number: L09070325-05
Client ID: 12WW21-071509
Matrix: Water
Workgroup Number: WG307222
Collect Date: 07/15/2009 11:20
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 5030C
Analytical Method: 8260B
Analyst: TMB
Dilution: 1
Units: ug/L

Instrument: HPMS10
Prep Date: 07/16/2009 17:38
Cal Date: 07/09/2009 20:36
Run Date: 07/16/2009 17:38
File ID: 10M73557

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	102	86	118	
1,2-Dichloroethane-d4	98.9	80	120	
Toluene-d8	104	88	110	
4-Bromofluorobenzene	108	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09070325**
Report Date : **July 17, 2009**

00115805

Sample Number: **L09070325-06**
Client ID: **12WW23-071509**
Matrix: **Water**
Workgroup Number: **WG307222**
Collect Date: **07/15/2009 12:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **07/16/2009 18:10**
Cal Date: **07/09/2009 20:36**
Run Date: **07/16/2009 18:10**
File ID: **10M73558**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3	0.516	J	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	0.277	J	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L09070325**
Report Date : **July 17, 2009**

00115806

Sample Number:	L09070325-06	PrePrep Method:	NONE	Instrument:	HPMS10
Client ID:	12WW23-071509	Prep Method:	5030C	Prep Date:	07/16/2009 18:10
Matrix:	Water	Analytical Method:	8260B	Cal Date:	07/09/2009 20:36
Workgroup Number:	WG307222	Analyst:	TMB	Run Date:	07/16/2009 18:10
Collect Date:	07/15/2009 12:45	Dilution:	1	File ID:	10M73558
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	100	86	118	
1,2-Dichloroethane-d4	97.9	80	120	
Toluene-d8	103	88	110	
4-Bromofluorobenzene	108	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09070325**
Report Date : **July 17, 2009**

00115807

Sample Number: **L09070325-07**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG307222**
Collect Date: **07/15/2009 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **07/16/2009 13:57**
Cal Date: **07/09/2009 20:36**
Run Date: **07/16/2009 13:57**
File ID: **10M73550**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	3.15	J	10.0	2.50
Benzene	71-43-2	0.949	J	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3	0.589	J	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	3.67		1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3	1.81		1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L09070325**
Report Date : **July 17, 2009**

00115808

Sample Number:	L09070325-07	PrePrep Method:	NONE	Instrument:	HPMS10
Client ID:	TRIP BLANK	Prep Method:	5030C	Prep Date:	07/16/2009 13:57
Matrix:	Water	Analytical Method:	8260B	Cal Date:	07/09/2009 20:36
Workgroup Number:	WG307222	Analyst:	TMB	Run Date:	07/16/2009 13:57
Collect Date:	07/15/2009 00:01	Dilution:	1	File ID:	10M73550
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6	0.329	J	1.00	0.250
m-,p-Xylene	136777-61-2	0.887	J	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	100	86	118	
1,2-Dichloroethane-d4	95.4	80	120	
Toluene-d8	103	88	110	
4-Bromofluorobenzene	110	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**
Dry weight correction:	
Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a\left(c - y\right)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS10 Dataset: 070909
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 5030C/5035A SOP: PAT01 Rev: 12

Maintenance Log ID: 29392

Internal Standard: STD33698 Surrogate Standard: STD33857
CCV: STD33808 LCS: STD33850 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG306520

Comments: There was no data collected for file 10M73394.

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M73381	CCV CHECK RT CHANGE	NA	1	1		07/09/09 08:28
2	10M73382	RINSE	NA	1	1		07/09/09 08:59
3	10M73383	WG306520-01 50ng BFB STD 8260	NA	1	1	STD33315	07/09/09 09:38
4	10M73384	WG306520-02 0.3ug/L STD 8260	NA	1	1	STD33808	07/09/09 10:03
5	10M73385	WG306520-03 0.4ug/L STD 8260	NA	1	1	STD33808	07/09/09 10:35
6	10M73386	WG306520-01 50ng BFB STD 8260	NA	1	1	STD33315	07/09/09 11:22
7	10M73387	WG306520-06 5ug/L STD 8260	NA	1	1	STD33808	07/09/09 11:55
8	10M73388	WG306520-05 2ug/L STD 8260	NA	1	1	STD33808	07/09/09 12:26
9	10M73389	WG306520-04 1ug/L STD 8260	NA	1	1	STD33808	07/09/09 12:58
10	10M73390	WG306520-03 0.4ug/L STD 8260	NA	1	1	STD33808	07/09/09 13:29
11	10M73391	WG306520-02 0.3ug/L STD 8260	NA	1	1	STD33808	07/09/09 14:06
12	10M73392	WG306520-01 50ng BFB STD 8260	NA	1	1	STD33315	07/09/09 14:34
13	10M73393	WG306520-01 50ng BFB STD 8260	NA	1	1	STD33315	07/09/09 14:50
14	10M73395	WG306520-01 50ng BFB STD 8260	NA	1	1	STD33315	07/09/09 15:28
15	10M73396	WG306520-02 0.3ug/L STD 8260	NA	1	1	STD33808	07/09/09 15:52
16	10M73397	WG306520-03 0.4ug/L STD 8260	NA	1	1	STD33808	07/09/09 16:24
17	10M73398	WG306520-04 1ug/L STD 8260	NA	1	1	STD33808	07/09/09 16:55
18	10M73399	WG306520-05 2ug/L STD 8260	NA	1	1	STD33808	07/09/09 17:27
19	10M73400	WG306520-06 5ug/L STD 8260	NA	1	1	STD33808	07/09/09 17:58
20	10M73401	WG306520-07 20ug/L STD 8260	NA	1	1	STD33808	07/09/09 18:30
21	10M73402	WG306520-08 50ug/L STD 8260	NA	1	1	STD33808	07/09/09 19:01
22	10M73403	WG306520-09 100ug/L STD 8260	NA	1	1	STD33808	07/09/09 19:33
23	10M73404	WG306520-10 200ug/L STD 8260	NA	1	1	STD33808	07/09/09 20:04
24	10M73405	WG306520-11 300ug/L STD 8260	NA	1	1	STD33808	07/09/09 20:36
25	10M73406	RINSE	NA	1	1		07/09/09 21:08
26	10M73407	RINSE	NA	1	1		07/09/09 21:39
27	10M73408	WG306520-12 50ug/L ALT SRC STD 8260	NA	1	1	STD33850	07/09/09 22:11
28	10M73409	RINSE MS H20	NA	1	1		07/09/09 22:42
29	10M73410	RINSE MS H20	NA	1	1		07/09/09 23:14

Comments

Seq.	Rerun	Dil.	Reason	Analytes
4	X			

Approved: July 10, 2009

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS10 Dataset: 070909
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 5030C/5035A SOP: PAT01 Rev: 12

Maintenance Log ID: 29392

Internal Standard: STD33698 Surrogate Standard: STD33857
CCV: STD33808 LCS: STD33850 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG306520

Comments: There was no data collected for file 10M73394.

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 10M73384				
	responces low. DNR.			
5	X			
File ID: 10M73385				
	responces low. DNR.			
7	X		Internal standard failure	
File ID: 10M73387				
	Internals were low. Restart curve. DNR.			
8	X		Internal standard failure	
File ID: 10M73388				
	Internals were low. Restart curve. DNR.			
9	X		Internal standard failure	
File ID: 10M73389				
	Internals were low. Restart curve. DNR.			
10	X		Internal standard failure	
File ID: 10M73390				
	Internals were low. Restart curve. DNR.			
11	X			
File ID: 10M73391				
	Internals were low. Restart curve. DNR.			
12	X			
File ID: 10M73392				
	Tune failed. DNR.			
13	X			
File ID: 10M73393				
	Tune failed. DNR. Baked instrument for 20 min.			

Approved: July 10, 2009

Page: 2

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS10 Dataset: 071609
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 5030C/5035A SOP: PAT01 Rev: 12

Maintenance Log ID: 29472

Internal Standard: STD33698 Surrogate Standard: STD33857
CCV: STD33808 LCS: STD34005 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG307222

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M73540	RINSE	NA	1	1		07/16/09 08:31
2	10M73541	RINSE	NA	1	1		07/16/09 09:09
3	10M73542	WG307221-01 50ng BFB STD 8260	NA	1	1	STD33918	07/16/09 09:47
4	10M73543	WG307221-02 50ug/L CCV STD 8260	NA	1	1	STD33808	07/16/09 10:11
5	10M73544	RINSE	NA	1	1		07/16/09 10:48
6	10M73545	WG307222-01 VBLK0716 BLANK STD 826	NA	1	1		07/16/09 11:19
7	10M73546	WG307222-02 20ug/L LCS STD 8260	NA	1	1	STD34005	07/16/09 11:51
8	10M73547	WG307222-03 20ug/L LCSDUP STD 8260	NA	1	1	STD34005	07/16/09 12:22
9	10M73548	WG307222-04 FBLK 10X STD 8260	NA	1	10		07/16/09 12:54
10	10M73549	L09070324-02 A 826-SPE	<2	1	1		07/16/09 13:26
11	10M73550	L09070325-07 A 826-LOW	<2	1	1		07/16/09 13:57
12	10M73551	L09070269-05 B 826-SPE	<2	1	1		07/16/09 14:29
13	10M73552	L09070269-06 B 826-SPE	<2	1	1		07/16/09 15:01
14	10M73553	L09070269-04 B 10X 826-SPE D1	<2	1	10		07/16/09 15:32
15	10M73554	L09070325-02 A 826-LOW	<2	1	1		07/16/09 16:04
16	10M73555	L09070325-03 A 826-LOW	<2	1	1		07/16/09 16:35
17	10M73556	L09070325-04 A 826-LOW	<2	1	1		07/16/09 17:07
18	10M73557	L09070325-05 A 826-LOW	<2	1	1		07/16/09 17:38
19	10M73558	L09070325-06 A 826-LOW	<2	1	1		07/16/09 18:10
20	10M73559	L09070325-01 A 2X 826-LOW	<2	1	2		07/16/09 18:42
21	10M73560	L09070310-01 A 826-SPE	<2	1	1		07/16/09 19:13
22	10M73561	L09070324-01 A 826-SPE	<2	1	1		07/16/09 19:45
23	10M73562	L09070273-03 10X 826-TC	NA	17	10		07/16/09 20:16
24	10M73563	L09070273-04 10X 826-TC	NA	17	10		07/16/09 20:48
25	10M73564	RINSE MS SIDE NEW FILTERS	NA	1	1		07/16/09 21:19
26	10M73565	RINSE MS SIDE	NA	1	1		07/16/09 21:51
27	10M73566	RINSE	NA	1	1		07/16/09 22:23

Comments

Seq.	Rerun	Dil.	Reason	Analytes
5	X	1	Carry-over contamination	
File ID: 10M73544				
DNR.				

Approved: July 17, 2009

Page: 1

Microbac Laboratories Inc.

Data Checklist

Date: 09-JUL-2009
Analyst: TMB
Analyst: NA
Method: 8260
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 29022
Analytical Workgroups: WG306520

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	X
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	NA
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
10-JUL-2009
Tiffany Bailey

Secondary Reviewer:
10-JUL-2009

CHECKLIST1 - Modified 03/05/2008
Generated: JUL-10-2009 12:38:55

Microbac Laboratories Inc.

Data Checklist

Date: 16-JUL-2009
Analyst: TMB
Analyst: NA
Method: 8260
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 29137
Analytical Workgroups: WG307222

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	NA
Manual Integrations	X
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
17-JUL-2009
Tiffany Bailey

Secondary Reviewer:
17-JUL-2009

CHECKLIST1 - Modified 03/05/2008
Generated: JUL-17-2009 13:24:10

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00115817

Analytical Method:8260B AAB#:WG307222

Login Number:L09070325

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
12WW21-071509	07/15/09	07/16/09	07/16/09	14	1.26	07/16/09	14	1.26	
12WW20-071509	07/15/09	07/16/09	07/16/09	14	1.29	07/16/09	14	1.29	
12WW23-071509	07/15/09	07/16/09	07/16/09	14	1.23	07/16/09	14	1.23	
12WW22-071509-FD	07/15/09	07/16/09	07/16/09	14	1.29	07/16/09	14	1.29	
TRIP BLANK	07/15/09	07/16/09	07/16/09	14	1.58	07/16/09	14	1.58	
12WW24-071409	07/14/09	07/16/09	07/16/09	14	2.72	07/16/09	14	2.72	
12WW22-071509	07/15/09	07/16/09	07/16/09	14	1.27	07/16/09	14	1.27	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1444343
Report generated 07/17/2009 14:55

Login Number: L09070325
Instrument Id: HPMS10
Workgroup (AAB#): WG307222

Method: 8260
CAL ID: HPMS10-09-JUL-09
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L09070325-01	2.00	DL01	97.1	102	108	103
L09070325-02	1.00	01	95.0	100	111	101
L09070325-03	1.00	01	97.6	101	109	103
L09070325-04	1.00	01	99.5	104	110	103
L09070325-05	1.00	01	98.9	102	108	104
L09070325-06	1.00	01	97.9	100	108	103
L09070325-07	1.00	01	95.4	100	110	103
WG307222-01	1.00	01	94.2	103	110	103
WG307222-02	1.00	01	96.1	103	101	103
WG307222-03	1.00	01	96.7	104	104	104
WG307222-04	10.0	DL01	94.5	102	111	104

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1444350
Report generated: 07/17/2009 14:55

METHOD BLANK SUMMARY

Login Number: L09070325 | Work Group: WG307222
Blank File ID: 10M73545 | Blank Sample ID: WG307222-01
Prep Date: 07/16/09 11:19 | Instrument ID: HPMS10
Analyzed Date: 07/16/09 11:19 | Method: 8260B
Analyst: TMB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG307222-02	10M73546	07/16/09 11:51	01
LCS2	WG307222-03	10M73547	07/16/09 12:22	01
FBLK	WG307222-04	10M73548	07/16/09 12:54	DL01
TRIP BLANK	L09070325-07	10M73550	07/16/09 13:57	01
12WW20-071509	L09070325-02	10M73554	07/16/09 16:04	01
12WW22-071509	L09070325-03	10M73555	07/16/09 16:35	01
12WW22-071509-FD	L09070325-04	10M73556	07/16/09 17:07	01
12WW21-071509	L09070325-05	10M73557	07/16/09 17:38	01
12WW23-071509	L09070325-06	10M73558	07/16/09 18:10	01
12WW24-071409	L09070325-01	10M73559	07/16/09 18:42	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1444342
Report generated 07/17/2009 14:55

Login Number:L09070325 Prep Date:07/16/09 11:19 Sample ID:WG307222-01
Instrument ID:HPMS10 Run Date:07/16/09 11:19 Prep Method:5030C
File ID:10M73545 Analyst:TMB Method:8260B
Workgroup (AAB#):WG307222 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS10-09-JUL-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.210	1	J
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

Report Name:BLANK
PDF ID: 1444344
17-JUL-2009 14:55

Login Number:L09070325 Prep Date:07/16/09 11:19 Sample ID:WG307222-01
Instrument ID:HPMS10 Run Date:07/16/09 11:19 Prep Method:5030C
File ID:10M73545 Analyst:TMB Method:8260B
Workgroup (AAB#):WG307222 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS10-09-JUL-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.427	1	J
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	103	86 - 118	PASS
1,2-Dichloroethane-d4	94.2	80 - 120	PASS
Toluene-d8	103	88 - 110	PASS
4-Bromofluorobenzene	110	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1444344
17-JUL-2009 14:55

Login Number:L09070325 Analyst:TMB Prep Method:5030C
Instrument ID:HPMS10 Matrix:Water Method:8260B
Workgroup (AAB#):WG307222 Units:ug/L
QC Key:STD Lot #:STD34005

Sample ID:WG307222-02 LCS File ID:10M73546 Run Date:07/16/2009 11:51
Sample ID:WG307222-03 LCS2 File ID:10M73547 Run Date:07/16/2009 12:22

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	26.2	131	20.0	26.0	130	0.500	40 - 180	20	
Benzene	20.0	20.3	102	20.0	19.9	99.4	2.12	80 - 121	20	
Bromobenzene	20.0	20.7	103	20.0	20.7	104	0.368	80 - 120	20	
Bromochloromethane	20.0	20.9	104	20.0	20.3	102	2.65	65 - 130	20	
Bromodichloromethane	20.0	23.2	116	20.0	22.5	112	3.00	80 - 131	20	
Bromoform	20.0	19.9	99.6	20.0	19.5	97.7	2.01	70 - 130	20	
Bromomethane	20.0	18.9	94.5	20.0	19.9	99.5	5.12	30 - 145	20	
2-Butanone	20.0	22.2	111	20.0	21.7	108	2.54	10 - 170	20	
n-Butylbenzene	20.0	22.1	110	20.0	22.2	111	0.671	80 - 131	20	
sec-Butylbenzene	20.0	21.7	109	20.0	21.7	109	0.0441	80 - 127	20	
tert-Butylbenzene	20.0	20.6	103	20.0	21.1	105	2.28	80 - 126	20	
Carbon disulfide	20.0	20.3	102	20.0	20.4	102	0.129	58 - 128	20	
Carbon tetrachloride	20.0	23.3	116	20.0	22.9	114	1.63	65 - 140	20	
Chlorobenzene	20.0	20.5	102	20.0	20.1	101	1.67	80 - 120	20	
Chlorodibromomethane	20.0	22.3	112	20.0	22.6	113	1.36	60 - 135	20	
Chloroethane	20.0	19.3	96.3	20.0	18.6	93.2	3.35	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	19.7	98.7	20.0	19.1	95.5	3.33	45 - 160	20	
Chloroform	20.0	21.5	108	20.0	21.2	106	1.42	80 - 125	20	
Chloromethane	20.0	16.2	80.9	20.0	15.9	79.3	2.05	40 - 125	20	
2-Chlorotoluene	20.0	21.5	108	20.0	20.4	102	5.44	80 - 127	20	
4-Chlorotoluene	20.0	20.2	101	20.0	21.2	106	4.90	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	19.4	97.2	20.0	19.1	95.3	1.96	50 - 130	20	
1,2-Dibromoethane	20.0	21.1	105	20.0	21.3	106	0.798	80 - 129	20	
Dibromomethane	20.0	21.7	109	20.0	21.4	107	1.79	75 - 125	20	
1,2-Dichlorobenzene	20.0	20.7	104	20.0	20.8	104	0.303	80 - 125	20	
1,3-Dichlorobenzene	20.0	20.8	104	20.0	20.9	104	0.316	80 - 120	20	
1,4-Dichlorobenzene	20.0	20.7	104	20.0	20.5	103	1.08	80 - 120	20	
Dichlorodifluoromethane	20.0	17.3	86.5	20.0	17.7	88.5	2.24	40 - 160	20	
1,1-Dichloroethane	20.0	20.6	103	20.0	20.3	102	1.16	80 - 125	20	
1,2-Dichloroethane	20.0	21.2	106	20.0	20.8	104	2.21	80 - 129	20	
1,1-Dichloroethene	20.0	19.6	98.0	20.0	19.3	96.4	1.63	80 - 132	20	
cis-1,2-Dichloroethene	20.0	20.6	103	20.0	20.2	101	2.11	70 - 125	20	
trans-1,2-Dichloroethene	20.0	23.2	116	20.0	23.7	119	2.35	80 - 127	20	
1,2-Dichloropropane	20.0	21.0	105	20.0	20.8	104	0.643	80 - 120	20	
1,3-Dichloropropane	20.0	20.5	102	20.0	20.7	104	1.13	80 - 120	20	
2,2-Dichloropropane	20.0	20.5	102	20.0	20.5	102	0.0366	80 - 133	20	
cis-1,3-Dichloropropene	20.0	21.5	108	20.0	21.1	105	1.94	70 - 130	20	
trans-1,3-Dichloropropene	20.0	18.7	93.6	20.0	18.6	93.0	0.712	80 - 130	20	
1,1-Dichloropropene	20.0	20.9	105	20.0	20.6	103	1.60	75 - 130	20	
Ethylbenzene	20.0	19.9	99.3	20.0	20.0	99.8	0.460	80 - 122	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1443939
Report generated: 07/17/2009 14:55

Microbac Laboratories Inc.

LABORATORY CONTROL SAMPLE (LCS)

00115823

Login Number: L09070325 Analyst: TMB Prep Method: 5030C

Instrument ID: HPMS10 Matrix: Water Method: 8260B

Workgroup (AAB#): WG307222 Units: ug/L

QC Key: STD Lot #: STD34005

Sample ID: WG307222-02 LCS File ID: 10M73546 Run Date: 07/16/2009 11:51

Sample ID: WG307222-03 LCS2 File ID: 10M73547 Run Date: 07/16/2009 12:22

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	19.4	97.1	20.0	20.2	101	3.96	55 - 130	20	
Hexachlorobutadiene	20.0	21.1	105	20.0	21.3	107	1.08	72 - 132	20	
Isopropylbenzene	20.0	20.5	102	20.0	20.1	101	1.71	80 - 122	20	
p-Isopropyltoluene	20.0	20.9	104	20.0	20.7	103	0.903	80 - 122	20	
4-Methyl-2-pentanone	20.0	19.1	95.6	20.0	19.2	96.2	0.646	64 - 140	20	
Methylene chloride	20.0	19.1	95.4	20.0	18.7	93.6	1.85	80 - 123	20	
Naphthalene	20.0	18.1	90.4	20.0	17.9	89.6	0.855	59 - 149	20	
n-Propylbenzene	20.0	21.7	109	20.0	21.8	109	0.234	80 - 129	20	
Styrene	20.0	21.5	108	20.0	21.1	106	1.95	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	21.2	106	20.0	21.1	106	0.558	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	19.7	98.7	20.0	20.0	99.8	1.15	79 - 125	20	
Tetrachloroethene	20.0	20.5	102	20.0	20.4	102	0.382	80 - 124	20	
Toluene	20.0	20.9	105	20.0	20.9	104	0.266	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	19.0	95.2	20.0	19.7	98.3	3.22	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	19.2	95.9	20.0	18.9	94.5	1.50	65 - 135	20	
1,1,1-Trichloroethane	20.0	21.7	108	20.0	21.2	106	2.09	80 - 134	20	
1,1,2-Trichloroethane	20.0	21.1	106	20.0	21.3	107	0.963	80 - 125	20	
Trichloroethene	20.0	20.2	101	20.0	19.9	99.3	1.81	80 - 122	20	
Trichlorofluoromethane	20.0	20.4	102	20.0	20.4	102	0.109	62 - 151	20	
1,2,3-Trichloropropane	20.0	19.3	96.4	20.0	19.4	97.2	0.927	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	21.5	108	20.0	21.5	108	0.0013	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	21.3	107	20.0	21.3	106	0.293	80 - 127	20	
Vinyl acetate	20.0	15.8	79.1	20.0	16.5	82.6	4.29	10 - 190	20	
Vinyl chloride	20.0	19.5	97.7	20.0	19.5	97.6	0.107	50 - 170	20	
o-Xylene	20.0	20.4	102	20.0	20.5	102	0.0199	80 - 122	20	
m-,p-Xylene	40.0	41.2	103	40.0	41.5	104	0.826	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	96.1	96.7	80 - 120	PASS
Dibromofluoromethane	103	104	86 - 118	PASS
4-Bromofluorobenzene	101	104	86 - 115	PASS
Toluene-d8	103	104	88 - 110	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008

PDF File ID: 1443939

Report generated: 07/17/2009 14:55

BFB

Login Number: L09070325
Instrument: HPMS10
Analyst: TMB
Workgroup: WG306520

Tune ID: WG306520-01
Run Date: 07/09/2009
Run Time: 15:28
File ID: 10M73395
Cal ID: HPMS10-09-JUL-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	27.4	9601	PASS
75.0	95.0	30.0	60.0	49.2	17229	PASS
95.0	95.0	100	100	100	35016	PASS
96.0	95.0	5.00	9.00	6.21	2175	PASS
173	174	0	2.00	1.35	381	PASS
174	95.0	50.0	100	80.8	28282	PASS
175	174	5.00	9.00	7.82	2211	PASS
176	174	95.0	101	96.9	27418	PASS
177	176	5.00	9.00	6.68	1831	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG306520-02	STD	01	07/09/2009 15:52	
WG306520-03	STD	01	07/09/2009 16:24	
WG306520-04	STD	01	07/09/2009 16:55	
WG306520-05	STD	01	07/09/2009 17:27	
WG306520-06	STD	01	07/09/2009 17:58	
WG306520-07	STD	01	07/09/2009 18:30	
WG306520-08	STD-CCV	01	07/09/2009 19:01	
WG306520-09	STD	01	07/09/2009 19:33	
WG306520-10	STD	01	07/09/2009 20:04	
WG306520-11	STD	01	07/09/2009 20:36	
WG306520-12	SSCV	01	07/09/2009 22:11	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1444347
Report generated 07/17/2009 14:55

BFB

Login Number: L09070325
Instrument: HPMS10
Analyst: TMB
Workgroup: WG307221

Tune ID: WG307221-01
Run Date: 07/16/2009
Run Time: 09:47
File ID: 10M73542
Cal ID: HPMS10-09-JUL-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	32.4	7666	PASS
75.0	95.0	30.0	60.0	53.5	12655	PASS
95.0	95.0	100	100	100	23653	PASS
96.0	95.0	5.00	9.00	6.57	1555	PASS
173	174	0	2.00	0.790	149	PASS
174	95.0	50.0	100	79.8	18870	PASS
175	174	5.00	9.00	7.15	1350	PASS
176	174	95.0	101	95.6	18034	PASS
177	176	5.00	9.00	7.23	1303	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG307221-02	CCV	01	07/16/2009 10:11	
WG307222-01	BLANK	01	07/16/2009 11:19	
WG307222-02	LCS	01	07/16/2009 11:51	
WG307222-03	LCS2	01	07/16/2009 12:22	
WG307222-04	FBLK	DL01	07/16/2009 12:54	
L09070325-07	TRIP BLANK	01	07/16/2009 13:57	
L09070325-02	12WW20-071509	01	07/16/2009 16:04	
L09070325-03	12WW22-071509	01	07/16/2009 16:35	
L09070325-04	12WW22-071509-FD	01	07/16/2009 17:07	
L09070325-05	12WW21-071509	01	07/16/2009 17:38	
L09070325-06	12WW23-071509	01	07/16/2009 18:10	
L09070325-01	12WW24-071409	DL01	07/16/2009 18:42	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1444347
Report generated 07/17/2009 14:55

Login Number: L09070325 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 09-JUL-09 20:36
ICAL Workgroup: WG306520 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.1874	5.49		
1,2-Dichloropropane	CCC	0.2998	6.16		
Chloroform	CCC	0.4021	5.21		
Ethylbenzene	CCC	0.4300	6.56		
Toluene	CCC	1.119	5.06		
Vinyl Chloride	CCC	0.4173	13.6		1.00000
1,1,2,2-Tetrachloroethane	SPCC	0.3721	18.6	1.00000	
1,1-Dichloroethane	SPCC	0.5305	4.61		
Bromoform	SPCC	0.1437	17.2		1.00000
Chlorobenzene	SPCC	0.7794	4.11		
Chloromethane	SPCC	0.5554	4.89		
1,1,1,2-Tetrachloroethane		0.2885	9.04		
1,1,1-Trichloroethane		0.3475	7.65		
1,1,2-Trichloroethane		0.1874	12.6		
1,1-Dichloropropene		0.2994	7.52		
1,2,3-Trichlorobenzene		0.5325	31.6	1.00000	
1,2,3-Trichloropropane		0.1338	4.55		
1,2,4-Trichlorobenzene		0.6040	35.4		1.00000
1,2,4-Trimethylbenzene		2.078	4.94		
1,2-Dibromo-3-Chloropropane		0.07822	16.1	1.00000	
1,2-Dibromoethane		0.1997	11.7		
1,2-Dichlorobenzene		1.119	6.00		
1,2-Dichloroethane		0.3776	4.19		
1,3,5-Trimethylbenzene		2.004	4.88		
1,3-Dichlorobenzene		1.210	4.43		
1,3-Dichloropropane		0.3542	6.58		
1,4-Dichlorobenzene		1.234	4.81		
2,2-Dichloropropane		0.3572	3.03		
2-Butanone		0.09622	4.02		
2-Chloroethyl Vinyl Ether		0.1449	6.14		
2-Chlorotoluene		1.808	4.70		
2-Hexanone		0.1681	5.16		
4-Chlorotoluene		1.685	4.12		
4-Methyl-2-Pentanone		0.08300	3.00		
Acetone		0.06153	10.3		
Benzene		0.8635	5.95		
Bromobenzene		0.6407	4.41		
Bromochloromethane		0.1042	8.40		
Bromodichloromethane		0.2829	8.85		
Bromomethane		0.1237	15.5		1.00000
Carbon Disulfide		0.6301	8.10		
Carbon Tetrachloride		0.3073	11.2		
Chloroethane		0.1693	7.09		
Dibromochloromethane		0.2393	12.2		
Dibromomethane		0.1136	11.9		

INT_CAL - Modified 03/06/2008
PDF File ID: 1444345
Report generated 07/17/2009 14:55

Login Number: L09070325 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 09-JUL-09 20:36
ICAL Workgroup: WG306520 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
Dichlorodifluoromethane		0.2721	5.64		
Hexachlorobutadiene		0.3123	9.83		
Isopropylbenzene		0.05784	6.54		
Methylene Chloride		0.2354	9.64		
Naphthalene		0.9922	36.0	0.99900	
Styrene		0.7869	13.8		
Tetrachloroethene		0.2398	3.55		
Trichloroethene		0.2365	3.78		
Trichlorofluoromethane		0.3600	7.23		
Vinyl Acetate		0.2998	20.6		0.99200
cis-1,2-Dichloroethene		0.2395	4.75		
cis-1,3-Dichloropropene		0.3226	9.23		
m-,p-Xylene		0.5027	5.90		
n-Butylbenzene		1.930	8.57		
n-Propylbenzene		2.770	5.62		
o-Xylene		0.4917	8.04		
p-Isopropyltoluene		2.084	5.43		
sec-Butylbenzene		2.543	5.49		
tert-Butylbenzene		0.4520	3.72		
trans-1,2-Dichloroethene		0.2059	7.61		
trans-1,3-Dichloropropene		0.3814	12.5		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

If the %RSD is greater than the limit specified by the method or project QAP, then linear or quadratic equations will be used.

INT_CAL - Modified 03/06/2008
PDF File ID: 1444345
Report generated 07/17/2009 14:55

Login Number: L09070325
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 09-JUL-09 20:36
Column ID: F

Analyte	WG306520-02			WG306520-03			WG306520-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	2800.00000	0.1687	1.00	7345.00000	0.1793
1,2-Dichloropropane	NA	NA	NA	0.400	4494.00000	0.2707	1.00	11133.0000	0.2718
Chloroform	0.300	4731.00000	0.3748	0.400	6711.00000	0.4043	1.00	15073.0000	0.3680
Ethylbenzene	NA	NA	NA	0.400	5811.00000	0.4583	1.00	12361.0000	0.3981
Toluene	NA	NA	NA	0.400	14007.0000	1.105	1.00	32140.0000	1.035
Vinyl Chloride	NA	NA	NA	0.400	8167.00000	0.4920	1.00	18374.0000	0.4486
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	1655.00000	0.2728	1.00	4383.00000	0.2875
1,1-Dichloroethane	NA	NA	NA	0.400	8475.00000	0.5106	1.00	20587.0000	0.5026
Bromoform	NA	NA	NA	NA	NA	NA	1.00	3414.00000	0.1099
Chlorobenzene	NA	NA	NA	0.400	9900.00000	0.7808	1.00	22941.0000	0.7388
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	24359.0000	0.5947
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	3615.00000	0.2851	1.00	7916.00000	0.2549
1,1,1-Trichloroethane	NA	NA	NA	0.400	4882.00000	0.2941	1.00	13475.0000	0.3290
1,1,2-Trichloroethane	NA	NA	NA	0.400	1788.00000	0.1410	1.00	5242.00000	0.1688
1,1-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	10950.0000	0.2674
1,2,3-Trichlorobenzene	0.300	1410.00000	0.3142	0.400	1864.00000	0.3073	1.00	6076.00000	0.3986
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	1876.00000	0.1231
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	1844.00000	0.3040	1.00	5712.00000	0.3747
1,2,4-Trimethylbenzene	NA	NA	NA	NA	NA	NA	1.00	29438.0000	1.931
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	2194.00000	0.1730	1.00	5402.00000	0.1740
1,2-Dichlorobenzene	0.300	5422.00000	1.208	0.400	7221.00000	1.190	1.00	15377.0000	1.009
1,2-Dichloroethane	NA	NA	NA	0.400	5924.00000	0.3569	1.00	14512.0000	0.3543
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	12291.0000	2.026	1.00	27907.0000	1.831
1,3-Dichlorobenzene	NA	NA	NA	0.400	7413.00000	1.222	1.00	16838.0000	1.105
1,3-Dichloropropane	NA	NA	NA	0.400	4118.00000	0.3248	1.00	10033.0000	0.3231
1,4-Dichlorobenzene	0.300	6088.00000	1.357	0.400	7277.00000	1.200	1.00	17616.0000	1.156
2,2-Dichloropropane	NA	NA	NA	0.400	6272.00000	0.3779	1.00	14429.0000	0.3523
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	NA	NA	NA	0.400	10916.0000	1.799	1.00	26531.0000	1.740
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	11114.0000	1.832	1.00	24448.0000	1.604
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	15847.0000	0.9547	1.00	34487.0000	0.8420
Bromobenzene	0.300	3074.00000	0.6849	0.400	4024.00000	0.6633	1.00	8966.00000	0.5882
Bromochloromethane	NA	NA	NA	0.400	1459.00000	0.08790	1.00	3914.00000	0.09560
Bromodichloromethane	NA	NA	NA	0.400	4212.00000	0.2538	1.00	10166.0000	0.2482
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	4781.00000	0.1167
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	21550.0000	0.5262
Carbon Tetrachloride	NA	NA	NA	0.400	4096.00000	0.2468	1.00	11459.0000	0.2798

INT_CAL - Modified 03/06/2008
PDF File ID: 1444345
Report generated 07/17/2009 14:55

Login Number: L09070325
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 09-JUL-09 20:36
Column ID: F

Analyte	WG306520-05			WG306520-06			WG306520-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	14860.0000	0.1811	5.00	39608.0000	0.1889	20.0	165628.000	0.1943
1,2-Dichloropropane	2.00	25008.0000	0.3048	5.00	62819.0000	0.2996	20.0	269764.000	0.3165
Chloroform	2.00	31843.0000	0.3881	5.00	87474.0000	0.4172	20.0	362059.000	0.4247
Ethylbenzene	2.00	24600.0000	0.3865	5.00	65448.0000	0.4076	20.0	286881.000	0.4408
Toluene	2.00	68729.0000	1.080	5.00	184208.000	1.147	20.0	780775.000	1.200
Vinyl Chloride	2.00	38329.0000	0.4672	5.00	87389.0000	0.4168	20.0	337371.000	0.3958
1,1,2,2-Tetrachloroethane	2.00	10810.0000	0.3496	5.00	33378.0000	0.4047	20.0	149705.000	0.4214
1,1-Dichloroethane	2.00	40829.0000	0.4977	5.00	112057.000	0.5344	20.0	475137.000	0.5574
Bromoform	2.00	7388.00000	0.1161	5.00	20625.0000	0.1285	20.0	102453.000	0.1574
Chlorobenzene	2.00	46111.0000	0.7244	5.00	125752.000	0.7832	20.0	530992.000	0.8160
Chloromethane	2.00	44410.0000	0.5413	5.00	124812.000	0.5953	20.0	460322.000	0.5400
1,1,1,2-Tetrachloroethane	2.00	15749.0000	0.2474	5.00	45589.0000	0.2839	20.0	195375.000	0.3002
1,1,1-Trichloroethane	2.00	28014.0000	0.3415	5.00	74040.0000	0.3531	20.0	317397.000	0.3723
1,1,2-Trichloroethane	2.00	11102.0000	0.1744	5.00	32146.0000	0.2002	20.0	134588.000	0.2068
1,1-Dichloropropene	2.00	22410.0000	0.2732	5.00	61426.0000	0.2930	20.0	273790.000	0.3212
1,2,3-Trichlorobenzene	2.00	13079.0000	0.4229	5.00	50733.0000	0.6151	20.0	237423.000	0.6683
1,2,3-Trichloropropane	2.00	4332.00000	0.1401	5.00	11454.0000	0.1389	20.0	49264.0000	0.1387
1,2,4-Trichlorobenzene	2.00	15351.0000	0.4964	5.00	53683.0000	0.6509	20.0	273452.000	0.7698
1,2,4-Trimethylbenzene	2.00	61930.0000	2.003	5.00	175842.000	2.132	20.0	777044.000	2.187
1,2-Dibromo-3-Chloropropane	2.00	1754.00000	0.05670	5.00	5825.00000	0.07060	20.0	28114.0000	0.07910
1,2-Dibromoethane	2.00	10908.0000	0.1714	5.00	32292.0000	0.2011	20.0	144421.000	0.2219
1,2-Dichlorobenzene	2.00	31916.0000	1.032	5.00	93067.0000	1.128	20.0	412887.000	1.162
1,2-Dichloroethane	2.00	30536.0000	0.3722	5.00	80904.0000	0.3859	20.0	335070.000	0.3931
1,3,5-Trimethylbenzene	2.00	59434.0000	1.922	5.00	167360.000	2.029	20.0	743169.000	2.092
1,3-Dichlorobenzene	2.00	35925.0000	1.162	5.00	102373.000	1.241	20.0	449706.000	1.266
1,3-Dichloropropane	2.00	21377.0000	0.3358	5.00	57752.0000	0.3597	20.0	248751.000	0.3823
1,4-Dichlorobenzene	2.00	36435.0000	1.178	5.00	102936.000	1.248	20.0	449623.000	1.266
2,2-Dichloropropane	2.00	28372.0000	0.3458	5.00	76006.0000	0.3625	20.0	307240.000	0.3604
2-Butanone	NA	NA	NA	5.00	20328.0000	0.09690	20.0	83843.0000	0.09840
2-Chloroethyl Vinyl Ether	NA	NA	NA	5.00	27385.0000	0.1306	20.0	124463.000	0.1460
2-Chlorotoluene	2.00	55043.0000	1.780	5.00	156254.000	1.895	20.0	660899.000	1.860
2-Hexanone	NA	NA	NA	5.00	24882.0000	0.1550	20.0	112410.000	0.1727
4-Chlorotoluene	2.00	50608.0000	1.637	5.00	138638.000	1.681	20.0	611757.000	1.722
4-Methyl-2-Pentanone	NA	NA	NA	5.00	16544.0000	0.07890	20.0	70549.0000	0.08280
Acetone	NA	NA	NA	5.00	14106.0000	0.06730	20.0	55800.0000	0.06550
Benzene	2.00	65093.0000	0.7934	5.00	181820.000	0.8671	20.0	763688.000	0.8959
Bromobenzene	2.00	18842.0000	0.6093	5.00	52798.0000	0.6402	20.0	229882.000	0.6471
Bromochloromethane	2.00	8207.00000	0.1000	5.00	22533.0000	0.1075	20.0	94570.0000	0.1109
Bromodichloromethane	2.00	21269.0000	0.2592	5.00	60712.0000	0.2896	20.0	256460.000	0.3009
Bromomethane	2.00	12653.0000	0.1542	5.00	31098.0000	0.1483	20.0	95097.0000	0.1116
Carbon Disulfide	2.00	54011.0000	0.6583	5.00	130033.000	0.6202	20.0	561738.000	0.6590
Carbon Tetrachloride	2.00	23263.0000	0.2836	5.00	64504.0000	0.3076	20.0	286569.000	0.3362

INT_CAL - Modified 03/06/2008
PDF File ID: 1444345
Report generated 07/17/2009 14:55

Login Number: L09070325
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 09-JUL-09 20:36
Column ID: F

Analyte	WG306520-08			WG306520-09			WG306520-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	459997.000	0.1985	100	914713.000	0.1974	200	1902401.00	0.1913
1,2-Dichloropropane	50.0	727035.000	0.3137	100	1458042.00	0.3146	200	3047646.00	0.3065
Chloroform	50.0	975287.000	0.4209	100	1944804.00	0.4196	200	3994810.00	0.4017
Ethylbenzene	50.0	801339.000	0.4453	100	1641329.00	0.4473	200	3452411.00	0.4564
Toluene	50.0	2125932.00	1.181	100	4146469.00	1.130	200	8098946.00	1.071
Vinyl Chloride	50.0	861843.000	0.3719	100	1524074.00	0.3288	NA	NA	NA
1,1,2,2-Tetrachloroethane	50.0	399248.000	0.4283	100	854821.000	0.4406	NA	NA	NA
1,1-Dichloroethane	50.0	1295795.00	0.5592	100	2549325.00	0.5500	200	5288368.00	0.5318
Bromoform	50.0	289294.000	0.1608	100	612197.000	0.1668	200	1258552.00	0.1664
Chlorobenzene	50.0	1453145.00	0.8075	100	2925491.00	0.7972	200	5957613.00	0.7876
Chloromethane	50.0	1259494.00	0.5435	100	2486488.00	0.5365	200	5335520.00	0.5365
1,1,1,2-Tetrachloroethane	50.0	549512.000	0.3054	100	1140161.00	0.3107	200	2421445.00	0.3201
1,1,1-Trichloroethane	50.0	868820.000	0.3749	100	1692867.00	0.3652	200	3481477.00	0.3501
1,1,2-Trichloroethane	50.0	370758.000	0.2060	100	741764.000	0.2021	200	1508757.00	0.1995
1,1-Dichloropropene	50.0	746088.000	0.3220	100	1467034.00	0.3165	200	3009328.00	0.3026
1,2,3-Trichlorobenzene	50.0	637924.000	0.6843	100	1357084.00	0.6995	200	2729724.00	0.6823
1,2,3-Trichloropropane	50.0	124291.000	0.1333	100	258425.000	0.1332	200	518388.000	0.1296
1,2,4-Trichlorobenzene	50.0	749276.000	0.8037	100	1607364.00	0.8285	NA	NA	NA
1,2,4-Trimethylbenzene	50.0	2021835.00	2.169	100	4157087.00	2.143	200	7939171.00	1.985
1,2-Dibromo-3-Chloropropane	50.0	80181.0000	0.08600	100	171436.000	0.08840	200	353914.000	0.08850
1,2-Dibromoethane	50.0	399457.000	0.2220	100	801453.000	0.2184	200	1634853.00	0.2161
1,2-Dichlorobenzene	50.0	1057369.00	1.134	100	2183696.00	1.126	200	4343042.00	1.086
1,2-Dichloroethane	50.0	912369.000	0.3937	100	1811297.00	0.3908	200	3720376.00	0.3741
1,3,5-Trimethylbenzene	50.0	1972537.00	2.116	100	4026906.00	2.076	200	7773692.00	1.943
1,3-Dichlorobenzene	50.0	1165330.00	1.250	100	2395394.00	1.235	200	4789552.00	1.197
1,3-Dichloropropane	50.0	678041.000	0.3768	100	1359465.00	0.3705	200	2725025.00	0.3603
1,4-Dichlorobenzene	50.0	1172369.00	1.258	100	2409978.00	1.242	200	4813021.00	1.203
2,2-Dichloropropane	50.0	834007.000	0.3599	100	1649282.00	0.3558	200	3413761.00	0.3433
2-Butanone	50.0	229238.000	0.09890	100	462645.000	0.09980	200	930336.000	0.09360
2-Chloroethyl Vinyl Ether	50.0	355706.000	0.1535	100	699554.000	0.1509	200	1429085.00	0.1437
2-Chlorotoluene	50.0	1773230.00	1.902	100	3569348.00	1.840	200	6599711.00	1.650
2-Hexanone	50.0	318950.000	0.1772	100	636714.000	0.1735	200	1286262.00	0.1700
4-Chlorotoluene	50.0	1576899.00	1.692	100	3215676.00	1.658	200	6619784.00	1.655
4-Methyl-2-Pentanone	50.0	197334.000	0.08520	100	398076.000	0.08590	200	815091.000	0.08200
Acetone	50.0	151412.000	0.06530	100	287737.000	0.06210	200	585477.000	0.05890
Benzene	50.0	2053843.00	0.8863	100	3995076.00	0.8620	200	8022985.00	0.8068
Bromobenzene	50.0	607876.000	0.6521	100	1245466.00	0.6420	200	2557080.00	0.6392
Bromochloromethane	50.0	255302.000	0.1102	100	507328.000	0.1095	200	1112311.00	0.1119
Bromodichloromethane	50.0	711490.000	0.3070	100	1429099.00	0.3083	200	2945420.00	0.2962
Bromomethane	50.0	247874.000	0.1070	100	525946.000	0.1135	200	1140795.00	0.1147
Carbon Disulfide	50.0	1559997.00	0.6732	100	3062451.00	0.6607	200	6096684.00	0.6131
Carbon Tetrachloride	50.0	791667.000	0.3416	100	1566642.00	0.3380	200	3226842.00	0.3245

INT_CAL - Modified 03/06/2008
PDF File ID: 1444345
Report generated 07/17/2009 14:55

Login Number: L09070325
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 09-JUL-09 20:36
Column ID: F

Analyte	WG306520-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	1405529.00	0.08970
2-Chloroethyl Vinyl Ether	NA	NA	NA
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	1879060.00	0.1600
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	1303518.00	0.08320
Acetone	300	785476.000	0.05010
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1444345
Report generated 07/17/2009 14:55

Login Number: L09070325
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 09-JUL-09 20:36
Column ID: F

Analyte	WG306520-02			WG306520-03			WG306520-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	6879.00000	0.1680
Dibromochloromethane	NA	NA	NA	0.400	3143.00000	0.2479	1.00	5687.00000	0.1831
Dibromomethane	NA	NA	NA	0.400	1481.00000	0.08920	1.00	3963.00000	0.09680
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	11150.0000	0.2722
Hexachlorobutadiene	NA	NA	NA	0.400	1495.00000	0.2464	1.00	4707.00000	0.3088
Isopropylbenzene	NA	NA	NA	NA	NA	NA	1.00	1646.00000	0.05300
Methylene Chloride	NA	NA	NA	NA	NA	NA	1.00	11607.0000	0.2834
Naphthalene	NA	NA	NA	0.400	3879.00000	0.6394	1.00	7412.00000	0.4862
Styrene	NA	NA	NA	0.400	8538.00000	0.6734	1.00	20056.0000	0.6459
Tetrachloroethene	NA	NA	NA	0.400	3010.00000	0.2374	1.00	7262.00000	0.2339
Trichloroethene	NA	NA	NA	0.400	3608.00000	0.2174	1.00	9763.00000	0.2384
Trichlorofluoromethane	NA	NA	NA	0.400	5162.00000	0.3110	1.00	13703.0000	0.3346
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	4080.00000	0.2458	1.00	9019.00000	0.2202
cis-1,3-Dichloropropene	NA	NA	NA	0.400	5338.00000	0.3216	1.00	11231.0000	0.2742
m-,p-Xylene	NA	NA	NA	0.800	12278.0000	0.4842	2.00	29072.0000	0.4681
n-Butylbenzene	NA	NA	NA	NA	NA	NA	1.00	24977.0000	1.639
n-Propylbenzene	NA	NA	NA	0.400	16720.0000	2.756	1.00	40449.0000	2.654
o-Xylene	NA	NA	NA	NA	NA	NA	1.00	13447.0000	0.4331
p-Isopropyltoluene	NA	NA	NA	NA	NA	NA	1.00	29638.0000	1.944
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	1.00	36946.0000	2.424
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	1.00	6330.00000	0.4153
trans-1,2-Dichloroethene	NA	NA	NA	0.400	2959.00000	0.1783	1.00	7783.00000	0.1900
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	9282.00000	0.2989

INT_CAL - Modified 03/06/2008
PDF File ID: 1444345
Report generated 07/17/2009 14:55

Login Number: L09070325
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 09-JUL-09 20:36
Column ID: F

Analyte	WG306520-05			WG306520-06			WG306520-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	14601.0000	0.1780	5.00	38905.0000	0.1855	20.0	151002.000	0.1771
Dibromochloromethane	2.00	13367.0000	0.2100	5.00	37372.0000	0.2327	20.0	164433.000	0.2527
Dibromomethane	2.00	9216.00000	0.1123	5.00	24796.0000	0.1183	20.0	106144.000	0.1245
Dichlorodifluoromethane	2.00	23428.0000	0.2856	5.00	60022.0000	0.2863	20.0	237929.000	0.2791
Hexachlorobutadiene	2.00	9319.00000	0.3014	5.00	25039.0000	0.3036	20.0	116677.000	0.3284
Isopropylbenzene	2.00	3457.00000	0.05430	5.00	8807.00000	0.05480	20.0	40821.0000	0.06270
Methylene Chloride	2.00	19968.0000	0.2434	5.00	48119.0000	0.2295	20.0	191570.000	0.2247
Naphthalene	2.00	20306.0000	0.6566	5.00	77419.0000	0.9387	20.0	436107.000	1.228
Styrene	2.00	42771.0000	0.6719	5.00	124976.000	0.7783	20.0	569541.000	0.8752
Tetrachloroethene	2.00	14375.0000	0.2258	5.00	38084.0000	0.2372	20.0	164856.000	0.2533
Trichloroethene	2.00	19403.0000	0.2365	5.00	50111.0000	0.2390	20.0	209006.000	0.2452
Trichlorofluoromethane	2.00	29566.0000	0.3604	5.00	81817.0000	0.3902	20.0	323602.000	0.3796
Vinyl Acetate	2.00	16647.0000	0.2029	5.00	55200.0000	0.2633	20.0	264837.000	0.3107
cis-1,2-Dichloroethene	2.00	18366.0000	0.2239	5.00	49968.0000	0.2383	20.0	208437.000	0.2445
cis-1,3-Dichloropropene	2.00	23269.0000	0.2836	5.00	66509.0000	0.3172	20.0	294554.000	0.3456
m-,p-Xylene	4.00	58244.0000	0.4575	10.0	163477.000	0.5091	40.0	694472.000	0.5336
n-Butylbenzene	2.00	56297.0000	1.821	5.00	160957.000	1.952	20.0	748828.000	2.108
n-Propylbenzene	2.00	86604.0000	2.801	5.00	234941.000	2.849	20.0	1030196.00	2.900
o-Xylene	2.00	27908.0000	0.4384	5.00	79098.0000	0.4926	20.0	335374.000	0.5154
p-Isopropyltoluene	2.00	60802.0000	1.966	5.00	174040.000	2.110	20.0	784227.000	2.208
sec-Butylbenzene	2.00	76741.0000	2.482	5.00	217976.000	2.643	20.0	952146.000	2.680
tert-Butylbenzene	2.00	14004.0000	0.4528	5.00	37588.0000	0.4557	20.0	161186.000	0.4537
trans-1,2-Dichloroethene	2.00	16240.0000	0.1980	5.00	43463.0000	0.2073	20.0	186361.000	0.2186
trans-1,3-Dichloropropene	2.00	21113.0000	0.3317	5.00	61724.0000	0.3844	20.0	274375.000	0.4216

INT_CAL - Modified 03/06/2008
PDF File ID: 1444345
Report generated 07/17/2009 14:55

Login Number: L09070325
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 09-JUL-09 20:36
Column ID: F

Analyte	WG306520-08			WG306520-09			WG306520-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	387301.000	0.1671	100	732166.000	0.1580	200	1503355.00	0.1512
Dibromochloromethane	50.0	468172.000	0.2602	100	965648.000	0.2632	200	2003590.00	0.2649
Dibromomethane	50.0	289507.000	0.1249	100	571945.000	0.1234	200	1187389.00	0.1194
Dichlorodifluoromethane	50.0	640972.000	0.2766	100	1214281.00	0.2620	200	2414165.00	0.2428
Hexachlorobutadiene	50.0	311949.000	0.3346	100	653243.000	0.3367	200	1354920.00	0.3387
Isopropylbenzene	50.0	105657.000	0.05870	100	220811.000	0.06020	200	462711.000	0.06120
Methylene Chloride	50.0	523069.000	0.2257	100	1045914.00	0.2257	200	2144991.00	0.2157
Naphthalene	50.0	1244441.00	1.335	100	2637273.00	1.359	200	5181084.00	1.295
Styrene	50.0	1585721.00	0.8812	100	3286608.00	0.8956	200	6609627.00	0.8738
Tetrachloroethene	50.0	447171.000	0.2485	100	879424.000	0.2397	200	1831725.00	0.2422
Trichloroethene	50.0	570380.000	0.2461	100	1096748.00	0.2366	200	2312831.00	0.2326
Trichlorofluoromethane	50.0	876678.000	0.3783	100	1703024.00	0.3674	200	3562557.00	0.3583
Vinyl Acetate	50.0	660442.000	0.2850	100	1880664.00	0.4058	200	3091506.00	0.3109
cis-1,2-Dichloroethene	50.0	582017.000	0.2512	100	1147458.00	0.2476	200	2427254.00	0.2441
cis-1,3-Dichloropropene	50.0	812286.000	0.3505	100	1625288.00	0.3507	200	3355981.00	0.3375
m-,p-Xylene	100	1917151.00	0.5327	200	3877006.00	0.5283	400	7690756.00	0.5084
n-Butylbenzene	50.0	1941020.00	2.082	100	3932220.00	2.027	200	7521339.00	1.880
n-Propylbenzene	50.0	2751182.00	2.951	100	5418534.00	2.793	200	9825325.00	2.456
o-Xylene	50.0	932506.000	0.5182	100	1915983.00	0.5221	200	3948981.00	0.5221
p-Isopropyltoluene	50.0	2055815.00	2.205	100	4188409.00	2.159	200	7996540.00	1.999
sec-Butylbenzene	50.0	2502315.00	2.684	100	4984000.00	2.569	200	9282872.00	2.320
tert-Butylbenzene	50.0	432096.000	0.4635	100	900129.000	0.4640	200	1836910.00	0.4592
trans-1,2-Dichloroethene	50.0	512256.000	0.2210	100	1012013.00	0.2183	200	2143567.00	0.2156
trans-1,3-Dichloropropene	50.0	752284.000	0.4180	100	1508605.00	0.4111	200	3055691.00	0.4040

INT_CAL - Modified 03/06/2008
PDF File ID: 1444345
Report generated 07/17/2009 14:55

Login Number: L09070325
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 09-JUL-09 20:36
Column ID: F

Analyte	WG306520-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	300	5010243.00	0.3198
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1444345
Report generated 07/17/2009 14:55

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number:L09070325 Run Date:07/09/2009 Sample ID:WG306520-12
Instrument ID:HPMS10 Run Time:22:11 Method:8260B
File ID:10M73408 Analyst:TMB QC Key:STD
ICal Workgroup:WG306520 Cal ID:HPMS10 - 09-JUL-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	50.0	51.3	ug/L	0.413	2.60	30	
1,1-Dichloroethene	CCC	50.0	48.4	ug/L	0.182	3.10	30	
1,2-Dichloropropane	CCC	50.0	50.8	ug/L	0.305	1.70	30	
Ethylbenzene	CCC	50.0	48.9	ug/L	0.421	2.10	30	
Toluene	CCC	50.0	49.6	ug/L	1.11	0.800	30	
Vinyl Chloride	CCC	50.0	45.9	ug/L	0.344	8.20	30	
Bromoform	SPCC	50.0	47.5	ug/L	0.156	5.00	30	
Chlorobenzene	SPCC	50.0	49.3	ug/L	0.768	1.40	30	
Chloromethane	SPCC	50.0	46.8	ug/L	0.520	6.40	30	
1,1-Dichloroethane	SPCC	50.0	49.9	ug/L	0.529	0.200	30	
1,1,2,2-Tetrachloroethane	SPCC	50.0	50.6	ug/L	0.441	1.20	30	
Acetone		50.0	59.1	ug/L	0.0727	18.1	30	
Benzene		50.0	49.0	ug/L	0.847	1.90	30	
Bromobenzene		50.0	49.4	ug/L	0.633	1.20	30	
Bromochloromethane		50.0	52.4	ug/L	0.109	4.80	30	
Bromodichloromethane		50.0	55.0	ug/L	0.311	10.1	30	
Bromomethane		50.0	55.6	ug/L	0.124	11.2	30	
2-Butanone		50.0	55.2	ug/L	0.106	10.4	30	
n-Butylbenzene		50.0	50.0	ug/L	1.93	0.100	30	
sec-Butylbenzene		50.0	49.6	ug/L	2.53	0.700	30	
tert-Butylbenzene		50.0	48.8	ug/L	0.441	2.30	30	
Carbon Disulfide		50.0	48.4	ug/L	0.610	3.20	30	
Carbon Tetrachloride		50.0	51.9	ug/L	0.319	3.80	30	
Dibromochloromethane		50.0	54.1	ug/L	0.259	8.30	30	
Chloroethane		50.0	45.9	ug/L	0.156	8.10	30	
2-Chloroethyl Vinyl Ether		50.0	53.0	ug/L	0.154	6.00	30	
2-Chlorotoluene		50.0	50.9	ug/L	1.84	1.70	30	
4-Chlorotoluene		50.0	47.9	ug/L	1.61	4.30	30	
1,2-Dibromo-3-Chloropropane		50.0	49.4	ug/L	0.0857	1.20	30	
1,2-Dibromoethane		50.0	54.2	ug/L	0.217	8.40	30	
Dibromomethane		50.0	54.3	ug/L	0.124	8.70	30	
1,2-Dichlorobenzene		50.0	49.2	ug/L	1.10	1.70	30	
1,3-Dichlorobenzene		50.0	48.8	ug/L	1.18	2.40	30	
1,4-Dichlorobenzene		50.0	48.4	ug/L	1.19	3.20	30	
Dichlorodifluoromethane		50.0	52.6	ug/L	0.286	5.20	30	
1,2-Dichloroethane		50.0	50.6	ug/L	0.382	1.30	30	
cis-1,2-Dichloroethene		50.0	50.0	ug/L	0.239	0	30	
trans-1,2-Dichloroethene		50.0	53.8	ug/L	0.222	7.60	30	
1,3-Dichloropropane		50.0	52.1	ug/L	0.369	4.30	30	
2,2-Dichloropropane		50.0	42.2	ug/L	0.301	15.6	30	
cis-1,3-Dichloropropene		50.0	52.1	ug/L	0.336	4.20	30	
trans-1,3-Dichloropropene		50.0	46.0	ug/L	0.351	7.90	30	

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1444346
Report generated 07/17/2009 14:55

Microbac Laboratories Inc.

ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L09070325 Run Date: 07/09/2009 Sample ID: WG306520-12

Instrument ID: HPMS10 Run Time: 22:11 Method: 8260B

File ID: 10M73408 Analyst: TMB QC Key: STD

ICal Workgroup: WG306520 Cal ID: HPMS10 - 09-JUL-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	49.4	ug/L	0.296	1.20	30	
2-Hexanone		50.0	51.1	ug/L	0.172	2.20	30	
Hexachlorobutadiene		50.0	47.9	ug/L	0.299	4.30	30	
Isopropylbenzene		50.0	48.2	ug/L	0.0557	3.70	30	
p-Isopropyltoluene		50.0	48.4	ug/L	2.02	3.10	30	
4-Methyl-2-Pentanone		50.0	51.9	ug/L	0.0861	3.80	30	
Methylene Chloride		50.0	47.1	ug/L	0.222	5.90	30	
Naphthalene		50.0	50.7	ug/L	1.32	1.30	30	
n-Propylbenzene		50.0	50.5	ug/L	2.80	0.900	30	
Styrene		50.0	53.7	ug/L	0.845	7.40	30	
1,1,1,2-Tetrachloroethane		50.0	51.1	ug/L	0.295	2.30	30	
Tetrachloroethene		50.0	47.0	ug/L	0.226	6.00	30	
1,2,3-Trichlorobenzene		50.0	48.8	ug/L	0.666	2.50	30	
1,2,4-Trichlorobenzene		50.0	46.3	ug/L	0.741	7.40	30	
1,1,1-Trichloroethane		50.0	50.0	ug/L	0.348	0	30	
1,1,2-Trichloroethane		50.0	53.9	ug/L	0.202	7.80	30	
Trichloroethene		50.0	48.4	ug/L	0.229	3.30	30	
Trichlorofluoromethane		50.0	48.3	ug/L	0.348	3.40	30	
1,2,3-Trichloropropane		50.0	50.9	ug/L	0.136	1.70	30	
1,2,4-Trimethylbenzene		50.0	50.8	ug/L	2.11	1.60	30	
1,3,5-Trimethylbenzene		50.0	50.4	ug/L	2.02	0.800	30	
Vinyl Acetate		50.0	47.3	ug/L	0.328	5.40	40	
o-Xylene		50.0	50.2	ug/L	0.493	0.300	30	
m-,p-Xylene		100	101	ug/L	0.507	0.900	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115838

Login Number: L09070325 Run Date: 07/16/2009 Sample ID: WG307221-02

Instrument ID: HPMS10 Run Time: 10:11 Method: 8260B

File ID: 10M73543 Analyst: TMB QC Key: STD

Workgroup (AAB#): WG307222 Cal ID: HPMS10 - 09-JUL-09

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	53.5	ug/L	0.431	7.08	20	
1,1-Dichloroethene	CCC	50.0	53.1	ug/L	0.199	6.21	20	
1,2-Dichloropropane	CCC	50.0	52.1	ug/L	0.312	4.14	20	
Ethylbenzene	CCC	50.0	52.3	ug/L	0.450	4.53	20	
Toluene	CCC	50.0	53.3	ug/L	1.19	6.63	20	
Vinyl Chloride	CCC	50.0	51.0	ug/L	0.378	1.98	20	
Bromoform	SPCC	50.0	47.9	ug/L	0.157	4.27	40	
Chlorobenzene	SPCC	50.0	52.0	ug/L	0.811	4.04	40	
Chloromethane	SPCC	50.0	43.1	ug/L	0.479	13.8	40	
1,1-Dichloroethane	SPCC	50.0	52.6	ug/L	0.558	5.21	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	45.2	ug/L	0.394	9.57	40	
Acetone		50.0	47.9	ug/L	0.0590	4.11	40	
Benzene		50.0	50.9	ug/L	0.880	1.90	40	
Bromobenzene		50.0	50.1	ug/L	0.641	0.115	40	
Bromochloromethane		50.0	50.1	ug/L	0.104	0.247	40	
Bromodichloromethane		50.0	53.9	ug/L	0.305	7.88	40	
Bromomethane		50.0	36.5	ug/L	0.0812	26.9	40	
2-Butanone		50.0	46.4	ug/L	0.0893	7.24	40	
n-Butylbenzene		50.0	57.0	ug/L	2.20	13.9	40	
sec-Butylbenzene		50.0	54.4	ug/L	2.77	8.82	40	
tert-Butylbenzene		50.0	52.2	ug/L	0.472	4.34	40	
Carbon Disulfide		50.0	51.6	ug/L	0.650	3.13	40	
Carbon Tetrachloride		50.0	60.0	ug/L	0.369	20.1	40	
Dibromochloromethane		50.0	53.7	ug/L	0.257	7.39	40	
Chloroethane		50.0	46.5	ug/L	0.158	6.93	40	
2-Chloroethyl Vinyl Ether		50.0	44.1	ug/L	0.128	11.7	40	
2-Chlorotoluene		50.0	53.2	ug/L	1.92	6.36	40	
4-Chlorotoluene		50.0	50.8	ug/L	1.71	1.66	40	
1,2-Dibromo-3-Chloropropane		50.0	42.8	ug/L	0.0740	14.3	40	
1,2-Dibromoethane		50.0	50.3	ug/L	0.201	0.666	40	
Dibromomethane		50.0	51.4	ug/L	0.117	2.87	40	
1,2-Dichlorobenzene		50.0	50.3	ug/L	1.13	0.663	40	
1,3-Dichlorobenzene		50.0	52.3	ug/L	1.27	4.65	40	
1,4-Dichlorobenzene		50.0	51.9	ug/L	1.28	3.86	40	
Dichlorodifluoromethane		50.0	48.7	ug/L	0.265	2.65	40	
1,2-Dichloroethane		50.0	51.2	ug/L	0.387	2.49	40	
cis-1,2-Dichloroethene		50.0	52.0	ug/L	0.249	3.99	40	
trans-1,2-Dichloroethene		50.0	52.7	ug/L	0.217	5.48	40	
1,3-Dichloropropane		50.0	49.1	ug/L	0.348	1.84	40	
2,2-Dichloropropane		50.0	54.9	ug/L	0.392	9.78	40	
cis-1,3-Dichloropropene		50.0	52.7	ug/L	0.340	5.31	40	
trans-1,3-Dichloropropene		50.0	52.3	ug/L	0.399	4.59	40	

CCV - Modified 03/05/2008

PDF File ID: 1444348

Report generated 07/17/2009 14:55

Login Number: L09070325 Run Date: 07/16/2009 Sample ID: WG307221-02
Instrument ID: HPMS10 Run Time: 10:11 Method: 8260B
File ID: 10M73543 Analyst: TMB QC Key: STD
Workgroup (AAB#): WG307222 Cal ID: HPMS10 - 09-JUL-09
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	54.4	ug/L	0.326	8.84	40	
2-Hexanone		50.0	44.1	ug/L	0.148	11.8	40	
Hexachlorobutadiene		50.0	57.2	ug/L	0.357	14.4	40	
Isopropylbenzene		50.0	53.8	ug/L	0.0622	7.57	40	
p-Isopropyltoluene		50.0	55.1	ug/L	2.30	10.3	40	
4-Methyl-2-Pentanone		50.0	42.0	ug/L	0.0698	15.9	40	
Methylene Chloride		50.0	46.6	ug/L	0.219	6.90	40	
Naphthalene		50.0	44.0	ug/L	1.15	11.9	40	
n-Propylbenzene		50.0	54.9	ug/L	3.04	9.80	40	
Styrene		50.0	55.8	ug/L	0.878	11.6	40	
1,1,1,2-Tetrachloroethane		50.0	53.2	ug/L	0.307	6.46	40	
Tetrachloroethene		50.0	54.2	ug/L	0.260	8.50	40	
1,2,3-Trichlorobenzene		50.0	46.0	ug/L	0.628	8.05	40	
1,2,4-Trichlorobenzene		50.0	49.1	ug/L	0.786	1.86	40	
1,1,1-Trichloroethane		50.0	55.4	ug/L	0.385	10.9	40	
1,1,2-Trichloroethane		50.0	50.1	ug/L	0.188	0.129	40	
Trichloroethene		50.0	51.4	ug/L	0.243	2.89	40	
Trichlorofluoromethane		50.0	53.5	ug/L	0.386	7.08	40	
1,2,3-Trichloropropane		50.0	44.7	ug/L	0.120	10.6	40	
1,2,4-Trimethylbenzene		50.0	53.8	ug/L	2.24	7.61	40	
1,3,5-Trimethylbenzene		50.0	54.1	ug/L	2.17	8.22	40	
Vinyl Acetate		50.0	43.2	ug/L	0.299	13.7	40	
o-Xylene		50.0	53.0	ug/L	0.521	5.91	40	
m-,p-Xylene		100	108	ug/L	0.542	7.75	40	
1,2-Dichloroethene		100	105	ug/L	0.233	4.73	40	
Xylenes		150	161	ug/L	0.531	7.14	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1444348
Report generated 07/17/2009 14:55

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY

(COMPARED TO CCV)

Login Number:L09070325

Instrument ID:HPMS10

Workgroup (AAB#):WG307222

CCV Number:WG307221-02

CAL ID: HPMS10-09-JUL-09

Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG307221-02	NA	NA	390736	744464	971876
Upper Limit	NA	NA	781472	1488928	1943752
Lower Limit	NA	NA	195368	372232	485938
L09070325-01	2.00	DL01	284203	594429	767259
L09070325-02	1.00	01	291102	628555	798633
L09070325-03	1.00	01	297470	619392	793523
L09070325-04	1.00	01	293419	613413	784880
L09070325-05	1.00	01	287907	600871	780192
L09070325-06	1.00	01	286292	602334	781305
L09070325-07	1.00	01	300153	630490	814648
WG307222-01	1.00	01	310199	659891	852206
WG307222-02	1.00	01	373926	720777	918547
WG307222-03	1.00	01	381992	740986	957278

IS-1 - 1,4-Dichlorobenzene-d4

IS-2 - Chlorobenzene-d5

IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008

PDF File ID: 1444349

Report generated 07/17/2009 14:55

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

00115841

Login Number:L09070325
Instrument ID:HPMS10
Workgroup (AAB#):WG307222

CCV Number:WG307221-02
CAL ID: HPMS10-09-JUL-09
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG307221-02	NA	NA	16.77	13.98	10.36
Upper Limit	NA	NA	17.27	14.48	10.86
Lower Limit	NA	NA	16.27	13.48	9.86
L09070325-01	2.00	DL01	16.77	13.97	10.37
L09070325-02	1.00	01	16.77	13.98	10.36
L09070325-03	1.00	01	16.77	13.98	10.36
L09070325-04	1.00	01	16.77	13.97	10.37
L09070325-05	1.00	01	16.77	13.98	10.36
L09070325-06	1.00	01	16.77	13.98	10.37
L09070325-07	1.00	01	16.76	13.97	10.37
WG307222-01	1.00	01	16.77	13.98	10.37
WG307222-02	1.00	01	16.77	13.98	10.36
WG307222-03	1.00	01	16.77	13.97	10.37

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1444351
Report generated 07/17/2009 14:55

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
July 21, 2009

ADC – ANTHONY D. CANTER	AJF – AMANDA J. FICKIESEN	AJM – ANTHONY J. MOSSBURG
ALB – ANNIE L. BROWN	AML – ANTHONY M. LONG	BLG – BRENDA L. GREENWALT
BRG – BRENDA R. GREGORY	CAA – CASSIE A. AUGENSTEIN	CAF – CHERYL A. FLOWERS
CAH – CHARLES A. HALL	CEB – CHAD E. BARNES	CLC – CHRYS L. CRAWFORD
CLW – CHARISSA L. WINTERS	CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL
DDE – DEBRA D. ELLIOTT	DEL – DON E. LIGHTFRITZ	DEV – DAVID E. VANDENBERG
DGB – DOUGLAS G. BUTCHER	DIH – DEANNA I. HESSON	DLB – DAVID L. BUMGARNER
DLP – DOROTHY L. PAYNE	DLR – DIANNA L. RAUCH	DR – DEANNA ROBERTS
ECL – ERIC C. LAWSON	EDA – ERIN D. AGEE	ERP – ERIN R. PORTER
FJB – FRANCES J. BOLDEN	HAV – HEMA VILASAGAR	HJR – HOLLY J. REED
JBK – JEREMY B. KINNEY	JDH – JUSTIN D. HESSON	JKT – JANE K. THOMPSON
JWR – JOHN W. RICHARDS	JWS – JACK W. SHEAVES	JYH – JI Y. HU
KEB – KATHRYN E. BARNES	KHR – KIM H. RHODES	KRA – KATHY R. ALBERTSON
LKN – LINDA K. NEDEFF	LSB – LESLIE S. BUCINA	MDA – MIKE D. ALBERTSON
MDC – MICHAEL D. COCHRAN	MES – MARY E. SCHILLING	MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR	MSW – MATT S. WILSON	NPM – NATHANIEL P. MILLER
PDM – PIERCE D. MORRIS	RAH – ROY A. HALSTEAD	RB – ROBERT BUCHANAN
REK – ROBERT E. KYER	RLK – ROBIN L. KLINGER	RWC – RODNEY W. CAMPBELL
SDH – SHANA D. HINYARD	SLM – STEPHANIE L. MOSSBURG	SLP – SHERI L. PFALZGRAF
TIP – TAE I. PARRISH	TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS
VC – VICKI COLLIER	WTD – WADE T. DELONG	

Microbac Laboratories Inc.
List of Valid Qualifiers
July 21, 2009

Qualkey: STD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
C	Confirmed by GC/MS
CG	Confluent growth
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
FL	Free Liquid
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit (RL).
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria fail. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Undetected; the concentration is below the reported MDL.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

Chain of Custody

NO. 5821

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: MICROBAC Address: 158 STARLITE DR. MARIETTA, OH Contact: STEPHANIE MOSSBURG

Project Name: LHAAP Project Location: KARNACK, TX.

Project No.: 117591, 0008B105 Project Contact: KAY EVERETT Project Telephone No.: 713-996-4421

Point of Contact: SCOTT BEESINGER Project Manager/Supervisor: PRAVEEN SRIVASTAV

Telephone No.: 903-679-3274

Analysis and Method Desired (Indicate separate containers)

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOA							Remarks
1	12WW24-071409	7/14/09	1:25		✓	W	SITE 12	2	✓							
2	12WW20-071509	7/15/09	9:05		✓	W	SITE 12	2	✓							
3	12WW22-071509	7/15/09	10:10		✓	W	SITE 12	2	✓							
4	12WW22-071509-FD	7/15/09	10:10		✓	W	SITE 12	2	✓							
5	12WW21-071509	7/15/09	11:20		✓	W	SITE 12	2	✓							
6	12WW23-071509	7/15/09	12:45		✓	W	SITE 12	2	✓							
7	TRIP BLANK	7/15/09			✓	W		2	✓							
8																
9																
10																

Transfers Relinquished By (signature)	Date/Time
Scott Beesinger	7/15/09 3:00

Microbac OVD
Received: 07/16/2009 09:54
By: ERIN PORTER
Erin Porter

221000000504

Instructions: STANDARD TAT

Airbill No.:

Sampler's Signature: Scott Beesinger

TAT: ____ Standard ____ Rush Date ____ Seals Intact? ____ Y ____ N Received Good Condition ____ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_2
Rev. 10-19-07

00115845

COOLER INSPECTION

Received: 07/16/2009 09:54
Delivery Method: UPS
Opened By: Erin R Porter
Comments:

Login(s): L09070325

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0013932	H	4.0	1Z66V7250195617267		

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	Yes	Were correct perservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	Yes	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L09070325
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 27-JUL-2009

Samplenum	Container ID	Products
L09070325-01	598900	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	16-JUL-2009 12:24	ERE	
2	ANALYZ	V1	ORG4	16-JUL-2009 12:48	TMB	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	16-JUL-2009 12:24	ERE	
2	ANALYZ	V1	ORG4	16-JUL-2009 12:48	TMB	ERE

Samplenum	Container ID	Products
L09070325-02	598901	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	16-JUL-2009 12:24	ERE	
2	ANALYZ	V1	ORG4	16-JUL-2009 12:48	TMB	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	16-JUL-2009 12:24	ERE	
2	ANALYZ	V1	ORG4	16-JUL-2009 12:48	TMB	ERE

Samplenum	Container ID	Products
L09070325-03	598902	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	16-JUL-2009 12:24	ERE	
2	ANALYZ	V1	ORG4	16-JUL-2009 12:48	TMB	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	16-JUL-2009 12:24	ERE	
2	ANALYZ	V1	ORG4	16-JUL-2009 12:48	TMB	ERE

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L09070325
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 27-JUL-2009

Samplenum	Container ID	Products
L09070325-04	598903	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	16-JUL-2009 12:24	ERE	
2	ANALYZ	V1	ORG4	16-JUL-2009 12:48	TMB	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	16-JUL-2009 12:24	ERE	
2	ANALYZ	V1	ORG4	16-JUL-2009 12:48	TMB	ERE

Samplenum	Container ID	Products
L09070325-05	598904	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	16-JUL-2009 12:24	ERE	
2	ANALYZ	V1	ORG4	16-JUL-2009 12:48	TMB	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	16-JUL-2009 12:24	ERE	
2	ANALYZ	V1	ORG4	16-JUL-2009 12:48	TMB	ERE

Samplenum	Container ID	Products
L09070325-06	598905	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	16-JUL-2009 12:24	ERE	
2	ANALYZ	V1	ORG4	16-JUL-2009 12:48	TMB	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	16-JUL-2009 12:24	ERE	
2	ANALYZ	V1	ORG4	16-JUL-2009 12:48	TMB	ERE

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L09070325
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 27-JUL-2009

Samplenum	Container ID	Products
L09070325-07	598906	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	16-JUL-2009 12:24	ERE	
2	ANALYZ	V1	ORG4	16-JUL-2009 12:48	TMB	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	16-JUL-2009 12:24	ERE	
2	ANALYZ	V1	ORG4	16-JUL-2009 12:48	TMB	ERE

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Shaw® Shaw Environmental, Inc.

Date: July 27, 2012

Project No.:117591

TRANSMITTAL LETTER:

To: Mr. Aaron Williams

Address: US Army Corps of Engineers - Tulsa
CESWT-PP-M
1645 South 101st East Ave
Tulsa, Oklahoma 74128

Re: ***Final Remedial Action Operation Summary Report, Years 3 and 4, Landfill 12 (LHAAP-12)***

Contract No. W912QR-04-D-0027/DS02

For: Review ____ As Requested ____ Approval ____ Corrections ____ Submittal **X** Other ____

Item No:	*No. of Copies*	*Date:*	*Document Title*
1	2	July 2012	**Final Remedial Action Operation Summary Report, Years 3 and 4 Landfill 12 (LHAAP-12) Longhorn Army Ammunition Plant, Karnack, Texas**

Aaron– Enclosed are 2 copies of the above-named document for your files. Copies have been distributed as indicated at the end of this message.

Please call with any questions or comments.

Sincerely:

For Praveen Srivastav
Project Manager

Distribution:
R. Zeiler, BRAC (1)
M. Plitnik, AEC (1)
S. Tzhone, USEPA (2)
F. Duke, TCEQ (2)
D. Vodak, TCEQ (1)
P. Bruckwicki, USFWS (1)

1401 Enclave Parkway, Suite 250, Houston, Texas 77077 *Phone: (281) 531-3100/Fax: (281) 531-3136*

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

July 27, 2011

DAIM-ODB-LO

Mr. Stephen Tzhone
US Environmental Protection Agency
Superfund Division (6SF-AT)
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Final Remedial Action Operation Summary Report, Years 3 and 4, Landfill 12 (LHAAP-12), Longhorn Army Ammunition Plant, Karnack, Texas, July 2012

Dear Mr. Tzhone,

The above-referenced document is being transmitted to you for your records. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility.

The point of contact for this action is the undersigned. I ask that Praveen Srivastav, Shaw's Project Manager, be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
F. Duke, TCEQ, Austin, TX
D. Vodak, TCEQ, Tyler, TX
P. Bruckwicki, Caddo Lake NWR, TX
J. Lambert, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
M. Plitnik, USAEC, San Antonio, TX
P. Srivastav, Shaw – Houston, TX (for project files)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

July 27, 2011

DAIM-ODB-LO

Ms. Fay Duke (MC-136)
SSDAT/Superfund Section
Remediation Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Remedial Action Operation Summary Report, Years 3 and 4, Landfill 12 (LHAAP-12), Longhorn Army Ammunition Plant, Karnack, Texas, July 2012
SUP 126

Dear Ms. Duke,

The above-referenced document is being transmitted to you for your records. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility.

The point of contact for this action is the undersigned. I ask that Praveen Srivastav, Shaw's Project Manager be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
S. Tzhone, USEPA Region 6, Dallas, TX
D. Vodak, TCEQ, Tyler, TX
P. Bruckwicki, Caddo Lake NWR, TX
J. Lambert, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
M. Plitnik, USAEC, San Antonio, TX
P. Srivastav, Shaw, Houston, TX (for project files)

From:	Stephen Tzhone
To:	Zeiler, Rose Ms CIV USA OSA; Lambert, John R SWT; Williams, Aaron K SWT; Plitnik, Marilyn A CIV USA IMCOM AEC
Cc:	Fay Duke; Dale Vodak; Richard Mayer; Paul Torcoletti; kdbecher@usgs.gov; Terry Burton; Forsythe.Barry@epamail.epa.gov
Subject:	EPA Comments on LHAAP-12 RA Operation Reports: RTC to Year 1 and 2 Report and Draft Years 3 and 4 Report
Date:	Monday, February 27, 2012 2:10:57 PM
Attachments:	ATT00002.gif RTC-LHAAP-12 Annual RAO Rpt Yr 1 and 2 TCEQ and EPA 112811.doc

Hi Rose,

The EPA has no further comments on the RTCs for LHAAP-12 RA Operation Year 1 and 2 Report.

The EPA has these comments for the Year 3 and 4 Report:

---

1) General: Consistent with comments provided by the TCEQ, the current monitoring well network appears inadequate and monitoring well coverage east of 12WW24 is an apparent data gap. Additional groundwater data is needed from this area to substantiate the statement on page 3-1 that the *"...the size of the plume is stable or shrinking around monitoring well 12WW24..."*

2) General: Substantial variation in VOC concentrations was observed in historic monitoring data when collected at a greater frequency (e.g. quarterly). Seasonal variation is a possible cause of these observed concentration differences. Figures 2-3 and 2-4 demonstrate the concentration maxima were generally observed in approximately the first calendar quarter of each year (winter/early spring) with concentration minima generally noted during mid-year sampling or later (summer), consistent with the current annual sampling being performed in June. The ability to evaluate potential seasonal variations in contaminant concentration is lost with the annual monitoring program. Furthermore, the current annual sampling date of June generally corresponds with historic concentration minima. The EPA is concerned that the annual monitoring program, as currently performed, produces data that is not representative of water quality conditions throughout the year. This observation casts considerable uncertainty on the statement that "*VOC concentrations in 12WW24 have shown a decreasing trend in concentrations over the past several years...*" on page 3-1. Consistent with comments provided by the TCEQ, quarterly monitoring is recommended to evaluate if contaminant concentrations continue to fluctuate during the year and to assess the causation of this variation. If the Army continues to defer the consideration of additional sampling until the next five-year review, then the EPA recommends that the annual data be collected during the first calendar quarter of each year.

3) Figure 2-2: Please show other existing (i.e. not plugged/abandoned) shallow monitoring wells on Figure 2-2, if any. A different symbol or color can be used to indicate that they are not part of the current monitoring program.

4) Figure 2-5: Groundwater Potentiometric Map (Based on August 25, 2003 Measurements): Monitoring well 12WW10 had a water level of 186.34 and monitoring well 12WW01 had a water level of 186.21. Are these levels correct? The monitoring wells to the east and west of these wells had water levels of 180.+ or 181.+.

5) Section 2.0: The Land Use Controls narrative does not mention that there is a deed restriction/notice prohibiting groundwater use and a restriction on the installation of water production wells for this site. This information should be mentioned or noted in the Report.

6) Section 2.2.1: As written, the discussion regarding gradient and flow direction is confusing. The text seems to imply that the direction of groundwater flow in the plume area (i.e. 12WW24) is to the north-northeast and northwest based on historical water level measurements from an expanded well network

and that the east-southeast flow direction observed in 2010/2011 data (as shown on Figure 2-2) is a function of the more limited group of monitoring wells and not an actual change in groundwater flow direction. However, the last sentence of this section (on page 2-3) affirmatively states that the downgradient flow direction from 12WW24 is to the east-southeast. Please modify this section to better explain what the EPA believes you are attempting to describe. That being said, the configuration of the water table and groundwater flow directions can and do change over time (seasonal to longer-term fluctuations) and the current monitoring well network used for water level measurements appears insufficient. The EPA agrees with the Army's recommendation to collect water level data from the eight monitoring wells during future sampling; however, it is unclear if these eight wells will provide sufficient coverage to accurately portray the true potentiometric surface. Are there other monitoring wells available, in addition to the eight shown on Figure 2-2, from which water levels can be measured?

7) Section 3.1: EPA recommends that a more robust statistical evaluation of VOC concentration trends is warranted beyond simple concentration-time plots (i.e. Figures 2-3 and 2-4) to substantiate the statement on page 3-1 that "*VOC concentrations in 12WW24 have shown a decreasing trend in concentrations over the past several years...*" Statistically-based trend evaluations, such as linear regression methods, the Mann-Kendall Trend Test and/or the Theil-Sen Trend Line, are potentially appropriate statistical methods. One potential statistical reference to consider is "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities-Unified Guidance" (EPA, 2009), which is also appropriate for application at CERCLA sites.

8) Section 3.2: EPA agrees with the Army that all eight wells shown on Figure 2-2, Groundwater Gradient Map, should be gauged for water levels for the next reporting period. The number wells that were gauged (5) for this report is inadequate. Also, EPA recommends that groundwater monitoring wells 12WW01 and 12WW02 be sampled in the future and analyzed (at a minimum) for VOCs. What value are these wells in monitoring the landfill's performance if they are not sampled? Furthermore, EPA recommends that an additional well be installed approximately 100 to 200 feet east of monitoring well 12WW24 and the samples analyzed for VOCs (and water level gauged). This should aid in plume uncertainty and groundwater flow direction.

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

From: "Fay Duke" <Fay.Duke@tceq.texas.gov>

To: "Praveen Srivastav" <praveen.srivastav@shawgrp.com>, "Rose Ms CIV USA OSA Zeiler" <rose.zeiler@us.army.mil>
Cc: Terry Burton/R6/USEPA/US@EPA, Barry Forsythe/R6/USEPA/US@EPA, Richard Mayer/R6/USEPA/US@EPA, Paul Torcoletti/R6/USEPA/US@EPA, Stephen Tzhone/R6/USEPA/US@EPA, "John R SWT Lambert" <John.R.Lambert@SWT03.usace.army.mil>, "Marilyn A CIV USA IMCOM AEC Plitnik" <marilyn.a.plitnik@us.army.mil>, "Aaron K SWT Williams" <Aaron.K.Williams@usace.army.mil>, <kdbecher@usgs.gov>

Date: 01/10/2012 05:56 PM

Subject: TCEQ Comments on LHAAP-12 RA(O) Reports: RTC to Year 1 and 2 Report and Draft Years 3 and 4 Report

---

Rose/Praveen,

The TCEQ has completed its review of the Draft Remedial Action Operation (RA(O) Summary Report for Years 3 and 4 as well as Army's responses to comments (RTCs) on the Year 1 and Year 2 of the RA(O) report. We generally disagree with the conclusion of the reports because we believe there exist data gaps which prohibits a sound evaluation. Specifically, we have the following comments:

1. Our concerns regarding the possibility that seasonal effect on the groundwater concentrations remains. We noted that samples collected during the winter/spring months appear to be much higher than the samples collected during the summer months. The difference in concentration can be as high as 100 ppb. Yet, we note that samples for Year 3 and Year 4 were collected only during the summer months. We again believe that quarterly samples must be reinitiated to evaluate the possibility of seasonal variations on the results of the groundwater data. We disagree with and don't quite understand the rationale for waiting until after the completion of the 2012 five-year review. The objective of the Five-Year review is to evaluate whether the remedy is effective and will continue to be protective. Without sufficient data, the five-year review will likely be inconclusive.
2. Similar to the above comment, we disagree with Army's response regarding the waiting for the completion of the Five Year review to determine whether additional well is needed to complete the data gap down gradient of well 12WW24. Furthermore, as stated in Army's response, the change in groundwater flow was a factor of a reduction in the number of wells in the monitoring network. This is a good indicator that the current monitoring network is insufficient for the fate and transport evaluation at this site due to the complex hydrogeology. We again, recommend installing additional wells.
3. Based on Army's response to TCEQ comment No. 3, it appears that there's a deficiency in the current sampling design plan. A modifications to the sampling design plan will be necessary to ensure that ROD objective are met.
4. Finally, please explain why Army completed three years of samples before the first report is submitted?

Please let me know if you should have any questions or wish to discuss these comments.

From: "Srivastav, Praveen" <Praveen.Srivastav@shawgrp.com>

To: Stephen Tzhone/R6/USEPA/US@EPA, Fay Duke <Fay.Duke@tceq.texas.gov>
Cc: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>, "Lambert, John R SWT" <John.R.Lambert@SWT03.usace.army.mil>, "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Watson, Susan" <Susan.Watson@shawgrp.com>, "Everett, Kay" <Kay.Everett@shawgrp.com>

Date: 11/28/2011 02:48 PM

Subject: FW: RTCs to TCEQ and EPA Comments - LHAAP-12 Annual RA(O) Rpt Years 1 and 2

Steve:

Please see attached response to regulatory comments on LHAAP-12 Year 1 and 2 RAO report.

Thank you,

Praveen Srivastav, PhD, PG, PMP

Project Manager
Federal Division/Project Management
Shaw Environmental & Infrastructure

1401 Enclave Parkway, Suite 250
Houston, TX 77077

281.531.3188 direct
281.639.8743 cell

praveen.srivastav@shawgrp.com

Shaw™ a world of Solutions™

www.shawgrp.com

Please consider the environment before printing this e-mail.

From: Watson, Susan
Sent: Monday, November 28, 2011 12:25 PM
To: Srivastav, Praveen
Cc: Everett, Kay
Subject: RTCs to TCEQ and EPA Comments - LHAAP-12 Annual RA(O) Rpt Years 1 and 2

Praveen,

Attached are the responses to TCEQ's and EPA's comments on the LHAAP-12 Remedial Action Operation (RA[O]) Report for Years 1 and 2.

The tracked changes have been accepted and these are ready to go to the regulators for their review.

Thanks,

Susan

****Internet Email Confidentiality Footer**** Privileged/Confidential Information may be contained in this message. If you are not the addressee indicated in this message (or responsible for delivery of the message to such person), you may not copy or deliver this message to anyone. In such case, you should destroy this message and notify the sender by reply email. Please advise immediately if you or your employer do not consent to Internet email for messages of this kind. Opinions, conclusions and other information in this message that do not relate to the official business of The Shaw Group Inc. or its subsidiaries shall be understood as neither given nor endorsed by it. _____ The Shaw Group Inc. http://www.shawgrp.com

From: Stephen Tzhone [Tzhone.Stephen@epamail.epa.gov]
Sent: Friday, April 27, 2012 1:43 PM
To: 'Zeiler, Rose Ms CIV USA OSA'; Lambert, John R SWT; Williams, Aaron K SWT; Plitnik, Marilyn A USA CIV US ; Lanier, Wendy SWT
Cc: Fay Duke; Dale Vodak; Terry Burton; Richard Mayer; Paul Torcoletti; kdbecher@usgs.gov; Forsythe.Barry@epamail.epa.gov
Subject: Re: LHAAP-12 RTCs to Years 3 and 4 RAO Report
Attachments: RTC-LHAAP-12 Annual RAO Rpt Yr 3 and 4 TCEQ EPA 2012 0314.doc

Hi Rose,

The EPA has reviewed the RTCs and have no further comments.

However, as some of the RTCs relate to the next 5-year review, please note that the previous 5-year review was signed by the Army on Sep 24, 2008 and concurred by the EPA on Oct 2, 2008... which means the next 5-year review should be finalized no later than Oct 2, 2013. Thus, please provide a schedule showing when Army expects to submit a draft 5-year review to regulators, along with an anticipated timeframe for finalization.

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

From: "Srivastav, Praveen" <Praveen.Srivastav@shawgrp.com>
To: Stephen Tzhone/R6/USEPA/US@EPA, Fay Duke <Fay.Duke@tceq.texas.gov>
Cc: Aaron K SWT Williams <Aaron.K.Williams@usace.army.mil>, "Lambert, John R SWT" <John.R.Lambert@SWT03.usace.army.mil>, Rose Zeiler <rose.zeiler@us.army.mil>, "Watson, Susan" <Susan.Watson@shawgrp.com>, "Chan, Vincent" <vincent.chan@shawgrp.com>, "Everett, Kay" <Kay.Everett@shawgrp.com>
Date: 03/14/2012 11:58 AM
Subject: LHAAP-12 RTCs to Years 3 and 4 RAO Report

Steve/Fay:

Army's response to regulatory comments on the LHAAP-12 Years 3 and 4 RAO report is attached for your review.

Thank you,

Praveen Srivastav, PhD, PG, PMP
Project Manager
Federal Division/Project Management
Shaw Environmental & Infrastructure
1401 Enclave Parkway, Suite 250
Houston, TX 77077
281.531.3188 direct
281.639.8743 cell
praveen.srivastav@shawgrp.com

ShawT a world of SolutionsT
www.shawgrp.com

Please consider the environment before printing this e-mail.

-----Original Message-----
From: Chan, Vincent
Sent: Wednesday, March 14, 2012 11:47 AM
To: Watson, Susan; Srivastav, Praveen; Mena, Kim
Subject: RTCs to Years 3 and 4 RAO Reports

****Internet Email Confidentiality Footer****
Privileged/Confidential Information may be contained in this message. If you are not the addressee indicated in this message (or responsible for delivery of the message to such person), you may not copy or deliver this message to anyone. In such case, you should destroy this message and notify the sender by reply email. Please advise immediately if you or your employer do not consent to Internet email for messages of this kind. Opinions, conclusions and other information in this message that do not relate to the official business of The Shaw Group Inc. or its subsidiaries shall be understood as neither given nor endorsed by it.
_____ The Shaw Group Inc.
http://www.shawgrp.com

From:	Fay Duke
To:	Stephen Tzhone; "Zeiler, Rose Ms CIV USA OSA"; Lambert, John R SWT; Williams, Aaron K SWT; Plitnik, Marilyn A USA CIV US ; Lanier, Wendy SWT
Cc:	Dale Vodak; Terry Burton; Richard Mayer; Paul Torcoletti; kdbecher@usgs.gov; Forsythe.Barry@epamail.epa.gov
Subject:	RE: LHAAP-12 RTCs to Years 3 and 4 RAO Report
Date:	Thursday, June 28, 2012 2:08:21 PM

Rose:

The TCEQ has completed its review of the RTCs to the Draft RAO Year 3 and 4 Summary Report for LHAAP 12. In response to the agencies' comment to perform an evaluation of the effectiveness of the monitoring system, Army proposes to perform this analysis at the Five-Year Review. Although the TCEQ believes that evaluation of the effectiveness of a monitoring system should be conducted annually or as needed and in light of the fact that the Five Year review is scheduled to begin in the near future, we reluctantly concur. Therefore, we have no further comments.

Thanks,

Fay Duke (MC-136)
Remediation Division, TCEQ
PO Box 13087
Austin, Texas 78711-3087
512-239-2443
fay.duke@tceq.texas.gov

From: Stephen Tzhone [mailto:Tzhone.Stephen@epamail.epa.gov]
Sent: Friday, April 27, 2012 1:43 PM
To: 'Zeiler, Rose Ms CIV USA OSA'; 'Lambert, John R SWT'; 'Williams, Aaron K SWT'; Plitnik, Marilyn A USA CIV US ; Lanier, Wendy SWT
Cc: Fay Duke; Dale Vodak; Terry Burton; Richard Mayer; Paul Torcoletti; kdbecher@usgs.gov; Forsythe.Barry@epamail.epa.gov
Subject: Re: LHAAP-12 RTCs to Years 3 and 4 RAO Report

Hi Rose,

The EPA has reviewed the RTCs and have no further comments.

However, as some of the RTCs relate to the next 5-year review, please note that the previous 5-year review was signed by the Army on Sep 24, 2008 and concurred by the EPA on Oct 2, 2008... which means the next 5-year review should be finalized no later than Oct 2, 2013. Thus, please provide a schedule showing when Army expects to submit a draft 5-year review to regulators, along with an anticipated timeframe for finalization.

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

From: "Srivastav, Praveen" <Praveen.Srivastav@shawgrp.com>

To: Stephen Tzhone/R6/USEPA/US@EPA, Fay Duke <Fay.Duke@tceq.texas.gov>
Cc: Aaron K SWT Williams <Aaron.K.Williams@usace.army.mil>, "Lambert, John R SWT" <John.R.Lambert@SWT03.usace.army.mil>, Rose Zeiler <rose.zeiler@us.army.mil>, "Watson, Susan" <Susan.Watson@shawgrp.com>, "Chan, Vincent" <vincent.chan@shawgrp.com>, "Everett, Kay" <Kay.Everett@shawgrp.com>

Date: 03/14/2012 11:58 AM
Subject: LHAAP-12 RTCs to Years 3 and 4 RAO Report

Steve/Fay:

Army's response to regulatory comments on the LHAAP-12 Years 3 and 4 RAO report is attached for your review.

Thank you,

Praveen Srivastav, PhD, PG, PMP
Project Manager
Federal Division/Project Management
Shaw Environmental & Infrastructure
1401 Enclave Parkway, Suite 250
Houston, TX 77077
281.531.3188 direct
281.639.8743 cell
praveen.srivastav@shawgrp.com

ShawT a world of SolutionsT
www.shawgrp.com

Please consider the environment before printing this e-mail.

-----Original Message-----
From: Chan, Vincent
Sent: Wednesday, March 14, 2012 11:47 AM
To: Watson, Susan; Srivastav, Praveen; Mena, Kim
Subject: RTCs to Years 3 and 4 RAO Reports

****Internet Email Confidentiality Footer****
Privileged/Confidential Information may be contained in this message. If you are not the addressee indicated in this message (or responsible for delivery of the message to such person), you may not copy or deliver this message to anyone. In such case, you should destroy this message and notify the sender by reply email. Please advise immediately if you or your employer do not consent to Internet email for messages of this kind. Opinions, conclusions and other information in this message that do not relate to the official business of The Shaw Group Inc. or its subsidiaries shall be understood as neither given nor endorsed by it.
_____ The Shaw Group Inc.
http://www.shawgrp.com

Comments on Draft RA(O) Summary Report, Years 3 and 4, Landfill 12 (LHAAP-12)
Longhorn Army Ammunition Plant, Karnack, Texas
Dated December 2011

Reviewer: Fay Duke, TCEQ, Stephen Tzhone, EPA
Respondent: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E)
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
TCEQ – Comments from January 10, 2012						
1.			The TCEQ has completed its review of the Draft Remedial Action Operation (RA(O) Summary Report for Years 3 and 4 as well as Army's responses to comments (RTCs) on the Year 1 and Year 2 of the RA(O) report. We generally disagree with the conclusion of the reports because we believe there exist data gaps which prohibits a sound evaluation. Specifically, we have the following comments: Our concerns regarding the possibility that seasonal effect on the groundwater concentrations remains. We noted that samples collected during the winter/spring months appear to be much higher than the samples collected during the summer months. The difference in concentration can be as high as 100 ppb. Yet, we note that samples for Year 3 and Year 4 were collected only during the summer months. We again believe that quarterly samples must be reinitiated to evaluate the possibility of seasonal variations on the results of the groundwater data. We disagree with and don't quite understand the rationale for waiting until after the completion of the 2012 five-year review. The objective of the Five-Year review is to evaluate whether the remedy is effective and will continue to be protective. Without sufficient data, the five-year review will likely be inconclusive.	E	We propose re-evaluation of sampling frequency with the Five-Year review; however, we also propose alternating the quarter for collection of annual samples until that re-evaluation.	
2.			Similar to the above comment, we disagree with Army's response regarding the waiting for the completion of the Five Year review to determine whether additional well is needed to complete the data gap down gradient of well 12WW24. Furthermore, as stated in Army's response, the change in groundwater flow was a factor of a reduction in the number of wells in the monitoring network. This is a good indicator that the current	E	We propose re-evaluating the data at the Five-Year review; however, we also propose collecting groundwater elevation readings from the eight remaining wells during the next sampling event to modify groundwater elevations.	

Comments on Draft RA(O) Summary Report, Years 3 and 4, Landfill 12 (LHAAP-12)
Longhorn Army Ammunition Plant, Karnack, Texas
Dated December 2011

Reviewer: Fay Duke, TCEQ, Stephen Tzhone, EPA
Respondent: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E)
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
			monitoring network is insufficient for the fate and transport evaluation at this site due to the complex hydrogeology. We again, recommend installing additional wells.			
3.			Based on Army's response to TCEQ comment No. 3 [to the Draft LHAAP-12 RA(O) Report, Years 1 and 2], it appears that there's a deficiency in the current sampling design plan. A modifications to the sampling design plan will be necessary to ensure that ROD objective are met.	E	We propose re-evaluating the current sampling design plan at the Five-Year review.	
4.			Finally, please explain why Army completed three years of samples before the first report is submitted?	C	The lengthy delay in submitting the first report to regulators was not intentional. The Army and contractor went through several iterations of Army comments prior to preparing a draft version for regulators and other priorities led to lengthy delays in addressing responses and comments for the first report.	
EPA						
1.		General	Consistent with comments provided by the TCEQ, the current monitoring well network appears inadequate and monitoring well coverage east of 12WW24 is an apparent data gap. Additional groundwater data is needed from this area to substantiate the statement on page 3-1 that the "…the size of the plume is stable or shrinking around monitoring well 12WW24…"	E	We propose re-evaluating the data at the Five-Year review; however, we also propose collecting groundwater elevation readings from the eight remaining wells during the next sampling event to modify groundwater elevations.	
2.		General	Substantial variation in VOC concentrations was observed in historic monitoring data when collected at a greater frequency (e.g. quarterly). Seasonal variation is a possible cause of these observed concentration differences. Figures 2-3 and 2-4 demonstrate the concentration maxima were generally observed in approximately the first calendar quarter of each year (winter/early spring) with concentration minima generally noted during mid-year sampling or later (summer), consistent with the	E	We propose re-evaluation of sampling frequency with the Five-Year review; however, we also propose alternating the quarter for collection of annual samples until that re-evaluation.	

Comments on Draft RA(O) Summary Report, Years 3 and 4, Landfill 12 (LHAAP-12)
Longhorn Army Ammunition Plant, Karnack, Texas
Dated December 2011

Reviewer: Fay Duke, TCEQ, Stephen Tzhone, EPA
Respondent: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E)
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
			current annual sampling being performed in June. The ability to evaluate potential seasonal variations in contaminant concentration is lost with the annual monitoring program. Furthermore, the current annual sampling date of June generally corresponds with historic concentration minima. The EPA is concerned that the annual monitoring program, as currently performed, produces data that is not representative of water quality conditions throughout the year. This observation casts considerable uncertainty on the statement that "VOC concentrations in 12WW24 have shown a decreasing trend in concentrations over the past several years..." on page 3-1. Consistent with comments provided by the TCEQ, quarterly monitoring is recommended to evaluate if contaminant concentrations continue to fluctuate during the year and to assess the causation of this variation. If the Army continues to defer the consideration of additional sampling until the next five-year review, then the EPA recommends that the annual data be collected during the first calendar quarter of each year.			
3.		Figure 2-2	Please show other existing (i.e. not plugged/ abandoned) shallow monitoring wells on Figure 2-2, if any. A different symbol or color can be used to indicate that they are not part of the current monitoring program.	C	The 8 wells shown in Figure 2-2 are the only wells at LHAAP-12 that exist. Other LHAAP-12 wells were abandoned in 2006 with regulator concurrence, as reported in the *Final LHAAP-12 Well Abandonment and Installation Report* from April 2007.	
4.		Figure 2-5	Groundwater Potentiometric Map (Based on August 25, 2003 Measurements): Monitoring well 12WW10 had a water level of 186.34 and monitoring well 12WW01 had a water level of 186.21. Are these levels correct? The monitoring wells to the east and west of these wells had water levels of 180.+ or 181.+.	C	The August 2003 measurements as reported in Figure 2-5 appear to be in error. Although we were unable to locate the August 2003 documentation to confirm this, the *Final Groundwater Monitoring Report Sites 12 and 16* (AR 00042576-00043178) includes water level measurements at Site 12 for Spring 2003, and Spring and Winter 2004 in which water levels for monitoring well 12WW01 and 12WW10 are in the range of 180.+ - 181.+ consistent with the wells to the east and west. Propose replacing Figure 2-5 with the figures (3-1, 3-2 and 3-3) from the *Final Groundwater Monitoring Report Sites 12 and 16* which are	

Comments on Draft RA(O) Summary Report, Years 3 and 4, Landfill 12 (LHAAP-12)
Longhorn Army Ammunition Plant, Karnack, Texas
Dated December 2011

Reviewer: Fay Duke, TCEQ, Stephen Tzhone, EPA
Respondent: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E)
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
					based on Spring 2003, Spring and Winter 2004 water level measurements.	
5.		Section 2.0	The Land Use Controls narrative does not mention that there is a deed restriction/notice prohibiting groundwater use and a restriction on the installation of water production wells for this site. This information should be mentioned or noted in the Report.	C	The following sentence will be added after the bulleted list in Section 2.0: "In addition, there is a Notice of Land Use Controls that was filed with the Harrison County clerk on June 13, 2007. It implemented a landfill restriction, residential restriction, and groundwater restriction at LHAAP-12."	
6.		Section 2.2.1	As written, the discussion regarding gradient and flow direction is confusing. The text seems to imply that the direction of groundwater flow in the plume area (i.e. 12WW24) is to the north-northeast and northwest based on historical water level measurements from an expanded well network and that the east-southeast flow direction observed in 2010/2011 data (as shown on Figure 2-2) is a function of the more limited group of monitoring wells and not an actual change in groundwater flow direction. However, the last sentence of this section (on page 2-3) affirmatively states that the downgradient flow direction from 12WW24 is to the east-southeast. Please modify this section to better explain what the EPA believes you are attempting to describe. That being said, the configuration of the water table and groundwater flow directions can and do change over time (seasonal to longer-term fluctuations) and the current monitoring well network used for water level measurements appears insufficient. The EPA agrees with the Army's recommendation to collect water level data from the eight monitoring wells during future sampling; however, it is unclear if these eight wells will provide sufficient coverage to accurately portray the true potentiometric surface. Are there other monitoring wells available, in addition to the eight shown on Figure 2-2, from which water levels can be measured?	C	Regarding the first point, the second paragraph of Section 2.2.1 will be revised as follows for clarity and to discuss the historical groundwater gradient figures that are replacing the August 2003 figure: "The groundwater gradients contoured with 2010 and 2011 data trend towards the east-southeast (**Figure 2-2**) indicating a downgradient flow direction from 12WW24 to the east-southeast. Historical data from Spring 2003 and Spring and Winter 2004 (**Figures 2-3**, **2-4**, and **2-5**) shows that the groundwater gradient can vary in this part of the site. Generally, the flow is to the east, but flow is also observed to occur in the northeast and southeast directions. Changes in the groundwater flow direction can occur both seasonally and in the longer-term. Additionally, the monitoring network in 2003/2004 was significantly different than the current network. Compared to the 2003/2004 network, there are now fewer wells in the network (and therefore fewer data points), and the well locations are different. It is recommended to collect a set of water levels from the 8 existing wells." Regarding the second point, an enlarged network of 8 wells for creating the groundwater gradient map is a significant increase from just 5 wells. Whether it is adequate can be evaluated once the data is gathered. Also see response to EPA comment 1. Regarding the third point, these 8 wells are the only wells	

Comments on Draft RA(O) Summary Report, Years 3 and 4, Landfill 12 (LHAAP-12)
Longhorn Army Ammunition Plant, Karnack, Texas
Dated December 2011

Reviewer: Fay Duke, TCEQ, Stephen Tzhone, EPA
Respondent: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E)
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]
					at LHAAP-12 that exist. Other LHAAP-12 wells were abandoned in 2006 with regulator concurrence, as reported in the *Final LHAAP-12 Well Abandonment and Installation Report* from April 2007. See response to EPA comment 3.	
7.		Section 3.1	EPA recommends that a more robust statistical evaluation of VOC concentration trends is warranted beyond simple concentration-time plots (i.e. Figures 2-3 and 2-4) to substantiate the statement on page 3-1 that "VOC concentrations in 12WW24 have shown a decreasing trend in concentrations over the past several years..." Statistically-based trend evaluations, such as linear regression methods, the Mann-Kendall Trend Test and/or the Theil-Sen Trend Line, are potentially appropriate statistical methods. One potential statistical reference to consider is "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities-Unified Guidance" (EPA, 2009), which is also appropriate for application at CERCLA sites.	C	We propose application of statistically-based trend evaluation after collecting samples in an alternating quarter.	
8.		Section 3.2	EPA agrees with the Army that all eight wells shown on Figure 2-2, Groundwater Gradient Map, should be gauged for water levels for the next reporting period. The number wells that were gauged (5) for this report is inadequate. Also, EPA recommends that groundwater monitoring wells 12WW01 and 12WW02 be sampled in the future and analyzed (at a minimum) for VOCs. What value are these wells in monitoring the landfill's performance if they are not sampled? Furthermore, EPA recommends that an additional well be installed approximately 100 to 200 feet east of monitoring well 12WW24 and the samples analyzed for VOCs (and water level gauged). This should aid in plume uncertainty and groundwater flow direction.	E	We propose re-evaluating the current sampling design plan at the Five-Year review.	

Final

Remedial Action Operation Summary Report, Years 3 and 4 Landfill 12 (LHAAP-12) Longhorn Army Ammunition Plant Karnack, Texas

Prepared for U.S. Army Corps of Engineers – Tulsa District
1645 South 101st East Avenue
Tulsa, Oklahoma 74128

Prepared by Shaw Environmental, Inc.
1401 Enclave Parkway, Suite 250
Houston, Texas 77077

Contract No. W912QR-04-D-0027, Task Order No. DS02
Project No. 117591
Rev 0
July 2012

Shaw® a world of Solutions™

Table of Contents

List of Tables ii
List of Figures ii
List of Appendices ii
Acronyms and Abbreviations iii

1.0 Introduction **1-1**
1.1 Project Objectives 1-1
1.2 Site Description 1-2
2.0 Site Activities at LHAAP-12 ..... **2-1**
2.1 Physical Inspection Summary 2-1
2.1.1 Cap Condition 2-1
2.1.2 Well Conditions 2-2
2.1.3 Signs and Fences 2-2
2.1.4 Land Use 2-2
2.2 Groundwater Monitoring and Analytical Results 2-2
2.2.1 Groundwater Gradient 2-2
2.2.2 Groundwater Sampling 2-3
3.0 Conclusions **3-1**
3.1 Physical Inspection 3-1
3.2 Groundwater Sampling 3-1
4.0 References **4-1**

List of Tables

Table 2-1 Groundwater Elevation Data, LHAAP-12
Table 2-2 Groundwater Sampling Results, Years 3 and 4, LHAAP-12

List of Figures

Figure 2-1 Groundwater Monitoring Well Locations, LHAAP-12, September 2008
Figure 2-2 Groundwater Gradient Map, LHAAP-12, 2010-2011
Figure 2-3 Groundwater Gradient Map, LHAAP-12, February 2003
Figure 2-4 Groundwater Gradient Map, LHAAP-12, February 2004
Figure 2-5 Groundwater Gradient Map, LHAAP-12, December 2004
Figure 2-6 TCE and cis,1,2-DCE Concentrations in 12WW24, LHAAP-12
Figure 2-7 VC Concentrations in 12WW24, LHAAP-12

List of Appendices

Appendix A Site Inspection Checklists
Appendix B Monitoring Well Sampling and Purging Forms
Appendix C Laboratory Analytical Results *(Provided on Compact Disk)*

Acronyms and Abbreviations

cis-1,2-DCE	cis-1,2-dichloroethene
IRA	interim remedial action
LHAAP	Longhorn Army Ammunition Plant
LUC	land use control
MARC	Multiple Award Remediation Contract
MCL	maximum contaminant level
MNA	monitored natural attenuation
RA(O)	Remedial Action (Operation)
RD	Remedial Design
ROD	Record of Decision
Shaw	Shaw Environmental, Inc.
TCE	trichloroethene
TO	Task Order
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound

Contract No. W912QR-04-D-0027, Task Order No. DS02• Final • Rev 0 • July 2012

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Tulsa District, contracted Shaw Environmental, Inc. (Shaw), to perform closure of multiple sites at the former Longhorn Army Ammunition Plant (also known as LHAAP), Karnack, Texas, under the Louisville District's Multiple Award Remediation Contract (MARC) No. W912QR-04-D-0027, Task Order (TO) No. DS02. As part of this contract, Shaw is performing site monitoring activities at the inactive landfill known as Landfill 12 (LHAAP-12) located at LHAAP as part of Remedial Action Operation [RA(O)]. A Record of Decision (ROD) was executed for LHAAP-12 in August, 2006 (U.S. Army, 2006). Groundwater monitoring and site inspection activities at LHAAP-12 are ongoing as described in the Final Remedial Design (RD) Addendum (Shaw, 2007). This report summarizes the results of site activities conducted in Years 3 and 4.

LHAAP is located in east-central Texas in the northeastern corner of Harrison County between State Highway 43 in Karnack, Texas, and the western shore of Caddo Lake. The nearest cities are Marshall, Texas, approximately 14 miles to the southwest, and Shreveport, Louisiana, approximately 40 miles to the east. Caddo Lake is a large freshwater lake that bounds LHAAP to the north and east. The eastern fence of the LHAAP installation is 3.5 miles from the Texas-Louisiana state border.

1.1 Project Objectives

The RA(O) at LHAAP-12 consists of two components: physical inspections and groundwater monitoring. Physical inspections are conducted annually to confirm compliance with land use control (LUC) objectives, which include the following:

- Ensure the integrity of the existing landfill cover
- Ensure no consumption of trichloroethene (TCE)-contaminated groundwater

The objectives of groundwater monitoring at LHAAP-12 are to:

- Ensure that TCE-contaminated groundwater does not impact nearby surface water
- Ensure that maximum contaminant levels (MCLs) are achieved for groundwater contaminants TCE, cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride (VC) and monitored natural attenuation (MNA) remains effective as a remedy

1.2 Site Description

LHAAP-12 was established in 1963 and was used for the disposal of industrial solid wastes, possibly containing small quantities of hazardous constituents generated at LHAAP. From 1978 until its closure in April 1994, the landfill was used continuously for the disposal of non-hazardous industrial solid waste. The construction of a landfill cap over the site was completed in 1998 as part of an Interim Remedial Action (IRA). The IRA is consistent with U.S. Environmental Protection Agency (USEPA) presumptive remedy guidance. The final remedy for LHAAP-12 is protective of human health and the environment and consists of LUCs in conjunction with MNA. LUCs include those set in place by the ROD (U.S. Army, 2006) for landfill cap maintenance and restriction of groundwater use. Although there is no current or anticipated future use of the groundwater as drinking water, MNA will return the contaminated groundwater at LHAAP-12 to its potential beneficial use as drinking water, wherever practicable.

2.0 SITE ACTIVITIES AT LHAAP-12

The LUCs for LHAAP-12 to be implemented by the U.S. Army or its representatives include:

- Maintenance of the integrity of the landfill cap, including, at a minimum, repairs to desiccation cracks, erosion, or gullying upon observance.
- Maintenance of a vegetative cover on the landfill cap including regular mowing.
- Maintenance of fence line and signage around landfill cap.
- Prohibition of any activities that would affect the integrity of the cap.
- Prohibition of any activities that would cause exposure to the contaminated groundwater.

In addition, there is a Notice of Land Use Controls that was filed with the Harrison County Clerk on June 13, 2007. It implemented a landfill restriction, residential restriction, and groundwater restriction at LHAAP-12.

The RD Addendum stipulated physical inspections to be conducted annually to ensure compliance with the above requirements and groundwater sampling to monitor the effectiveness of MNA in reducing contaminant concentrations over time. The effectiveness of MNA was evaluated in the Years 1 and 2 report (Shaw, 2011). Although groundwater monitoring is not a LUC, it was included as a component of the remedy for LHAAP-12 identified in the ROD (U.S. Army, 2006). This report summarizes the results of groundwater sampling and the landfill integrity inspections for years 3 and 4.

2.1 Physical Inspection Summary

Shaw conducted a physical inspection of the LHAAP-12 landfill cap on April 28, 2010, December 28, 2010, June 8, 2011, and January 24, 2012.

2.1.1 Cap Condition

According to the physical inspections, the cap appears to be in good condition. There were no signs of erosion or desiccation cracks, tree seedlings or saplings, bare spots or dead vegetation, burrowing animals or subsidence at or around the landfill cap. Periodic mowing of the cap is conducted during the growing season. The Landfill Inspection Checklists include detailed observations and notes made during the inspections and are provided in **Appendix A**.

Contract No. W912QR-04-D-0027, Task Order No. DS02• Final • Rev 0 • July 2012

2.1.2 Well Conditions

Monitoring wells were inspected during the physical inspections and during the twice yearly sampling events, and during mowing, weeding, and brush clearing activities. Damage or irregularities to the wellheads are reported at the time they are identified and recorded in field notes or on sampling forms, and are repaired when needed. For this reporting period, well head locks were in place and no damage or irregularities were reported. The wells were secure and in good condition. Notes regarding well head conditions are recorded on the Landfill Inspection Checklists and on Field Sampling Forms provided in **Appendix A** and **Appendix B**, respectively.

2.1.3 Signs and Fences

During the last two years of physical inspections, all signage and fencing were observed to be intact and in good condition. Any notes regarding signs and fencing is recorded on the Landfill Inspection Checklists provided in **Appendix A**.

2.1.4 Land Use

There was no evidence of trespassers or any changes to land use. The access road was observed to be in good condition. The site use is still consistent with that mandated by the Final ROD. In addition, no new wells have been installed at the site.

2.2 Groundwater Monitoring and Analytical Results

As described by the Groundwater Sampling Plan included in the RD Addendum (Shaw, 2007), groundwater sampling of monitoring wells, 12WW20, 12WW21, and 12WW24 and two compliance monitoring wells, 12WW22 and 12WW23, was conducted annually beginning in the third year of the RA(O) to document any migration of the groundwater contamination, to monitor natural attenuation, and to ensure that the target contaminants (TCE and metabolic daughter products) do not discharge to nearby surface water bodies. The locations of these monitoring wells are shown in **Figure 2-1**.

2.2.1 Groundwater Gradient

Groundwater elevation data collected during sampling events are shown in **Table 2-1**. Over the last four years, groundwater elevations have not changed significantly. A slightly depressed groundwater level was observed in year 3 when compared to data collected in all four years; however, year 4 groundwater levels are within a foot of the recorded depths for year 1.

The groundwater gradients contoured with 2010 and 2011 data trend towards the east-southeast (**Figure 2-2**) indicating a downgradient flow direction from 12WW24 to the east-southeast. Historical data from Spring 2003 and Spring and Winter 2004 (**Figures 2-3**, **2-4**,

and **2-5**) shows that the groundwater gradient can vary in this part of the site. Generally, the flow is to the east, but flow is also observed to occur in the northeast and southeast directions. Changes in the groundwater flow direction can occur both seasonally and in the longer-term.

Additionally, the monitoring network in 2003/2004 was significantly different than the current network. Compared to the 2003/2004 network, there are now fewer wells in the network (and therefore fewer data points), and the well locations are different. It is recommended to collect a set of water levels from the 8 existing wells.

2.2.2 Groundwater Sampling

Water samples were collected using the low-flow method in accordance with standard operating procedures (Shaw, 2006). The objective of this method was to collect representative samples of the groundwater in the formation adjacent to the well screen, eliminating the mixing of stagnant water above and below the well screen. The flow rate of water discharge from the downhole bladder pump is equal to or less than the flow rate of groundwater entering the well from the water-bearing zone. After water quality parameters stabilized and were within acceptable ranges, samples were collected at the same low flow rate.

Groundwater sampling and purging forms were completed for each monitoring well sampled and are included in **Appendix B**. The groundwater sampling and purging forms indicated that sampling for all wells during both events was conducted using the low-flow method. The total measured depth of the well, the depth to water, the interval the submersible low-flow pump was placed corresponding to well screen depth (to minimize stagnant casing water mixing and prevention of bottom hole sediment resuspension during purging and sampling), and confirmation that drawdown is within acceptable parameters was recorded on the forms. In addition, there was adequate recharge from each well for sampling to occur using the low-flow sampling method. The sampling forms also indicate the amount of fluid removed and rate of removal (flow rate) according to pressure and volume per well. The length of time required for the stabilization of all recorded parameters was also recorded on the forms before samples were collected at each well. All pertinent sampling activities are recorded on the field sampling forms which are attached as **Appendix B**. Field notes recording weather conditions and basic sampling protocols are also provided in **Appendix B**.

Annual samples were collected June 15, 2010, and June 7, 2011, from the five monitoring wells (12WW20, 12WW21, 12WW22, 12WW23, 12WW24) and were analyzed for volatile organic compounds (VOCs). Analytical results are shown in **Table 2-2**. As shown in **Figure 2-6** and **Figure 2-7**, TCE, cis-1,2-DCE, and VC concentrations have decreased in 12WW24. Laboratory analytical reports are attached in **Appendix C**.

Table 2-1
Groundwater Elevation Data, LHAAP-12

RA(O) Year	Well ID	Date of Sampling	Top of Casing Elevation in Feet	Depth to Water in Feet	Groundwater Elevation in Feet
	12WW20	5-Sep-07	199.15	19.52	179.63
1	12WW20	18-Dec-07	199.15	19.77	179.38
	12WW20	6-Mar-08	199.15	20.16	178.99
	12WW20	4-Jun-08	199.15	19.42	179.73
	12WW20	8-Sep-08	199.15	20.82	178.33
2	12WW20	4-Feb-09	199.15	20.95	178.20
	12WW20	29-Apr-09	199.15	19.81	179.34
	12WW20	15-Jul-09	199.15	20.22	178.93
3	12WW20	15-Jun-10	199.15	17.98	181.17
4	12WW20	7-Jun-11	199.15	19.78	179.37
	12WW21	5-Sep-07	202.07	23.25	178.82
1	12WW21	18-Dec-07	202.07	24.30	177.77
	12WW21	6-Mar-08	202.07	24.19	177.88
	12WW21	4-Jun-08	202.07	23.45	178.62
	12WW21	11-Sep-08	202.07	24.38	177.69
2	12WW21	4-Feb-09	202.07	24.68	177.39
	12WW21	29-Apr-09	202.07	23.95	178.12
	12WW21	15-Jul-09	202.07	24.00	178.07
3	12WW21	15-Jun-10	202.07	21.85	180.22
4	12WW21	7-Jun-11	202.07	23.35	178.72
	12WW22	4-Sep-07	190.20	9.37	180.83
1	12WW22	18-Dec-07	190.20	11.65	178.55
	12WW22	5-Mar-08	190.20	9.81	180.39
	12WW22	3-Jun-08	190.20	8.43	181.77
	12WW22	8-Sep-08	190.20	11.11	179.09
2	12WW22	4-Feb-09	190.20	10.88	179.32
	12WW22	29-Apr-09	190.20	8.90	181.30
	12WW22	15-Jul-09	190.20	10.05	180.15
3	12WW22	15-Jun-10	190.20	7.93	182.27
4	12WW22	7-Jun-11	190.20	9.72	180.48
	12WW23	4-Sep-07	196.97	19.73	177.24
1	12WW23	19-Dec-07	196.97	20.15	176.82
	12WW23	5-Mar-08	196.97	20.20	176.77
	12WW23	3-Jun-08	196.97	20.05	176.92
	12WW23	11-Sep-08	196.97	20.40	176.57
2	12WW23	4-Feb-09	196.97	20.76	176.21
	12WW23	29-Apr-09	196.97	19.58	177.39
	12WW23	15-Jul-09	196.97	20.41	176.56
3	12WW23	16-Jun-10	196.97	18.28	178.69
4	12WW23	7-Jun-11	196.97	19.40	177.57
	12WW24	5-Sep-07	203.17	23.91	179.26
1	12WW24	19-Dec-07	203.17	24.92	178.25
	12WW24	5-Mar-08	203.17	24.90	178.27
	12WW24	4-Jun-08	203.17	24.23	178.94
	12WW24	11-Sep-08	203.17	25.03	178.14
2	12WW24	4-Feb-09	203.17	25.37	177.80
	12WW24	29-Apr-09	203.17	24.66	178.51
	12WW24	14-Jul-09	203.17	24.50	178.67
3	12WW24	16-Jun-10	203.17	22.50	180.67
4	12WW24	7-Jun-11	203.17	24.15	179.02

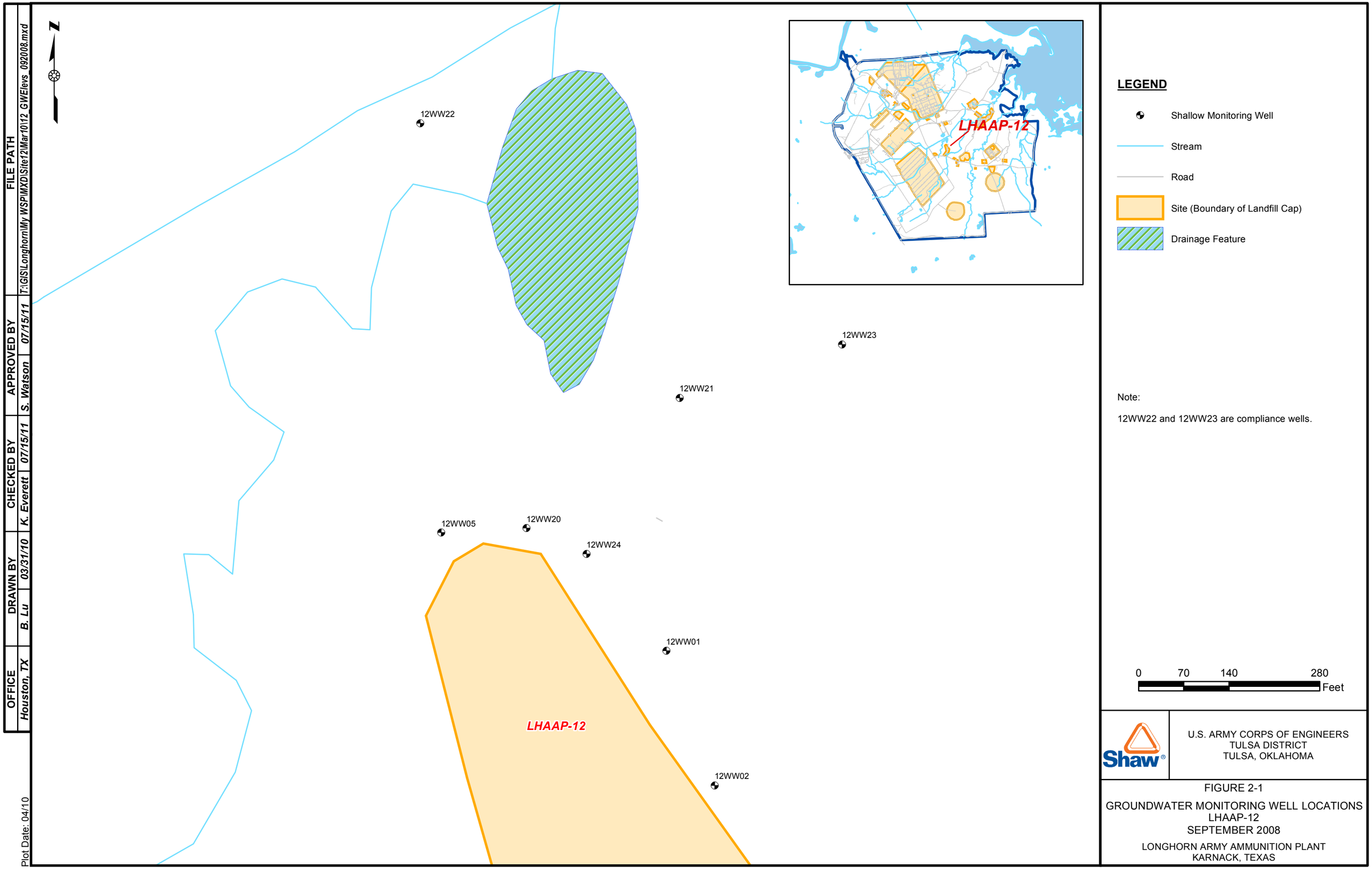
Table 2-2
Groundwater Sampling Results, Years 3 and 4, LHAAP-12

		Location Code		12WW20		12WW20		12WW21		12WW21		12WW22		12WW22		12WW22		12WW22		12WW23		12WW23		12WW24		12WW24	
		Sample No		12WW20-101506		12MW20-110607		12WW21-101506		12MW21-110607		12WW22-101506		12WW22-101506-FD		12MW22-110607		12MW22-110607-FD		12WW23-101606		12MW23-110607		12WW24-101606		12MW24-110607	
		Sample Date		6/15/2010		6/7/2011		6/15/2010		6/7/2011		6/15/2010		6/15/2010		6/7/2011		6/7/2011		6/16/2010		6/7/2011		6/16/2010		6/7/2011	
		Sample Purpose		REG		REG		REG		REG		REG		REG		REG		FD		REG		REG		REG		REG	
Test Group	Parameter	Units	MCL	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual
VOLATILES	1,1,1,2-Tetrachloroethane	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	1,1,1-Trichloroethane	µg/L	200	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	1,1,2,2-Tetrachloroethane	µg/L		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
VOLATILES	1,1,2-Trichloroethane	µg/L	5	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	1,1-Dichloroethane	µg/L		0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.442	J	0.303	J
VOLATILES	1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.661	J	0.5	U
VOLATILES	1,1-Dichloropropene	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	1,2,3-Trichlorobenzene	µg/L		0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U
VOLATILES	1,2,3-Trichloropropane	µg/L		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	1,2,4-Trichlorobenzene	µg/L	70	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
VOLATILES	1,2,4-Trimethylbenzene	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	1,2-Dibromo-3-chloropropane	µg/L	0.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
VOLATILES	1,2-Dibromoethane	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	1,2-Dichlorobenzene	µg/L	600	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U
VOLATILES	1,2-Dichloroethane	µg/L	5	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	1,2-Dichloropropane	µg/L	5	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	1,3,5-Trimethylbenzene	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	1,3-Dichlorobenzene	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	1,3-Dichloropropane	µg/L		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
VOLATILES	1,4-Dichlorobenzene	µg/L	75	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	2.33		1.46	
VOLATILES	2,2-Dichloropropane	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	2-Butanone	µg/L		2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
VOLATILES	2-Chloroethyl vinyl ether	µg/L		2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
VOLATILES	2-Chlorotoluene	µg/L		0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U
VOLATILES	2-Hexanone	µg/L		2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
VOLATILES	4-Chlorotoluene	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	Acetone	µg/L		2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	7	J	2.5	U	16.9		2.5	U
VOLATILES	Benzene	µg/L	5	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.305	J	0.229	J
VOLATILES	Bromobenzene	µg/L		0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U
VOLATILES	Bromochloromethane	µg/L		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
VOLATILES	Bromodichloromethane	µg/L	100	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	Bromoform	µg/L	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	Bromomethane	µg/L		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	Carbon disulfide	µg/L		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	Carbon tetrachloride	µg/L	5	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	Chlorobenzene	µg/L	100	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	4.82		3.24	
VOLATILES	Chloroethane	µg/L		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	Chloroform	µg/L	100	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U
VOLATILES	Chloromethane	µg/L		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	cis-1,2-Dichloroethene	µg/L	70	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	27.1		25.3	
VOLATILES	cis-1,3-Dichloropropene	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	Dibromochloromethane	µg/L	100	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	Dibromomethane	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	Dichlorodifluoromethane	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	Ethylbenzene	µg/L	700	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	Hexachlorobutadiene	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	Isopropylbenzene	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	m,p-Xylenes	µg/L		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	Methyl isobutyl ketone	µg/L		2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
VOLATILES	Methylene chloride	µg/L	5	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	Naphthalene	µg/L		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
VOLATILES	n-Butylbenzene	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	n-Propylbenzene	µg/L		0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U

Table 2-2
Groundwater Sampling Results, Years 3 and 4, LHAAP-12

				Location Code	12WW20		12WW20		12WW21		12WW21		12WW22		12WW22		12WW22		12WW22		12WW23		12WW23		12WW24		12WW24	
				Sample No	12WW20-101506		12MW20-110607		12WW21-101506		12MW21-110607		12WW22-101506		12WW22-101506-FD		12MW22-110607		12MW22-110607-FD		12WW23-101606		12MW23-110607		12WW24-101606		12MW24-110607	
				Sample Date	6/15/2010		6/7/2011		6/15/2010		6/7/2011		6/15/2010		6/15/2010		6/7/2011		6/7/2011		6/16/2010		6/7/2011		6/16/2010		6/7/2011	
				Sample Purpose	REG		REG		REG		REG		REG		REG		REG		FD		REG		REG		REG		REG	
Test Group	Parameter	Units	MCL	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual	Result	ValQual
VOLATILES	p-Isopropyltoluene	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	sec-Butylbenzene	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	Styrene	µg/L	100	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U	0.125	U
VOLATILES	tert-Butylbenzene	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	Tetrachloroethene	µg/L	5	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.815	J	0.577	J
VOLATILES	Toluene	µg/L	1000	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	trans-1,2-Dichloroethene	µg/L	100	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.684	J
VOLATILES	trans-1,3-Dichloropropene	µg/L		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VOLATILES	Trichloroethene	µg/L	5	0.353	J	0.263	J	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	145		147	
VOLATILES	Trichlorofluoromethane	µg/L		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
VOLATILES	Vinyl acetate	µg/L		2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
VOLATILES	Vinyl chloride	µg/L	2	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.577	J	0.358	J

Notes:
µg/L - micrograms per liter
J - analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed
MCL - maximum concentration level
U - not detected



FILE PATH	
T:\GIS\Longhorn\My WSP\MXD\Site12\Mar10\12_GWElevs_092008.mxd	

OFFICE	DRAWN BY		CHECKED BY	
Houston, TX	B. Lu	03/31/10	K. Everett	07/15/11

	APPROVED BY	
	S. Watson	07/15/11

Plot Date: 04/10

LEGEND

- Shallow Monitoring Well
- Stream
- Road
- Site (Boundary of Landfill Cap)
- Drainage Feature

Note:

12WW22 and 12WW23 are compliance wells.

0 70 140 280
Feet

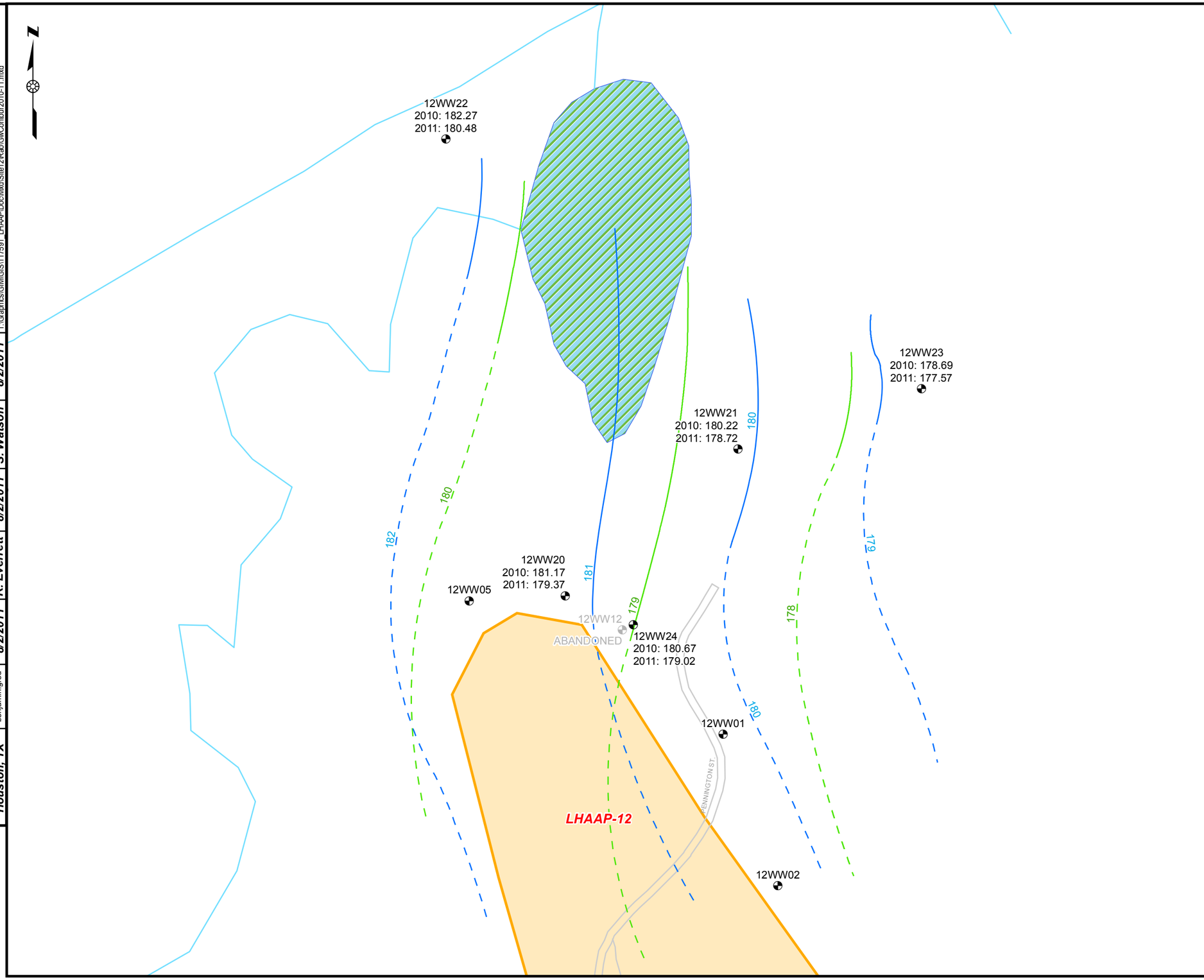
U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-1

GROUNDWATER MONITORING WELL LOCATIONS
LHAAP-12
SEPTEMBER 2008

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00115879



LEGEND

- Shallow Monitoring Well
- 2010 Groundwater Gradient Contour *(Inferred were dashed)*
- 2011 Groundwater Gradient Contour *(Inferred were dashed)*
- Stream
- Road
- Site (Boundary of Landfill Cap)
- Drainage Feature

Note:

12WW22 and 12WW23 are compliance wells.
Inferred contours based on historical data trends.

0 75 150 300 Feet

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
Houston, TX	benjamin.grod 8/2/2011	K. Everrett 8/2/2011	S. Watson 8/2/2011	T:\Graphics\GIM\GIS\117591_LHAAP\Doc\Mxd\Site12\Rad\GwContour2010-11.mxd

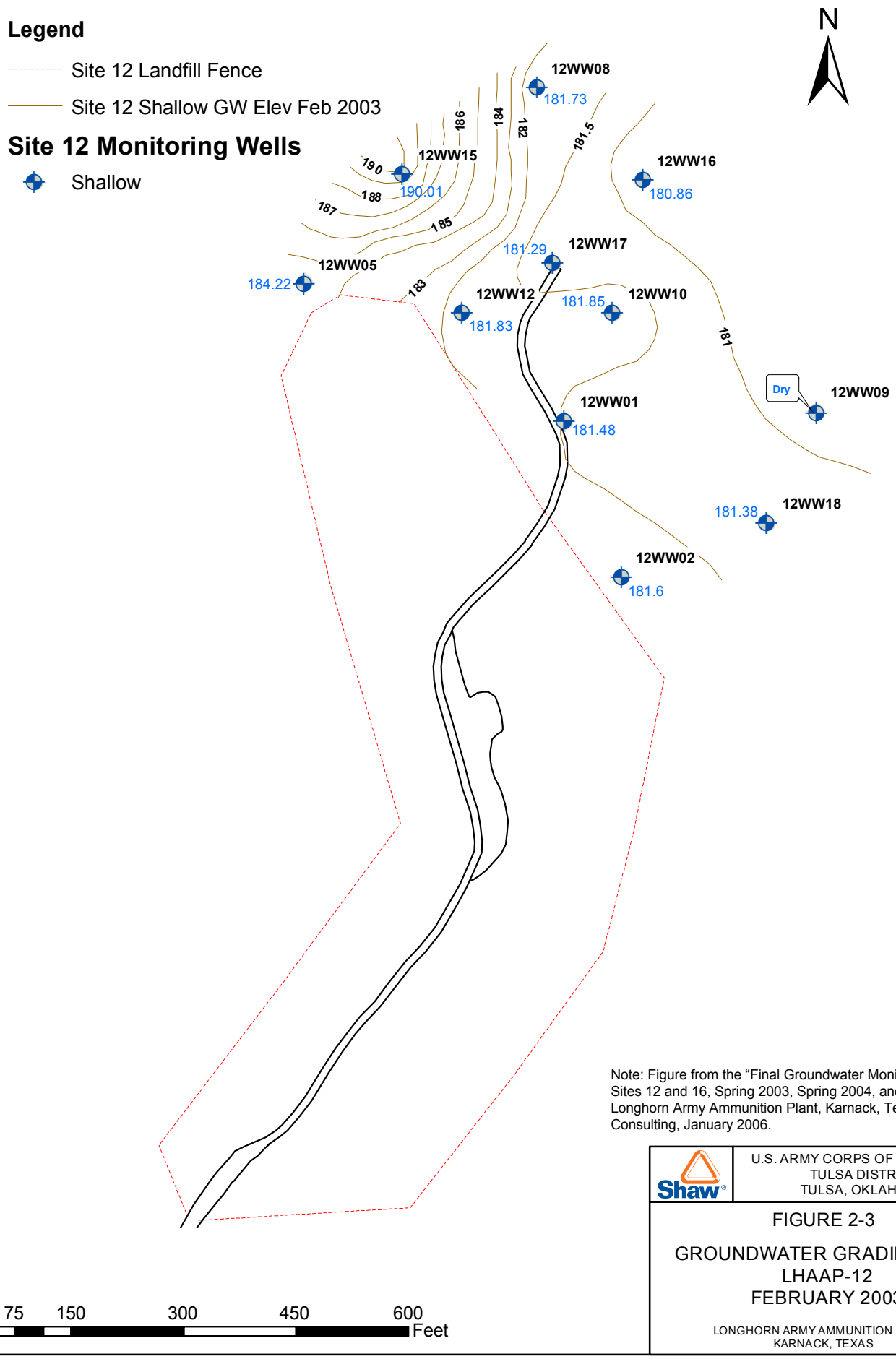
U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-2

GROUNDWATER GRADIENT MAP
LHAAP-12
2010-2011

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

T:\Graphics\GIMG\S\117591_LHAAP\Doc\Mxd\Site12\Rao\GW_Elevations.mxd



Note: Figure from the "Final Groundwater Monitoring Report Sites 12 and 16, Spring 2003, Spring 2004, and Winter 2004, Longhorn Army Ammunition Plant, Karnack, Texas," ALL Consulting, January 2006.

Shaw

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

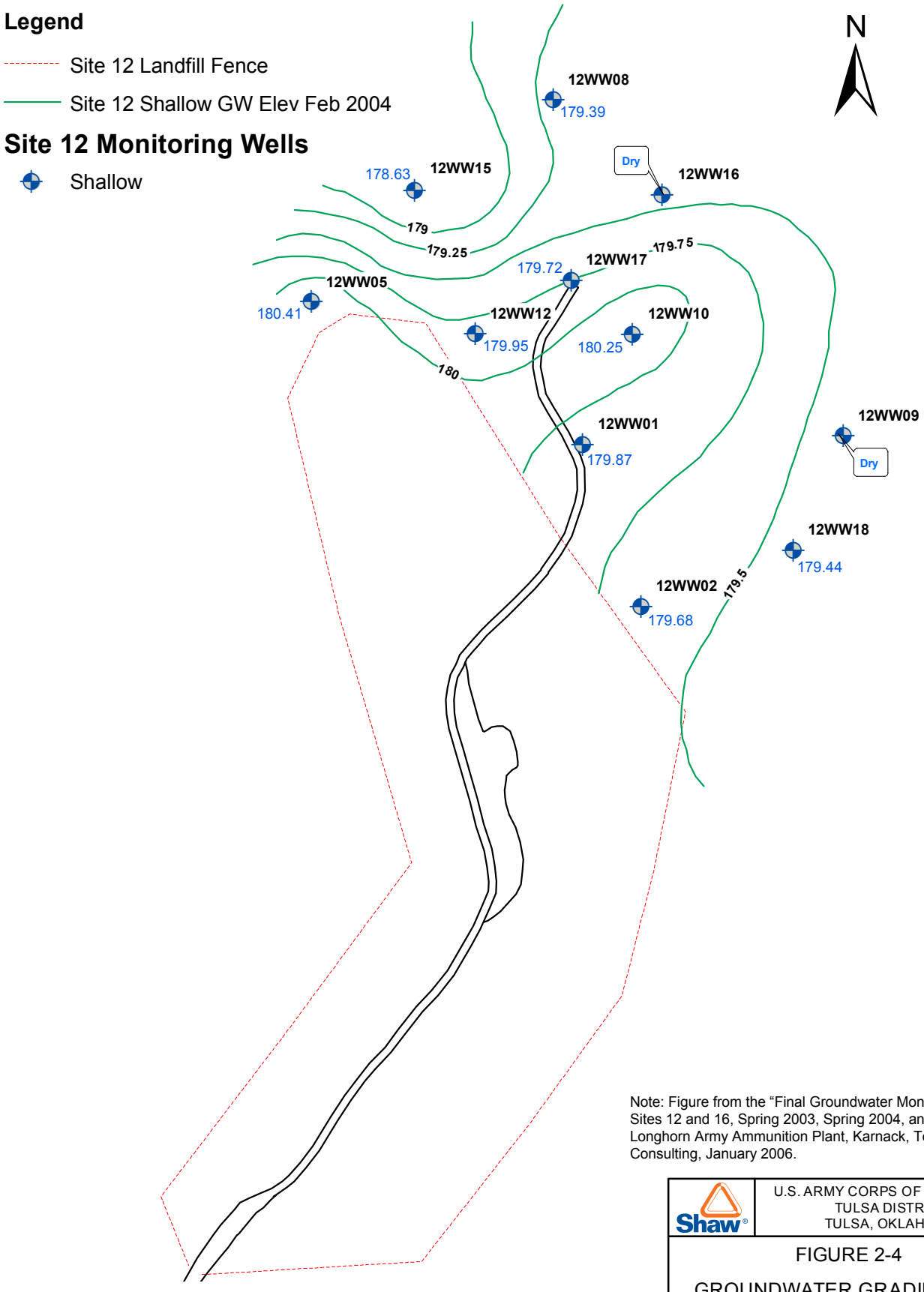
FIGURE 2-3

GROUNDWATER GRADIENT MAP
LHAAP-12
FEBRUARY 2003

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

MRM - HOU - 3/15/2012

T:\Graphics\GIMG\S\117591_LHAAP\Doc\Mxd\Site12\Rao\GW_Elevations.mxd



Note: Figure from the "Final Groundwater Monitoring Report Sites 12 and 16, Spring 2003, Spring 2004, and Winter 2004, Longhorn Army Ammunition Plant, Karnack, Texas," ALL Consulting, January 2006.

Shaw

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

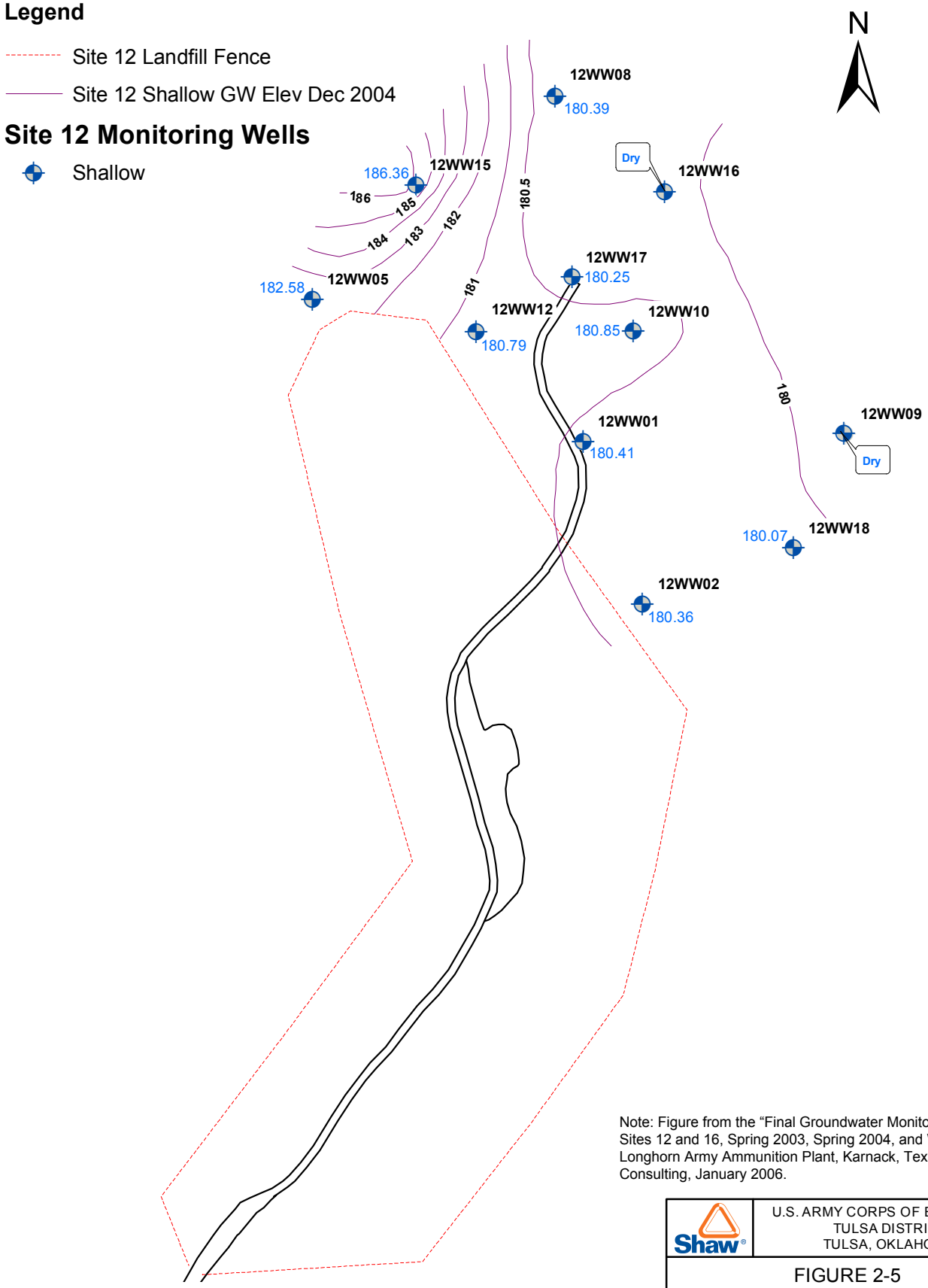
FIGURE 2-4

GROUNDWATER GRADIENT MAP
LHAAP-12
FEBRUARY 2004

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

MRM - HOU - 3/15/2012

T:\Graphics\GIMG\S\117591_LHAAP\Doc\Mxd\Site12\Rao\GW_Elevations.mxd



Note: Figure from the "Final Groundwater Monitoring Report Sites 12 and 16, Spring 2003, Spring 2004, and Winter 2004, Longhorn Army Ammunition Plant, Karnack, Texas," ALL Consulting, January 2006.

Shaw

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-5

GROUNDWATER GRADIENT MAP
LHAAP-12
DECEMBER 2004

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

MRM - HOU - 3/15/2012

Figure 2-6
TCE and cis-1, 2-DCE Concentrations in 12WW24
LHAAP-12

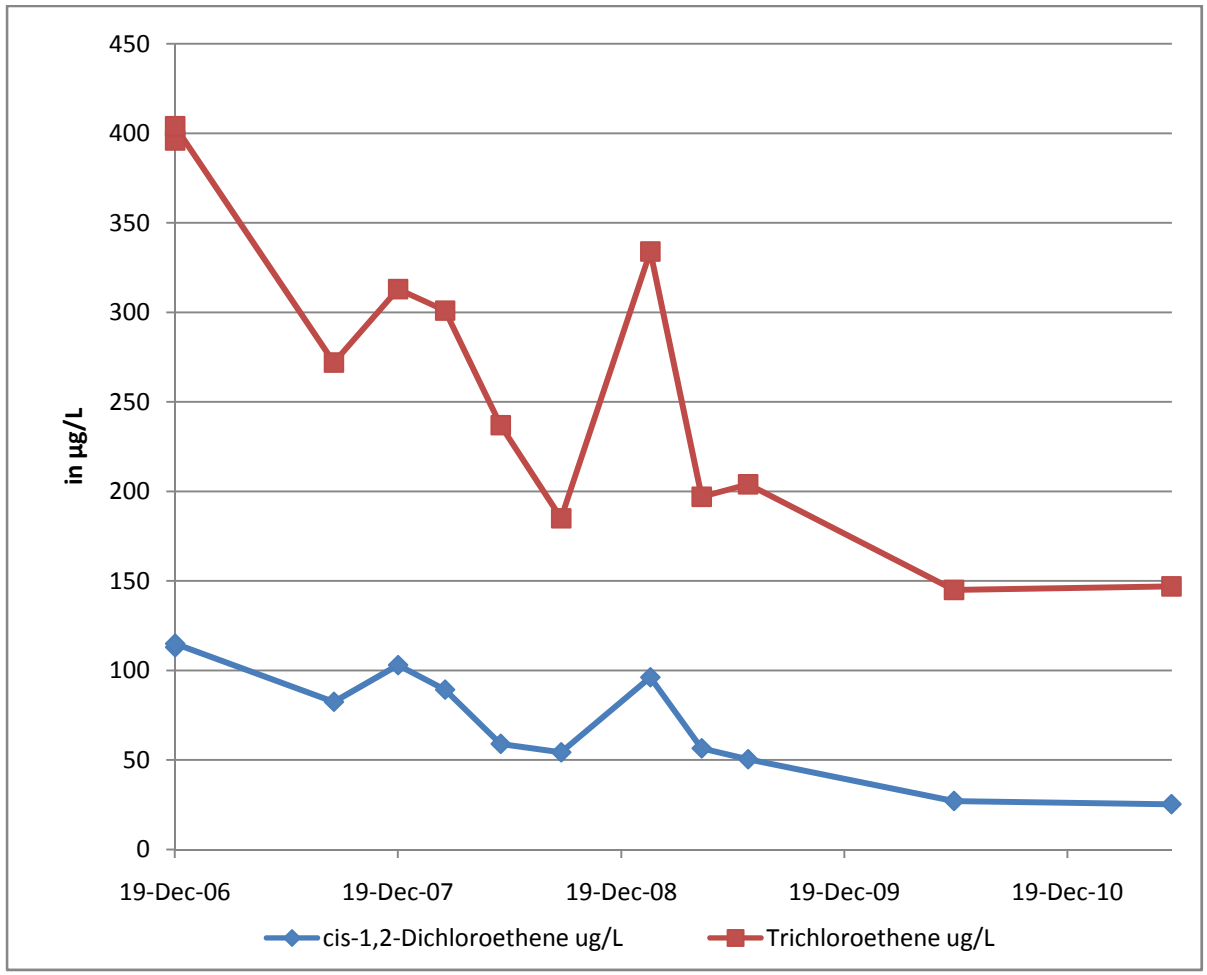
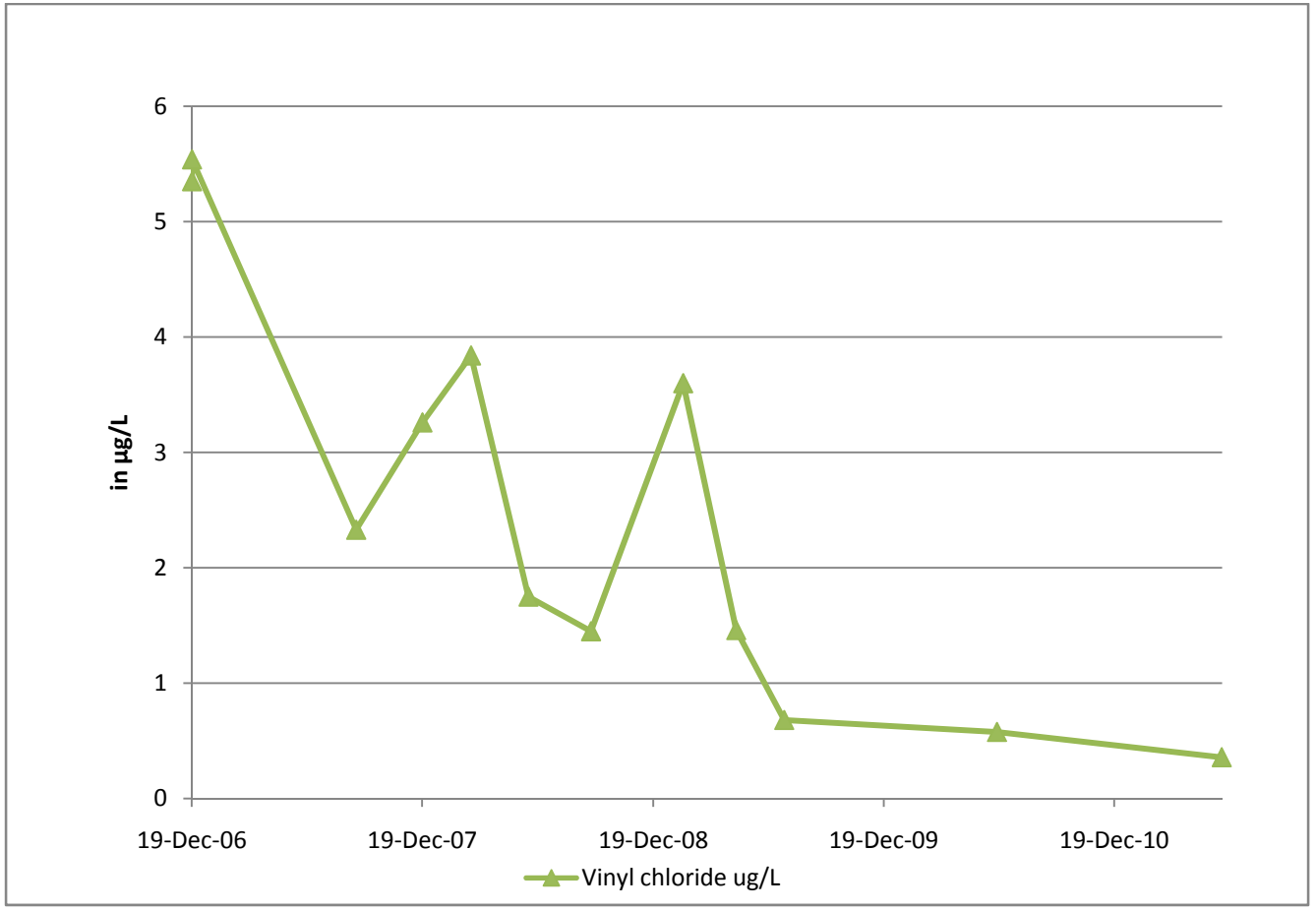


Figure 2-7
VC Concentrations in 12WW24
LHAAP-12



3.0 CONCLUSIONS

In conclusion, physical inspections and groundwater monitoring are conducted at LHAAP-12 in compliance with the ROD for LHAAP-12 (U.S. Army, 2006). Frequency and schedules of these events were established in the ROD and the RD Addendum for LHAAP-12 (Shaw, 2007).

3.1 Physical Inspection

Since the last report, two years of periodic inspections of LHAAP-12 occurred. Inspections indicated that no repairs are needed at this time to maintain the integrity of the cap. No desiccation cracks, gullying, or erosional effects have been observed and no seedlings were observed growing on the landfill cover. Periodic mowing is conducted during the growing season. Cap integrity remains intact as observed during these activities as well as noted during the annual physical inspections.

General monitoring of well conditions were inspected and wells are found to be in good condition. Wells are locked and no repairs are needed. No new water wells have been installed at LHAAP-12; fencing and signage at LHAAP-12 remain intact and legible, respectively. No change in land or groundwater use has occurred at the site and the use of the site is still consistent with that mandated by the ROD (U.S. Army, 2006). Land use controls were verified.

3.2 Groundwater Sampling

In accordance with the sampling schedule from Appendix A from the Groundwater Sampling Plan, found in the RD Addendum for LHAAP-12 (Shaw, 2007), annual sampling of 5 wells was implemented beginning in Year 3 and will continue until the next 5-year review. Monitoring wells 12WW20, 12WW21, 12WW22, 12WW23, and 12WW24 were sampled for VOCs. Annual results for Years 3 and 4 are found in this report. The only VOC (TCE) above its MCL is observed in monitoring well 12WW24.

Sampling results indicate that the size of the plume is stable or shrinking around monitoring well 12WW24, and that contaminants have not impacted nearby surface water. VOC concentrations in 12WW24 have shown a decreasing trend in concentrations over the past several years and other monitoring wells at LHAAP-12 are below laboratory detection limits or below MCL concentrations. Based on groundwater flow directions comparing historical and current trends, no additional wells are recommended to be installed at this time. However, it is suggested that all 8 wells are gauged during future scheduled sampling activities. In addition, all data will be evaluated at that time for adding or installing additional wells to the monitoring network.

4.0 REFERENCES

Shaw Environmental & Infrastructure, Inc. (Shaw), 2006, *Final Installation-Wide Work Plan*, Longhorn Army Ammunition Plant, Karnack, Texas, January.

Shaw, 2007, *Final Remedial Design Addendum Landfill 12 (LHAAP-12)*, Longhorn Army Ammunition Plant, Karnack, Texas, June.

Shaw, 2011, *Draft Annual Remedial Action Operation Report, Years 1 and 2, Landfill 12 (LHAAP-12)*, Longhorn Army Ammunition Plant, Karnack, Texas, June.

U.S. Army, 2006, *Final Record of Decision, Landfill 12 (LHAAP-12)*, Longhorn Army Ammunition Plant, Karnack, Texas, August.

U.S. Army Corps of Engineers (USACE), 2007, *Groundwater Report Sites 12 and 16*, January.

Appendix A

Site Inspection Checklists

LUC and Landfill Cap Inspection and Maintenance Log – LHAAP-12

Inspection/maintenance activities to be conducted yearly at a minimum

Date	Inspected by	Protect landfill cover integrity				Prevent human exposure to groundwater	Action or repairs?	Repairs / actions taken
		Vegetative cover maintained (e.g. grass mowed at least annually)	Fence and signage maintained	Observance of landfill cover degradation (e.g. dessication cracks, erosion, or gullying)	Compliance verified for no digging or disturbance of landfill cover or contents	Verified no withdrawal or use of ground-water (other than environ-mental testing		
12/5/2006	Van Vangala	Yes	Yes	Slight erosion	Yes	Yes	No	None
2/2/2007	Van Vangala	Yes	Yes	Slight erosion	Yes	Yes	No	None
6/13/2007	Van Vangala	Yes	Yes	Slight erosion	Yes	Yes	No	None
6/23/2008	Van Vangala	Yes	Yes	Slight erosion	Presence of seedlings	Yes	Yes	Eradicate seedlings, monitor erosion
10/14/2009	Van Vangala	Yes	Yes	Slight erosion	Yes	Yes	Yes	Monitor erosion
4/28/2010	Van Vangala	Yes	Yes	None	Yes	Yes	No	None
12/28/2010	Van Vangala	Yes	Yes	None	Yes	Yes	No	None
6/8/2011	Van Vangala	Yes	Yes	None	Yes	Yes	No	None
1/24/2012	Van Vangala	Yes	Yes	None	Yes	Yes	No	None

Landfill Inspection Checklist
Landfill 12
LHAAP, Texas

Sl. No.	Item	Findings/Existing Conditions	Action Needed?	Action Performed (Duration)
1	Condition of Access Road	Satisfactory	No	
2	Site Fencing and Signage	Satisfactory		
3	Evidence of Trespassers?	None		
4	Inspection of Vegetative Landfill Cover	Good		
5	Inspection of Erosion Control Measures	Good		
6	Inspection of Drainage Culverts and Pipes	Not Applicable	NA	
7	Drainage Channel/Ditches	"	NA	
8	Erosion Damage	None	No	
9	Status of Cover Vegetation? Bare Spots, Dead Grass, etc.	None		
10	Presence of Tree Seedlings, Kudzu, etc.?	None		
11	Height of Vegetation	4 to 6 inches		
12	Evidence of Burrowing Animals?	No		
13	Excessive Cracking or Desiccation?	None		
14	Any Evidence of Settlement/Subsidence?	No		
15	Inspect Monitoring Wells Surrounding Site	Good		
16	Note Any Changes to Land Use	No		

Landfill Inspected: 12
Weather Conditions: Sunny & 72°
Signature: Van Vangala

Date of Inspection: 4/28/10
Name/Organization: Shaw E&I

Landfill Inspection Checklist
Landfill 12
LHAAP, Texas

Sl. No.	Item	Findings/Existing Conditions	Action Needed?	Action Performed (Duration)
1	Condition of Access Road	Good	NO	
2	Site Fencing and Signage	Good		
3	Evidence of Trespassers?	NO		
4	Inspection of Vegetative Landfill Cover	Dormant		
5	Inspection of Erosion Control Measures	No		
6	Inspection of Drainage Culverts and Pipes	NA	NA	
7	Drainage Channel/Ditches	NA	NA	
8	Erosion Damage	No	NO	
9	Status of Cover Vegetation? Bare Spots, Dead Grass, etc.	Dormant		
10	Presence of Tree Seedlings, Kudzu, etc.?	NO		
11	Height of Vegetation	Dormant		
12	Evidence of Burrowing Animals?	NO		
13	Excessive Cracking or Desiccation?	NO		
14	Any Evidence of Settlement/Subsidence?	No		
15	Inspect Monitoring Wells Surrounding Site	Good		
16	Note Any Changes to Land Use	NO		

Landfill Inspected: 12
Weather Conditions:
Signature: Van Vangala

Date of Inspection: 12/28/10
Name/Organization: Shaw E&I

Landfill Inspection Checklist
Landfill 12
LHAAP, Texas

Sl. No.	Item	Findings/Existing Conditions	Action Needed?	Action Performed (Duration)
1	Condition of Access Road	Good	No	
2	Site Fencing and Signage	Good	NO	
3	Evidence of Trespassers?	None	NO	
4	Inspection of Vegetative Landfill Cover	Good	NO	
5	Inspection of Erosion Control Measures	Good	NO	
6	Inspection of Drainage Culverts and Pipes	Not Applicable	NA	
7	Drainage Channel/Ditches	"	NA	
8	Erosion Damage	None	NO	
9	Status of Cover Vegetation? Bare Spots, Dead Grass, etc.	Fair to Good	NO	
10	Presence of Tree Seedlings, Kudzu, etc.?	None	NO	
11	Height of Vegetation	Most of the areas 4 - 6 inches Tall w.a. Grass upto 36 inches	NO	
12	Evidence of Burrowing Animals?	None	NO	
13	Excessive Cracking or Desiccation?	None Noted	NO	
14	Any Evidence of Settlement/Subsidence?	None noted	NO	
15	Inspect Monitoring Wells Surrounding Site	Good	No	
16	Note Any Changes to Land Use	Good	No	

Landfill Inspected: 12
Weather Conditions:
Signature: Van Vangala

Date of Inspection: 6-8-11
Name/Organization: Shaw E&I

Landfill Inspection Checklist
Landfill 12
LHAAP, Texas

Sl. No.	Item	Findings/Existing Conditions	Action Needed?	Action Performed (Duration)
1	Condition of Access Road	Good		
2	Site Fencing and Signage	Satisfactory		
3	Evidence of Trespassers?	No		
4	Inspection of Vegetative Landfill Cover	Dormant		
5	Inspection of Erosion Control Measures	Satisfactory		
6	Inspection of Drainage Culverts and Pipes	NA		
7	Drainage Channel/Ditches	NA		
8	Erosion Damage	None		
9	Status of Cover Vegetation? Bare Spots, Dead Grass, etc.	Grass in Dormant		
10	Presence of Tree Seedlings, Kudzu, etc.?	NO		
11	Height of Vegetation	Doramant		
12	Evidence of Burrowing Animals?	NO		
13	Excessive Cracking or Desiccation?	NO		
14	Any Evidence of Settlement/Subsidence?	NO		
15	Inspect Monitoring Wells Surrounding Site	Satisfactory		
16	Note Any Changes to Land Use	None		

Landfill Inspected: 12
Weather Conditions:
Signature: Van Vangala

Date of Inspection: 1/24/12
Name/Organization: Shaw E&I

Appendix B

Monitoring Well Sampling and Purging Forms

00115894

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 11759.0008B105
Weather: CLEAR 80 °F

Sampling location ID: SITE 12
Sample ID: 12WW20-101506
Collection Time/Date: 8:50 6/15/10

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 39.00
Initial (pre-installation) DTW/time: 17.98
Final (after pump priming) DTW/time: 17.95
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 175
Discharge tube length (ft.): NA

Installation date/beginning time: 6/15/10 0750
Installation date/completion time: 6/15/10 8:00
Screen Interval (ft. BTOC): 29.00 to 39.00
Pump intake depth (ft BTOC): 34.00
Post-installation DTW/time: 17.90
Max. sustainable pump rate (mL/min): 100
Appearance of product: CLEAR
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20	22							
Refill Setting	17	19							
Discharge Setting	20	22							
Flow rate (mL/min)	75	100							

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 6/15/10 8:00
Initial (pre-purging) DTW (ft. BTOC): 17.95
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 6/15/10 8:50
Final (post-purging) DTW (ft. BTOC): 18.02
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	22	22	22	22	22	22	22	22	22
Refill Setting	19	19	19	19	19	19	19	19	19
Discharge Setting	22	22	22	22	22	22	22	22	22
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:05	17.98	100	.5	20.13	1.557	6.81	196.3	5.11	2.2
8:10	18.00	100	1.0	19.43	1.545	6.26	221.1	4.26	1.9
8:15	18.01	100	1.5	19.12	1.535	5.88	247.8	3.91	2.0
8:20	18.02	100	2.0	19.13	1.535	5.82	255.5	3.81	1.8
8:25	18.02	100	2.5	19.10	1.534	5.76	262.9	3.70	1.6
8:30	18.02	100	3.0	19.09	1.535	5.72	270.9	3.47	1.7
8:35	18.02	100	3.5	19.10	1.534	5.69	279.1	3.34	1.5
8:40	18.02	100	4.0	19.09	1.534	5.68	281.1	3.30	1.9

00115895

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:45	18.02	100	4.5	19.10	1.534	5.68	286.0	3.29	1.9
8:50	18.02	100	5.0	19.10	1.534	5.68	287.1	3.29	1.7

Sampling

Sampling beginning time: 8:50 Sampling completion time: 8:51

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: ~~[illegible]~~ 12WW20-001506 Sample collection date/time: 6/15/10 8:50

Duplicate sample collected (Y/N): N Duplicate sample ID:

Split sample collected (Y/N): N Split sample ID:

COC No(s): 5874

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOCs		2-40 mL glass			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00115896

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008105
Weather: Clear 85°F

Sampling location ID: SITE12
Sample ID: 12WW21-101506
Collection Time/Date: 10:00 6/15/10

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 41.60
Initial (pre-installation) DTW/time: 21.85
Final (after pump priming) DTW/time: 21.81
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): NA

Installation date/beginning time: 6/15/10 9:00
Installation date/completion time: 6/15/10 9:10
Screen Interval (ft. BTOC): 31.60 to 41.60
Pump intake depth (ft BTOC): 36.50
Post-installation DTW/time: 21.76
Max. sustainable pump rate (mL/min): 100
Appearance of product: CLEAR
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	23								
Refill Setting	20								
Discharge Setting	23								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 6/15/10 9:10
Initial (pre-purging) DTW (ft. BTOC): 21.81
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 6/15/10 10:00
Final (post-purging) DTW (ft. BTOC): 21.90
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	23	23	23	23	23	23	23	23	23
Refill Setting	20	20	20	20	20	20	20	20	20
Discharge Setting	23	23	23	23	23	23	23	23	23
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:15	21.83	100	.5	20.72	0.036	6.61	250.0	8.79	9.2
9:20	21.85	100	1.0	18.45	5.180	6.21	230.7	1.81	13.6
9:25	21.87	100	1.5	18.31	5.309	6.17	224.8	1.06	14.7
9:30	21.88	100	2.0	18.27	5.325	6.18	222.7	1.03	12.5
9:35	21.89	100	2.5	18.25	5.336	6.19	220.4	0.94	8.2
9:40	21.90	100	3.0	18.20	5.350	6.19	218.8	0.91	6.2
9:45	21.90	100	3.5	18.19	5.353	6.20	218.4	0.90	5.0
9:50	21.90	100	4.0	18.19	5.364	6.20	218.2	0.88	4.3

00115897

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:55	21.90	100	4.5	18.21	5.365	6.20	217.7	0.87	3.5
10:00	21.90	100	5.0	18.21	5.365	6.20	217.0	0.86	2.8

Sampling

Sampling beginning time: 10:00 Sampling completion time: 10:01

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 12wwz1-101506 Sample collection date/time: 6/15/10 10:00

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s): 5875

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		2-40 ml glass			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00115898

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008105
Weather: CLEAR 90°F

Sampling location ID: SITE 12
Sample ID: 12WW22-101506
Collection Time/Date: 11:05 6/15/10

Pump Installation

Pump installation crew: BEESINGER
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 38.43
Initial (pre-installation) DTW/time: 7.93
Final (after pump priming) DTW/time: 7.90
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 175
Discharge tube length (ft.): NA

Installation date/beginning time: 6/15/10 10:15
Installation date/completion time: 6/15/10 10:25
Screen Interval (ft. BTOC): 28.43 to 38.43
Pump intake depth (ft BTOC): 33.50
Post-installation DTW/time: 7.85
Max. sustainable pump rate (mL/min): 100
Appearance of product: CLEAR
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	25	27							
Refill Setting	22	24							
Discharge Setting	25	27							
Flow rate (mL/min)	~~175~~	100							

Purging

Purging/sampling crew: BEESINGER
Purge date/beginning time: 6/15/10 10:25
Initial (pre-purging) DTW (ft. BTOC): 7.90
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 6/15/10 11:05
Final (post-purging) DTW (ft. BTOC): 7.95
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	27	27	27	27	27	27	27	27	27
Refill Setting	24	24	24	24	24	24	24	24	24
Discharge Setting	27	27	27	27	27	27	27	27	27
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:30	7.92	100	.5	18.30	1.580	7.20	130.4	2.19	2.9
10:35	7.93	100	1.0	18.03	1.532	7.21	119.4	1.12	1.5
10:40	7.94	100	1.5	17.90	1.521	7.23	111.9	0.79	1.6
10:45	7.95	100	2.0	17.89	1.518	7.24	108.9	0.74	1.7
10:50	7.95	100	2.5	17.84	1.516	7.24	106.5	0.70	1.3
10:55	7.95	100	3.0	17.81	1.514	7.24	106.6	0.66	1.3
11:00	7.95	100	3.5	17.87	1.512	7.25	104.4	0.64	1.8
11:05	7.95	100	4.0	17.86	1.510	7.25	104.1	0.63	2.0

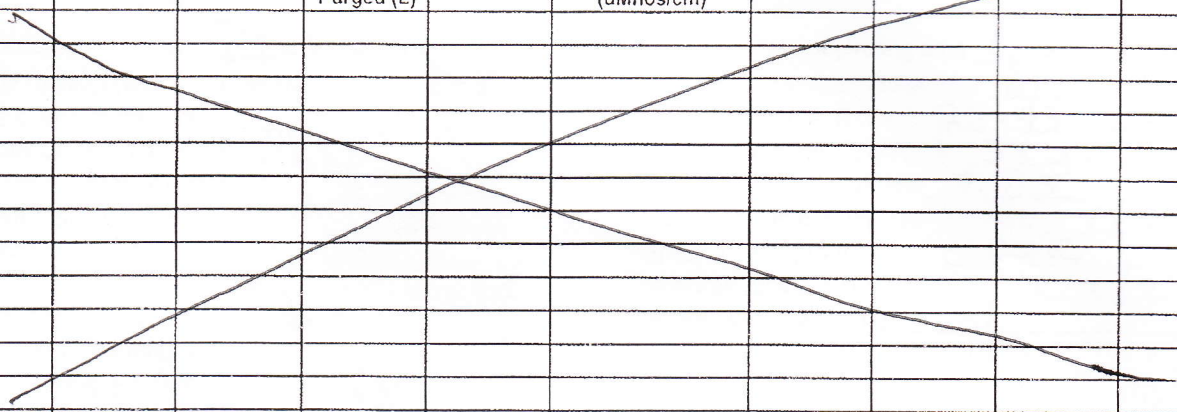
00115899

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)



Sampling

Sampling beginning time: 11:05 Sampling completion time: 11:06

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 12WW22-101506
Duplicate sample collected (Y/N): Y
Split sample collected (Y/N): N
COC No(s): 5874

Sample collection date/time: 6/15/10 11:05
Duplicate sample ID: 12WW22-101506FD
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		4-40 ml glass			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00115900

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: ~~SWMU~~ LHAAP
Project Name/#: 117591.0008B105
Weather: CLEAR 85°F

Sampling location ID: SITE 12
Sample ID: 12WW23-101606
Collection Time/Date: 9:45 6/16/10

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 25.11
Initial (pre-installation) DTW/time: 18.28
Final (after pump priming) DTW/time: 18.26
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): NA

Installation date/beginning time: 6/16/10 8:35
Installation date/completion time: 6/16/10 8:50
Screen Interval (ft. BTOC): 15.11 to 25.11
Pump intake depth (ft BTOC): 20.50
Post-installation DTW/time: 18.20
Max. sustainable pump rate (mL/min): 100
Appearance of product: MURKY
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18								
Refill Setting	15								
Discharge Setting	18								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 6/16/10 8:50
Initial (pre-purging) DTW (ft. BTOC): 18.26
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 6/16/10 9:45
Final (post-purging) DTW (ft. BTOC): 18.37
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = ~~NA~~ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18	18	18	18	18	18	18	18	18
Refill Setting	15	15	15	15	15	15	15	15	15
Discharge Setting	18	18	18	18	18	18	18	18	18
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:55	18.28	100	.5	18.47	0.536	6.45	222.8	1.67	135.4
9:00	18.30	100	1.0	17.65	0.523	5.93	240.5	1.03	112.7
9:05	18.32	100	1.5	17.56	0.518	5.79	244.9	0.93	92.5
9:10	18.34	100	2.0	17.45	0.515	5.73	248.8	0.98	77.7
9:15	18.35	100	2.5	17.38	0.513	5.68	253.1	0.87	62.9
9:20	18.36	100	3.0	17.37	0.511	5.65	254.7	0.82	40.1
9:25	18.37	100	3.5	17.42	0.510	5.64	256.2	0.82	19.3
9:30	18.37	100	4.0	17.45	0.508	5.64	256.5	0.80	10.0

00115901

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Shaw®

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:35	18.37	100	4.5	17.37	0.507	5.65	256.0	0.80	8.8
9:40	18.37	100	5.0	17.39	0.504	5.65	255.7	0.79	6.5
9:45	18.37	100	5.5	17.39	0.504	5.65	255.0	0.79	6.0

Sampling

Sampling beginning time: 9:45 Sampling completion time: 9:46

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 12WW23-$01606

Sample collection date/time: 6/16/10 9:45

Duplicate sample collected (Y/N): N

Duplicate sample ID: NA

Split sample collected (Y/N): N

Split sample ID: NA

COC No(s): 5874

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		2-40ml glass			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008B105
Weather: Clear 90°F
Sampling location ID: Site 12
Sample ID: 12WW24-101606
Collection Time/Date: 10:45 6/16/10

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): 0 NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 27.90
Initial (pre-installation) DTW/time: 22.50
Final (after pump priming) DTW/time: 22.48
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): NA
Installation date/beginning time: 6/16/10 9:55
Installation date/completion time: 6/16/10 10:05
Screen Interval (ft. BTOC): 17.90 to 27.90
Pump intake depth (ft BTOC): 25.00
Post-installation DTW/time: 22.42
Max. sustainable pump rate (mL/min): 100
Appearance of product: CLEAR
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17								
Refill Setting	14								
Discharge Setting	17								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 6/16/10 10:05
Initial (pre-purging) DTW (ft. BTOC): 22.48
Calculated tubing + pump volume: NA
PID/FID reading (well head/background): NA
Purge date/completion time: 6/16/10 10:45
Final (post-purging) DTW (ft. BTOC): 22.63
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17	17	17	17	17	17	17	17	17
Refill Setting	14	14	14	14	14	14	14	14	14
Discharge Setting	17	17	17	17	17	17	17	17	17
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:10	22.50	100	.5	20.62	1.639	5.52	207.7	2.92	1.9
10:15	22.52	100	1.0	19.49	1.674	5.33	233.3	1.53	1.5
10:20	22.54	100	1.5	19.33	1.672	5.31	234.8	1.31	1.2
10:25	22.56	100	2.0	19.31	1.672	5.30	235.6	1.25	1.1
10:30	22.58	100	2.5	19.23	1.675	5.29	236.6	1.23	0.6
10:35	22.60	100	3.0	19.25	1.675	5.29	238.4	1.23	0.5
10:40	22.62	100	3.5	19.27	1.676	5.28	239.0	1.24	0.5
10:45	22.63	100	4.0	19.28	1.676	5.28	239.5	1.24	0.4

00115903

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 10:45 Sampling completion time: 10:46

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 12WW24-101606 Sample collection date/time: 6/16/10 10:45

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s): 5874

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		2-40ml glass			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00115904

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008B106
Weather: CLEAR 75°F

Sampling location ID: SITE 12
Sample ID: 12MW20-110607
Collection Time/Date: 0850 6/7/11

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 38.90
Initial (pre-installation) DTW/time: 19.78
Final (after pump priming) DTW/time: 19.75
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): NA

Installation date/beginning time: 6/7/11 7:30
Installation date/completion time: 6/7/11 7:50
Screen Interval (ft. BTOC): 28.90 to 38.90
Pump intake depth (ft BTOC): 34.00
Post-installation DTW/time: 19.70
Max. sustainable pump rate (mL/min): 100
Appearance of product: CLEAR
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20								
Refill Setting	17								
Discharge Setting	20								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 6/7/11
Initial (pre-purging) DTW (ft. BTOC): 19.75
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 6/7/11 0850
Final (post-purging) DTW (ft. BTOC): 12.85
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20	20	20	20	20	20	20	20	20
Refill Setting	17	17	17	17	17	17	17	17	17
Discharge Setting	20	20	20	20	20	20	20	20	20
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
0800	12.80	100	1.0	20.72	1.362	6.37	170.0	6.35	-1.7
0805	12.82	100	1.5	20.37	1.337	5.92	232.0	5.64	-1.4
0810	12.83	100	2.0	20.31	1.332	5.82	268.6	5.50	-1.9
0815	12.84	100	2.5	20.31	1.332	5.82	279.7	5.47	-1.8
0820	12.85	100	3.0	20.37	1.331	5.80	308.5	5.35	-1.8
0825	12.85	100	3.5	20.34	1.331	5.79	315.3	5.32	-2.0
0830	12.85	100	4.0	20.30	1.330	5.77	346.1	5.21	-1.9
0835	12.85	100	4.5	20.28	1.328	5.76	355.7	5.14	-1.6

00115905

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Shaw

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
0840	12.85	100	5.0	20.29	1.327	5.76	356.7	5.13	-1.7
0845	12.85	100	5.5	20.30	1.327	5.76	357.0	5.12	-1.4
0850	12.85	100	6.0	20.32	1.327	5.76	357.9	5.12	-1.3

Sampling

Sampling beginning time: 0850 Sampling completion time: 0855

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 12WWZ0-110607
Duplicate sample collected (Y/N): N
Split sample collected (Y/N): N
COC No(s): 6060

Sample collection date/time: 6/7/11 0850
Duplicate sample ID: NA
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC	8260	2-40mL glass			

Comments: USGS ONSITE AND COLLECTED SPLIT SAMPLES ON this well.

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00115906

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: SWLHAAP — Sampling location ID: S17E12
Project Name/#: 117591.0008B106 — Sample ID: 12WW21-110607
Weather: CLEAR 97°F — Collection Time/Date: ~~1350~~ 1350 6/7/11

Pump Installation

Pump installation crew: Beesinger — Installation date/beginning time: 6/7/11 12:35
PID/FID reading (well head/background): NA — Installation date/completion time: 6/7/11 12:50
Casing diameter (inches): 4" — Screen Interval (ft. BTOC): 31.50 to 41.50
Total well Depth (ft. BTOC): 41.50 — Pump intake depth (ft BTOC): 36.50
Initial (pre-installation) DTW/time: 23.35 — Post-installation DTW/time: 23.30
Final (after pump priming) DTW/time: 23.33 — Max. sustainable pump rate (mL/min): 100
Free product (circle): LNAPL / DNAPL — Appearance of product: CLEAR
Volume of water removed during priming (mL): 100 — Discharge tube diameter (3/8" or 1/4"): 1/4"
Discharge tube length (ft.): NA — Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	22								
Refill Setting	19								
Discharge Setting	22								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger — PID/FID reading (well head/background): NA
Purge date/beginning time: 6/7/11 12:50 — Purge date/completion time: 6/7/11 1350
Initial (pre-purging) DTW (ft. BTOC): 23.33 — Final (post-purging) DTW (ft. BTOC): 23.39
Calculated tubing + pump volume: NA — No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	22	22	22	22	22	22	22	22	22
Refill Setting	19	19	19	19	19	19	19	19	19
Discharge Setting	22	22	22	22	22	22	22	22	22
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1255	23.35	100	.5	21.22	5.057	5.84	83.2	2.20	-1.4
1300	23.36	100	1.0	20.61	5.217	5.72	89.9	1.30	-2.4
1305	23.37	100	1.5	20.30	5,254	5.65	97.1	0.99	-2.2
1310	23.38	100	2.0	20.31	5,259	5.62	102.8	0.92	-2.2
1315	23.39	100	2.5	20.26	5,266	5.61	105.0	0.88	-2.4
1320	23.39	100	3.0	21.58	5,238	5.63	110.5	0.92	-2.1
1325	23.39	100	3.5	20.76	5,286	5.57	113.3	0.88	-2.4
1330	23.39	100	4.0	20.61	5,281	5.55	115.0	0.85	-2.4

00115907

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C) 20.31	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1335	23.39	100	~~4.5~~	~~20.31~~	~~5.274~~	5.49	120.3	0.81	-2.4
1340	23.39	100	5.0	20.30	5.272	5.49	125.4	0.79	-2.5
1345	23.39	100	5.5	20.24	5.270	5.49	127.1	0.79	-2.5
1350	23.39	100	6.0	20.28	5.270	5.49	127.7	0.79	-2.6

Sampling

Sampling beginning time: 1350 Sampling completion time: 1355

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 12WW21-110607
Sample collection date/time: 6/7/11 1350
Duplicate sample collected (Y/N): N
Duplicate sample ID: NA
Split sample collected (Y/N): N
Split sample ID: NA
COC No(s): 6060

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC	8260	2-40ml glass			

Comments: USGS collected split samples on this well.

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00115908

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP — Sampling location ID: SITE 12
Project Name/#: 117591.0008B106 — Sample ID: 12MW22-110607 SB
Weather: CLEAR 80°F — Collection Time/Date: 1005 6/7/11

Pump Installation

Pump installation crew: Beesinger — Installation date/beginning time: 6/7/11 0910
PID/FID reading (well head/background): NA — Installation date/completion time: 6/7/11 0925
Casing diameter (inches): 4" — Screen Interval (ft. BTOC): 28-40 38.40
Total well Depth (ft. BTOC): 38.40 — Pump intake depth (ft BTOC): 33.50
Initial (pre-installation) DTW/time: 9.72 — Post-installation DTW/time: 9.65
Final (after pump priming) DTW/time: 9.70 — Max. sustainable pump rate (mL/min): 100
Free product (circle): LNAPL / DNAPL — Appearance of product: CLEAR
Volume of water removed during priming (mL): 100 — Discharge tube diameter (3/8" or 1/4"): 1/4"
Discharge tube length (ft.): NA — Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20								
Refill Setting	17								
Discharge Setting	20								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger — PID/FID reading (well head/background): NA
Purge date/beginning time: 6/7/11 0925 — Purge date/completion time: 6/7/11 1005
Initial (pre-purging) DTW (ft. BTOC): 9.70 — Final (post-purging) DTW (ft. BTOC): 9.75
Calculated tubing + pump volume: NA — No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20	20	20	20	20	20	20	20	20
Refill Setting	17	17	17	17	17	17	17	17	17
Discharge Setting	20	20	20	20	20	20	20	20	20
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
0930	9.72	100	.5	19.59	1.422	6.99	-87.4	2.58	1.8
0935	9.74	100	1.0	19.17	1.414	7.06	-97.4	1.36	1.0
0940	9.75	100	1.5	19.09	1.413	7.10	-100.3	0.84	2.3
0945	9.75	100	2.0	18.94	1.414	7.14	-102.3	0.68	2.0
0950	9.75	100	2.5	18.91	1.413	7.14	-104.0	0.66	4.4
0955	9.75	100	3.0	18.86	1.413	7.15	-104.7	0.62	3.5
1000	9.75	100	3.5	18.86	1.413	7.15	-104.9	0.62	1.3
1005	9.75	100	4.0	18.87	1.413	7.15	-105.0	0.63	1.4

00115909

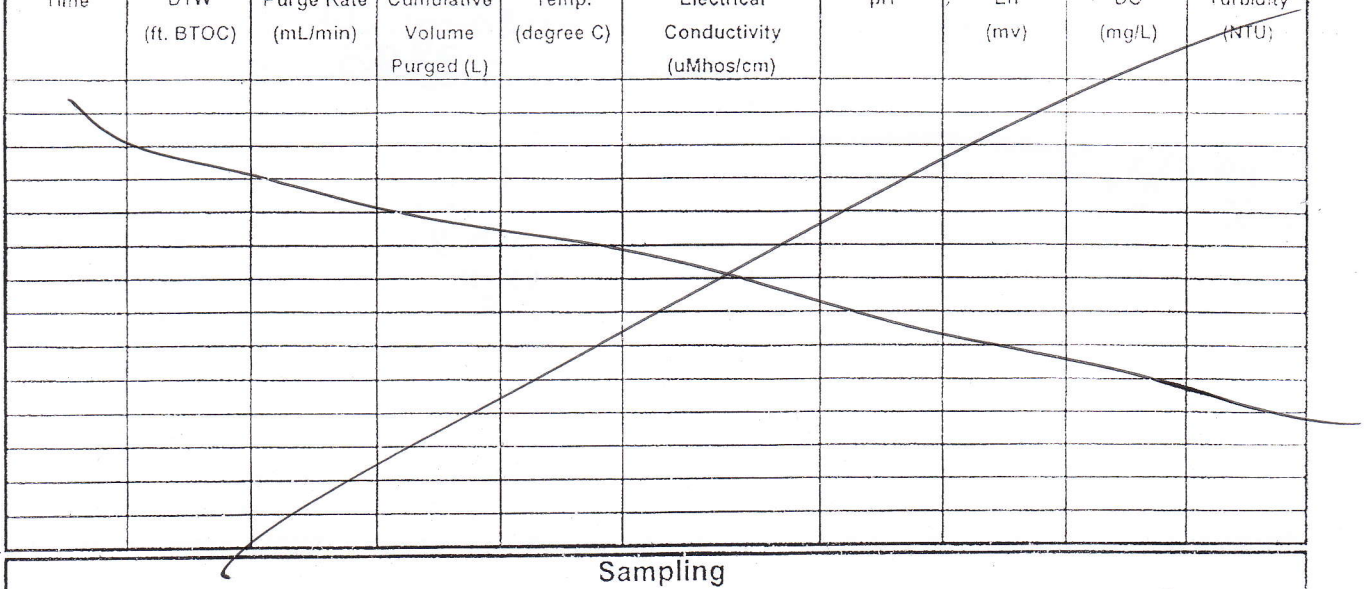
GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Shaw®

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

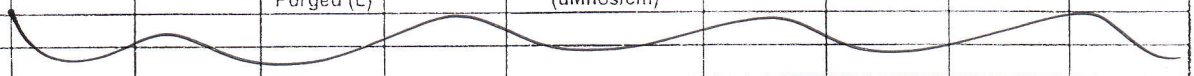


Sampling

Sampling beginning time: 1005 Sampling completion time: 1010

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)



Sample Information

Sample ID: 12WW22-110607
Sample collection date/time: 6/7/11 1005
Duplicate sample collected (Y/N): Yes
Duplicate sample ID: 12WW22-FD
Split sample collected (Y/N): N
Split sample ID: NA
COC No(s): 6060

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC	8260	4-40 mL glass			

Comments: USGS collected split samples on this well

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00115910

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP — Sampling location ID: Site 12
Project Name/#: 117591.0008B106 — Sample ID: 12WW23-110607
Weather: CLEAR 99°F — Collection Time/Date: 1505 6/7/11

Pump Installation

Pump installation crew: Beesinger — Installation date/beginning time: 6/7/11 1410
PID/FID reading (well head/background): NA — Installation date/completion time: 6/7/11 1425
Casing diameter (inches): 4" — Screen Interval (ft. BTOC): 15.15 to 25.15
Total well Depth (ft. BTOC): 25.15 — Pump intake depth (ft BTOC): 22.50
Initial (pre-installation) DTW/time: 19.40 — Post-installation DTW/time: 19.35
Final (after pump priming) DTW/time: 19.41 — Max. sustainable pump rate (mL/min): 100
Free product (circle): LNAPL / DNAPL — Appearance of product: Slightly murky
Volume of water removed during priming (mL): 100 — Discharge tube diameter (3/8" or 1/4"): 1/4"
Discharge tube length (ft.): NA — Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	19								
Refill Setting	16								
Discharge Setting	19								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger — PID/FID reading (well head/background): NA
Purge date/beginning time: 6/7/11 1425 — Purge date/completion time: 6/7/11 1945
Initial (pre-purging) DTW (ft. BTOC): 19.41 — Final (post-purging) DTW (ft. BTOC): 1505
Calculated tubing + pump volume: NA — No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	19	19	19	19	19	19	19	19	19
Refill Setting	16	16	16	16	16	16	16	16	16
Discharge Setting	19	19	19	19	19	19	19	19	19
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mV)	DO (mg/L)	Turbidity (NTU)
1430	19.42	100	.5	23.66	0.701	5.99	57.5	2.06	9.9
1435	19.43	100	1.0	21.52	0.482	5.55	76.3	1.00	8.1
1440	19.44	100	1.5	21.10	0.440	5.28	93.3	0.78	6.8
1445	19.45	100	2.0	20.94	0.431	5.24	98.6	0.71	7.0
1450	19.45	100	2.5	20.91	0.426	5.23	102.4	0.67	6.1
1455	19.45	100	3.0	20.95	0.424	5.24	105.7	0.65	5.4
1500	19.45	100	3.5	21.06	0.424	5.24	107.6	0.65	6.1
1505	19.45	100	4.0	21.08	0.424	5.24	108.0	0.60	4.8

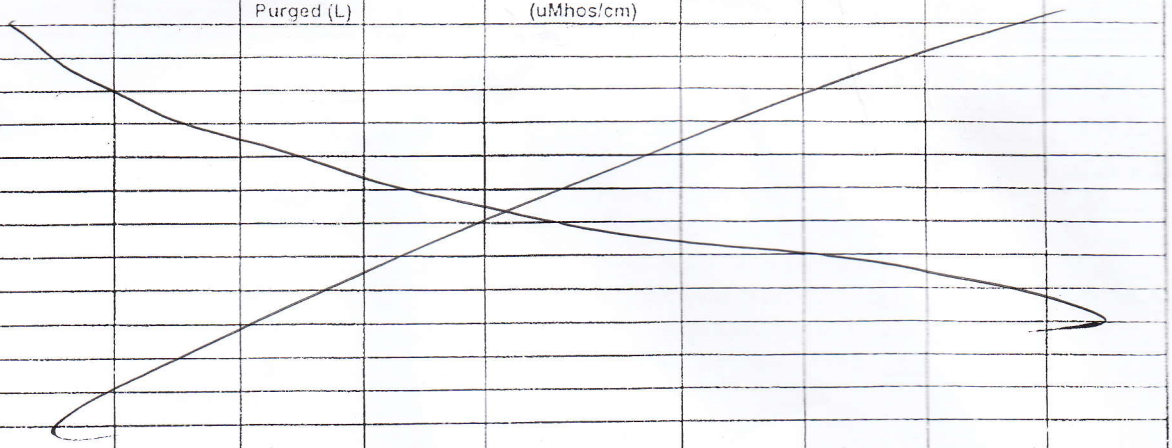
00115911

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

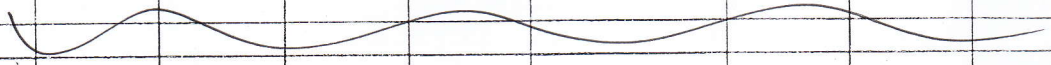


Sampling

Sampling beginning time: 1505 Sampling completion time: 1510

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)



Sample Information

Sample ID: 12WW23-110607
Duplicate sample collected (Y/N): N
Split sample collected (Y/N): N
COC No(s): 6060

Sample collection date/time: 6/7/11 1505
Duplicate sample ID: NA
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC	8260	2-40 mL glass			

Comments:
VSAS collected Split Samples on this well

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00115912

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0008B106
Weather: CLEAR 80°F

Sampling location ID: SITE12
Sample ID: 12WW24-110611 MS/MSD
Collection Time/Date: 11:20 6/7/11

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 27.90
Initial (pre-installation) DTW/time: 24.15
Final (after pump priming) DTW/time: 24.17
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): NA

Installation date/beginning time: 6/7/11 10:25
Installation date/completion time: 6/7/11 10:35
Screen Interval (ft. BTOC): 17.90 to 27.90
Pump intake depth (ft BTOC): 26.00
Post-installation DTW/time: 24.10
Max. sustainable pump rate (mL/min): 100
Appearance of product: CLEAR
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17								
Refill Setting	14								
Discharge Setting	17								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 6/7/11 10:35
Initial (pre-purging) DTW (ft. BTOC): 24.17
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

PID/FID reading (well head/background): NA
Purge date/completion time: 6/7/11 24.28
Final (post-purging) DTW (ft. BTOC): 11:20
No. of tubing + pump volumes purged: NA

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17	17	17	17	17	17	17	17	17
Refill Setting	14	14	14	14	14	14	14	14	14
Discharge Setting	17	17	17	17	17	17	17	17	17
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:45	24.20	100	1.0	23.52	0.684	6.24	70.8	3.41	-1.0
10.50	24.22	100	1.5	22.18	1.239	5.59	71.5	1.48	-1.7
1055	24.23	100	2.0	21.89	1.229	5.45	69.1	1.16	-1.8
1100	24.24	100	2.5	21.75	1.226	5.40	67.5	1.04	-1.9
1105	24.25	100	3.0	21.68	1.225	5.36	67.6	0.98	-1.9
1110	24.26	100	3.5	21.45	1.226	5.34	68.1	0.93	-1.8
1115	24.27	100	4.0	21.37	1.226	5.34	70.7	0.91	-1.7
1120	24.28	100	4.5	21.36	1.226	5.34	71.3	0.91	-1.7

00115913

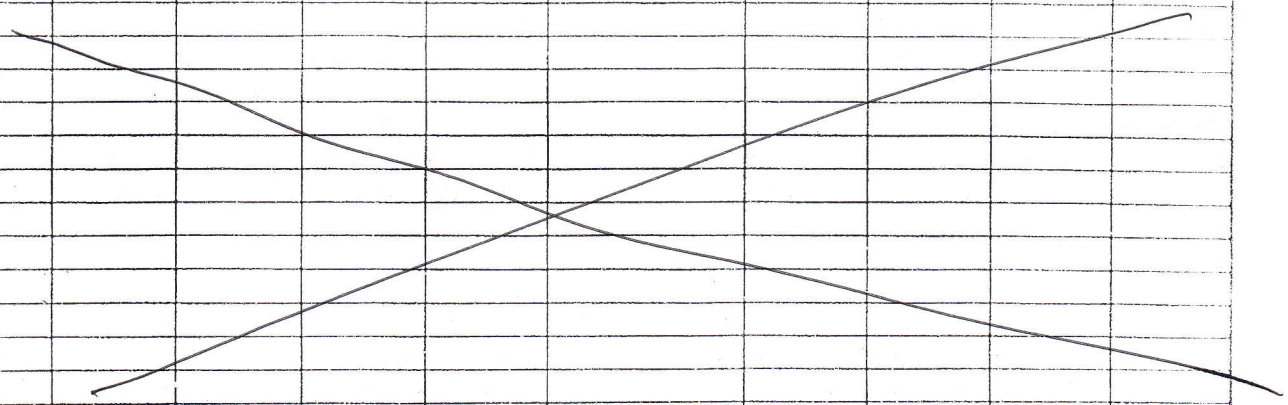
GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Shaw®

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)



Sampling

Sampling beginning time: 11:20 Sampling completion time: 11:35

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 12WW24-110607 Sample collection date/time: 6/7/11 11:20

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s): 60060

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC	8260	2-40ml glass			

Comments: USGS Collected Split Samples on this well

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

6/15/10 ANNUAL SITE 12 SAMPLING
CLEAR 80°F

0750 - Setup on 12WW20 with a bladder pump. Equipment decconned before sampling and disposable gloves were used. Sample 12WW20-101506 collected at 8:50 for VOC's.

09:00 - Setup on 12WW21 with bladder pump. Decconned equipment prior to sampling and disposable gloves were used. Sample 12WW21-101506 collected at 10:00 for VOC.

10:15 - Setup on 12WW22 with bladder pump. Equipment decconned before Sampling and used disposable gloves. Sample 12WW22-101506 collected at 11:05 for VOC. Duplicate Sample collected on this well.

Scott Basye

6/15/10 ANNUAL SITE 12 SAMPLING
CLEAR 85°F

8:50 - Setup on 12WW23 with a bladder pump. Decconned equipment prior to sampling and used disposable gloves. Sample 12WW23-101606 collected at 9:45 for perchlorate.

9:55 - Setup on 12WW24 with bladder pump. Disposable gloves were used and equipment was decconned before Sampling. Sample 12WW24-101606 collected at 10:45 for perchlorate

Scott Basye

00115915

6/7/11 SITE 12 ANNUAL SAMPLING
Clear 75°F

0730 - Setup on 12ww20 with bladder pump. Equipment decon'ed prior to sample and disposable gloves were used. Sample 12ww20-110607 collected at 0850 for VOC.

0910 - Setup on 12ww22 with bladder pump. Decon'ed equipment and used disposable gloves. Sample 12ww22-110607 collected at 10:05 for VOC. Field Dup collected on this well.

10:35 - Setup on 12ww24 with bladder pump. Disposable gloves were used and decon equipment prior to sampling. Sample 12ww24-110607 collected at 11:20 for VOC.

Scott Beesinger

Site 12 Sampling Cont

1235 - Setup on 12ww21 with bladder pump. Decon'ed equipment and used disposable gloves prior to sampling. Sample 12ww21-110607 collected at 1250 for VOC.

1410 - Setup on 12ww23 with bladder pump. Equipment decon'ed and disposable gloves used. Sample 12ww23-110607 collected at 1505 for VOC.

1530 - Collected water level on 12ww01. DTW - 25.32
T.D. - 29.65

1535 - Collected water level on 12ww02. DTW - 23.73
T.D. - 31.40

1540 - Collected water level on 12ww05, DTW - 10.70
TD - 38.35

Scott Beesinger

Appendix C

Laboratory Analytical Results

(Provided on Compact Disk)

158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • http://www.microbac.com

Laboratory Report Number: L10060495

Client: Jennifer Hoang, 1401 Enclave Parkway, Houston, TX, 77077
Contract #: DACA56-94-D-0020

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	*Team Chemist/Data Specialist*	Kathy.Albertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	Stephanie.Mossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	Tony.Long@microbac.com
Amanda Fickiesen	*Client Services Specialist*	Amanda.Fickiesen@microbac.com
Annie Brown	*Client Services Specialist*	Annie.Brown@microbac.com

This report was reviewed on June 23, 2010.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

This report was certified on June 23, 2010.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac OVD
This report contains a total of 76 pages.

Look closer. Go further. Do more.

Microbac

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

Access and print reports, check the status of your projects, and review electronic data forms online from anywhere with internet access!

View a demo by visiting www.microbac.com and entering the Ohio Valley location
Click on "Online Data Access"
User ID: jdoe@abc.com
Password: demo

Contact your Microbac service representative to set up a *FREE* account today!

LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L10060495
PREPARED FOR Shaw E I, Inc.
WORK ID:

1.0 Introduction 4
2.1 Volatiles Data 10
2.1.1 Volatiles GCMS Data (8260) 11
2.1.1.1 Summary Data 12
2.1.1.2 QC Summary Data 28
3.0 Attachments 66

1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L10060495

CHAIN OF CUSTODY: The chain of custody number was 5874.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 3 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst: SLM

Approved: 22-JUN-10
Stephanie Mossburg

Laboratory Data Package Cover Page

00115922

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	June 23, 2010
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L10060495
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	334769
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	June 23, 2010

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT
ER# - Description
There were no exceptions.

Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

00115929

L10060495

06/23/10 16:27

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
1401 Enclave Parkway
Suite 250
Houston, TX 77077
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 557440

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12WW20-101506	L10060495-01	8260B	1	17-JUN-10
12WW21-101506	L10060495-02	8260B	1	17-JUN-10
12WW22-101506	L10060495-03	8260B	1	17-JUN-10
12WW22-101506-FD	L10060495-04	8260B	1	17-JUN-10
12WW23-101606	L10060495-05	8260B	1	17-JUN-10
12WW24-101606	L10060495-06	8260B	1	17-JUN-10
TRIP BLANK	L10060495-07	8260B	1	17-JUN-10

Report Number: **L10060495**
Report Date : **June 23, 2010**

00115930

Sample Number: **L10060495-01**
Client ID: **12WW20-101506**
Matrix: **Water**
Workgroup Number: **WG334769**
Collect Date: **06/15/2010 08:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/18/2010 18:53**
Cal Date: **06/14/2010 21:19**
Run Date: **06/18/2010 18:53**
File ID: **6M91809**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	0.353	J	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L10060495**
Report Date : **June 23, 2010**

00115931

Sample Number: **L10060495-01**
Client ID: **12WW20-101506**
Matrix: **Water**
Workgroup Number: **WG334769**
Collect Date: **06/15/2010 08:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/18/2010 18:53**
Cal Date: **06/14/2010 21:19**
Run Date: **06/18/2010 18:53**
File ID: **6M91809**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	103	86	118	
1,2-Dichloroethane-d4	98.1	80	120	
Toluene-d8	101	88	110	
4-Bromofluorobenzene	103	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: L10060495
Report Date : June 23, 2010

00115932

Sample Number: L10060495-02
Client ID: 12WW21-101506
Matrix: Water
Workgroup Number: WG334769
Collect Date: 06/15/2010 10:00
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 5030B/5030C/5035
Analytical Method: 8260B
Analyst: ADC
Dilution: 1
Units: ug/L

Instrument: HPMS6
Prep Date: 06/18/2010 19:25
Cal Date: 06/14/2010 21:19
Run Date: 06/18/2010 19:25
File ID: 6M91810

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L10060495**
Report Date : **June 23, 2010**

00115933

Sample Number: **L10060495-02**
Client ID: **12WW21-101506**
Matrix: **Water**
Workgroup Number: **WG334769**
Collect Date: **06/15/2010 10:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/18/2010 19:25**
Cal Date: **06/14/2010 21:19**
Run Date: **06/18/2010 19:25**
File ID: **6M91810**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	102	86	118	
1,2-Dichloroethane-d4	101	80	120	
Toluene-d8	101	88	110	
4-Bromofluorobenzene	104	86	115	

U Not detected at or above adjusted sample detection limit

Report Number: **L10060495**
Report Date : **June 23, 2010**

00115934

Sample Number: **L10060495-03**
Client ID: **12WW22-101506**
Matrix: **Water**
Workgroup Number: **WG334769**
Collect Date: **06/15/2010 11:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/18/2010 19:57**
Cal Date: **06/14/2010 21:19**
Run Date: **06/18/2010 19:57**
File ID: **6M91811**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L10060495**
Report Date : **June 23, 2010**

00115935

Sample Number: **L10060495-03**
Client ID: **12WW22-101506**
Matrix: **Water**
Workgroup Number: **WG334769**
Collect Date: **06/15/2010 11:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/18/2010 19:57**
Cal Date: **06/14/2010 21:19**
Run Date: **06/18/2010 19:57**
File ID: **6M91811**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	102	86	118	
1,2-Dichloroethane-d4	98.8	80	120	
Toluene-d8	100	88	110	
4-Bromofluorobenzene	100	86	115	

U Not detected at or above adjusted sample detection limit

Report Number: **L10060495**
Report Date : **June 23, 2010**

00115936

Sample Number: **L10060495-04**
Client ID: **12WW22-101506-FD**
Matrix: **Water**
Workgroup Number: **WG334769**
Collect Date: **06/15/2010 11:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/18/2010 20:28**
Cal Date: **06/14/2010 21:19**
Run Date: **06/18/2010 20:28**
File ID: **6M91812**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L10060495**
Report Date : **June 23, 2010**

00115937

Sample Number: **L10060495-04**
Client ID: **12WW22-101506-FD**
Matrix: **Water**
Workgroup Number: **WG334769**
Collect Date: **06/15/2010 11:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/18/2010 20:28**
Cal Date: **06/14/2010 21:19**
Run Date: **06/18/2010 20:28**
File ID: **6M91812**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	100	86	118	
1,2-Dichloroethane-d4	99.2	80	120	
Toluene-d8	101	88	110	
4-Bromofluorobenzene	102	86	115	

U Not detected at or above adjusted sample detection limit

Report Number: **L10060495**
Report Date : **June 23, 2010**

00115938

Sample Number: **L10060495-05**
Client ID: **12WW23-101606**
Matrix: **Water**
Workgroup Number: **WG334769**
Collect Date: **06/16/2010 09:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/18/2010 21:01**
Cal Date: **06/14/2010 21:19**
Run Date: **06/18/2010 21:01**
File ID: **6M91813**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	7.00	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Sample Number: L10060495-05
Client ID: 12WW23-101606
Matrix: Water
Workgroup Number: WG334769
Collect Date: 06/16/2010 09:45
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 5030B/5030C/5035
Analytical Method: 8260B
Analyst: ADC
Dilution: 1
Units: ug/L

Instrument: HPMS6
Prep Date: 06/18/2010 21:01
Cal Date: 06/14/2010 21:19
Run Date: 06/18/2010 21:01
File ID: 6M91813

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	102	86	118	
1,2-Dichloroethane-d4	97.8	80	120	
Toluene-d8	99.8	88	110	
4-Bromofluorobenzene	103	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L10060495**
Report Date : **June 23, 2010**

00115940

Sample Number: **L10060495-06**
Client ID: **12WW24-101606**
Matrix: **Water**
Workgroup Number: **WG334769**
Collect Date: **06/16/2010 10:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/18/2010 21:33**
Cal Date: **06/14/2010 21:19**
Run Date: **06/18/2010 21:33**
File ID: **6M91814**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	16.9		10.0	2.50
Benzene	71-43-2	0.305	J	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7	4.82		1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	2.33		1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3	0.442	J	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	0.661	J	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	27.1		1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
Tetrachloroethene	127-18-4	0.815	J	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	145		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Sample Number: L10060495-06
Client ID: 12WW24-101606
Matrix: Water
Workgroup Number: WG334769
Collect Date: 06/16/2010 10:45
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 5030B/5030C/5035
Analytical Method: 8260B
Analyst: ADC
Dilution: 1
Units: ug/L

Instrument: HPMS6
Prep Date: 06/18/2010 21:33
Cal Date: 06/14/2010 21:19
Run Date: 06/18/2010 21:33
File ID: 6M91814

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4	0.577	J	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	101	86	118	
1,2-Dichloroethane-d4	101	80	120	
Toluene-d8	98.0	88	110	
4-Bromofluorobenzene	103	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L10060495**
Report Date : **June 23, 2010**

00115942

Sample Number: **L10060495-07**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG334769**
Collect Date: **06/16/2010 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/18/2010 18:20**
Cal Date: **06/14/2010 21:19**
Run Date: **06/18/2010 18:20**
File ID: **6M91808**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L10060495**
Report Date : **June 23, 2010**

00115943

Sample Number: **L10060495-07**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG334769**
Collect Date: **06/16/2010 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/18/2010 18:20**
Cal Date: **06/14/2010 21:19**
Run Date: **06/18/2010 18:20**
File ID: **6M91808**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	100	86	118	
1,2-Dichloroethane-d4	97.7	80	120	
Toluene-d8	100	88	110	
4-Bromofluorobenzene	102	86	115	

U Not detected at or above adjusted sample detection limit

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a\left(c - y\right)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 061410
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 14
Method: 624 SOP: MSV10 Rev: 7
Method: 5030C/5035A SOP: PAT01 Rev: 12
Maintenance Log ID: 33404

Internal Standard: STD39583 Surrogate Standard: STD39821
CCV: STD39794 LCS: STD39797 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG334239

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M91668	RINSE	NA	1	1		06/14/10 08:35
2	6M91669	GRO	NA	1	1		06/14/10 10:32
3	6M91670	GRO	NA	1	1		06/14/10 11:12
4	6M91671	OLD CCV	NA	1	1		06/14/10 11:44
5	6M91672	LCS	NA	1	1		06/14/10 12:22
6	6M91673	RINSE	NA	1	1		06/14/10 12:53
7	6M91674	RINSE	NA	1	1		06/14/10 13:25
8	6M91675	WG334239-01 50NG BFB STD 8260	NA	1	1	STD39599	06/14/10 13:56
9	6M91676	WG334239-01 50NG BFB STD 8260	NA	1	1	STD39599	06/14/10 14:09
10	6M91677	WG334239-02 0.3ug/L WATER STD 8260	NA	1	1	STD39794	06/14/10 14:35
11	6M91678	WG334239-01 50NG BFB STD 8260	NA	1	1	STD39599	06/14/10 15:03
12	6M91679	WG334239-02 0.3ug/L WATER STD 8260	NA	1	1	STD39794	06/14/10 15:30
13	6M91680	WG334239-01 50NG BFB STD 8260	NA	1	1	STD39599	06/14/10 16:03
14	6M91681	WG334239-02 0.3ug/L WATER STD 8260	NA	1	1	STD39794	06/14/10 16:29
15	6M91682	WG334239-03 0.4ug/L WATER STD 8260	NA	1	1	STD39794	06/14/10 17:01
16	6M91683	WG334239-04 1ug/L WATER STD 8260	NA	1	1	STD39794	06/14/10 17:33
17	6M91684	WG334239-05 2ug/L WATER STD 8260	NA	1	1	STD39794	06/14/10 18:05
18	6M91685	WG334239-06 5ug/L WATER STD 8260	NA	1	1	STD39794	06/14/10 18:37
19	6M91686	WG334239-07 20ug/L WATER STD 8260	NA	1	1	STD39794	06/14/10 19:10
20	6M91687	WG334239-08 50ug/L WATER STD 8260	NA	1	1	STD39794	06/14/10 19:42
21	6M91688	WG334239-09 100ug/L WATER STD 8260	NA	1	1	STD39794	06/14/10 20:14
22	6M91689	WG334239-10 200ug/L WATER STD 8260	NA	1	1	STD39794	06/14/10 20:46
23	6M91690	WG334239-11 300ug/L WATER STD 8260	NA	1	1	STD39794	06/14/10 21:19
24	6M91691	RINSE	NA	1	1		06/14/10 21:51
25	6M91692	WG334239-12 50ug/L ALT SOURCE	NA	1	1	STD39797	06/14/10 22:23

Comments

Seq.	Rerun	Dil.	Reason	Analytes
8				
File ID: 6M91675				
	RR, leak in injection port.			
10				
File ID: 6M91677				

Approved: June 15, 2010

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument:	HPMS6	Dataset:	061410		
Analyst1:	MES	Analyst2:	NA		
Method:	8260B	SOP:	MSV01	Rev:	14
Method:	624	SOP:	MSV10	Rev:	7
Method:	5030C/5035A	SOP:	PAT01	Rev:	12
Maintenance Log ID:	33404				

Internal Standard: STD39583 Surrogate Standard: STD39821

CCV: STD39794 LCS: STD39797 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA

Workgroups: WG334239

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
			Restarting raising voltage.	
12				
File ID: 6M91679				
			Restarting raising voltage.	

Approved: June 15, 2010

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 061510
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 14
Method: 5030C/5030B/5035A SOP: PAT01 Rev: 12
Method: 624 SOP: MSV10 Rev: 7
Maintenance Log ID: 33412

Internal Standard: STD39583 Surrogate Standard: STD39821
CCV: STD39794 LCS: STD39797 MS/MSD: STD39797

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG334296,WG334408

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M91694	RINSE	NA	1	1		06/15/10 07:57
2	6M91695	WG334295-01 50NG BFB STD 8260	NA	1	1	STD39599	06/15/10 08:25
3	6M91696	WG334295-02 50ug/L WATER STD 8260	NA	1	1	STD39794	06/15/10 08:50
4	6M91697	WG334324-01 100ug/L APPIX/FOO STD	NA	1	1	STD39725	06/15/10 09:22
5	6M91698	WG334296-01 VBLK0615 BLANK 8260	NA	7	1		06/15/10 09:54
6	6M91699	WG334296-02 20ug/L LCS 8260	NA	7	1	STD39797	06/15/10 10:27
7	6M91700	L10060269-01 5000X 8260 1.01g/10mL	NA	11	500		06/15/10 10:58
8	6M91701	L10060261-01 C M1 100X 8260 6.03g/10m	NA	7	50		06/15/10 11:30
9	6M91702	L10060350-01 C M1 100X 8260 6.26g/10m	NA	7	50		06/15/10 12:02
12	6M91705	L10060372-03 2000X 8260 4.60g/20mL	NA	10	500		06/15/10 13:37
13	6M91706	L10060296-03 M1 100X 826-SPE 4.68g/10m	NA	7	50		06/15/10 14:09
14	6M91707	L10060372-03 200X 8260 4.60g/20mL	NA	10	50		06/15/10 14:40
15	6M91708	RINSE	NA	1	1		06/15/10 15:12
16	6M91709	RINSE	NA	1	1		06/15/10 15:44
17	6M91710	WG334407-01 50NG BFB STD 8260	NA	1	1	STD39599	06/15/10 16:11
19	6M91704	WG334296-04 L10060296-02 DUP 100X 82	NA	7	50		06/15/10 13:05
21	6M91711	WG334407-02 50ug/L WATER STD 8260	NA	1	1	STD39794	06/15/10 16:37
22	6M91703	L10060296-02 100X 826-SPE 5.44g/10mL	NA	7	50		06/15/10 12:33
23	6M91712	RINSE	NA	1	1		06/15/10 17:08
24	6M91713	WG334408-01 VBLK0615 BLANK 8260	NA	1	1		06/15/10 17:40
25	6M91714	WG334239-13 50ug/L ALT SOURCE	NA	1	1	STD39797	06/15/10 18:11
26	6M91715	WG334408-02 20ug/L LCS 8260	NA	1	1	STD39797	06/15/10 18:43
28	6M91717	L10060296-07 B 826-SPE	NA	1	1		06/15/10 19:47
29	6M91718	L10060296-09 B 826-SPE	NA	1	1		06/15/10 20:19
30	6M91719	L10060399-10 A 826-SPE	NA	1	1		06/15/10 20:51
31	6M91720	L10060398-01 A 826-SPE	NA	1	1		06/15/10 21:23
32	6M91721	L10060399-01 A 826-SPE	NA	1	1		06/15/10 21:55
36	6M91725	L10060399-02 A 826-SPE	NA	1	1		06/16/10 00:03
37	6M91726	L10060399-03 A 826-SPE	NA	1	1		06/16/10 00:35
38	6M91727	L10060399-04 A 826-SPE	NA	1	1		06/16/10 01:07
39	6M91728	L10060399-08 A 826-SPE	NA	1	1		06/16/10 01:39
40	6M91729	L10060399-09 A 826-SPE	NA	1	1		06/16/10 02:11
41	6M91730	L10060341-01 A 2X 826-SPE	NA	1	2		06/16/10 02:43
42	6M91731	L10060341-02 A 2X 826-SPE	NA	1	2		06/16/10 03:15

Approved: June 16, 2010

Microbac

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 061510
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 14
Method: 5030C/5030B/5035A SOP: PAT01 Rev: 12
Method: 624 SOP: MSV10 Rev: 7
Maintenance Log ID: 33412

Internal Standard: STD39583 Surrogate Standard: STD39821
CCV: STD39794 LCS: STD39797 MS/MSD: STD39797

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG334296,WG334408

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
43	6M91732	L10060296-08 A 826-SPE	NA	1	1		06/16/10 03:48
44	6M91733	RINSE	NA	1	1		06/16/10 04:19
45	6M91734	WG334408-06 624 BLANK	NA	2	1		06/16/10 04:51
46	6M91735	L10060396-01 A 624	NA	2	1		06/16/10 05:23
47	6M91736	L10060396-02 A 624-SPE1	NA	2	1		06/16/10 05:55
48	6M91737	RINSE	NA	2	1		06/16/10 06:27
49	6M91738	RINSE	NA	2	1		06/16/10 07:00
50	6M91716	L10060398-02 A 826-SPE	NA	1	1		06/15/10 19:15
51	6M91722	L10060399-05 A 826-SPE	NA	1	1		06/15/10 22:27
52	6M91723	L10060399-06 MS A 826-SPE	NA	1	1	STD39797	06/15/10 22:59
53	6M91724	L10060399-07 MSD A 826-SPE	NA	1	1	STD39797	06/15/10 23:31

Comments

Seq.	Rerun	Dil.	Reason	Analytes
12	X	200	Analyzed too dilute	
File ID: 6M91705				
	DNR			

Approved: June 16, 2010

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 061810
Analyst1: ADC Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 14
Method: 5030C/5035A/5030B SOP: PAT01 Rev: 12

Maintenance Log ID: 33488

Internal Standard: STD39856 Surrogate Standard: STD39821
CCV: STD39794 LCS: STD39797 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG334769

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M91801	WG334767-01 50NG BFB STD 8260	NA	1	1	STD39599	06/18/10 14:36
2	6M91802	WG334767-02 50ug/L WATER STD 8260	NA	1	1	STD39794	06/18/10 15:01
3	6M91803	RINSE	NA	1	1		06/18/10 15:40
4	6M91804	WG334769-01 VBLK0618 BLANK 8260	NA	1	1		06/18/10 16:12
5	6M91805	WG334769-02 20ug/L LCS 8260	NA	1	1	STD39797	06/18/10 16:44
6	6M91806	WG334769-03 20ug/L LCSDUP 8260	NA	1	1	STD39797	06/18/10 17:16
7	6M91807	L10060507-28 A 826-SPE	<2	1	1		06/18/10 17:48
8	6M91808	L10060495-07 A 826-SPE	<2	1	1		06/18/10 18:20
9	6M91809	L10060495-01 A 826-SPE	<2	1	1		06/18/10 18:53
10	6M91810	L10060495-02 A 826-SPE	<2	1	1		06/18/10 19:25
11	6M91811	L10060495-03 A 826-SPE	<2	1	1		06/18/10 19:57
12	6M91812	L10060495-04 A 826-SPE	<2	1	1		06/18/10 20:28
13	6M91813	L10060495-05 A 826-SPE	<2	1	1		06/18/10 21:01
14	6M91814	L10060495-06 A 826-SPE	<2	1	1		06/18/10 21:33
15	6M91815	L10060507-02 A 2X 826-SPE	<2	1	2		06/18/10 22:05
16	6M91816	L10060507-03 A 10X 826-SPE	<2	1	10		06/18/10 22:37
17	6M91817	L10060507-08 A 200X 826-SPE	<2	1	200		06/18/10 23:10
18	6M91818	L10060507-01 A 826-SPE	<2	1	1		06/18/10 23:42
19	6M91819	L10060507-04 A 826-SPE	<2	1	1		06/19/10 00:15
20	6M91820	L10060507-05 A 826-SPE	<2	1	1		06/19/10 00:47
21	6M91821	L10060507-06 A 826-SPE	<2	1	1		06/19/10 01:20
22	6M91822	L10060507-07 A 826-SPE	<2	1	1		06/19/10 01:52
23	6M91823	L10060507-09 A 826-SPE	<2	1	1		06/19/10 02:25
24	6M91824	RINSE	NA	1	1		06/19/10 02:57
25	6M91825	OXY RINSE	NA	1	1		06/19/10 03:29
26	6M91826	RINSE	NA	1	1		06/19/10 04:02

Comments

Seq.	Rerun	Dil.	Reason	Analytes
16	X	10	Surrogate standard failure	
File ID: 6M91816				
17	X	100	Analyzed too dilute	

Approved: June 22, 2010

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 061810
Analyst1: ADC Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 14
Method: 5030C/5035A/5030B SOP: PAT01 Rev: 12

Maintenance Log ID: 33488

Internal Standard: STD39856 Surrogate Standard: STD39821
CCV: STD39794 LCS: STD39797 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG334769

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 6M91817				
	DNR			
22	X	5	Over Calibration Range	14-dioxane
File ID: 6M91822				
23	X	2	Over Calibration Range	12
File ID: 6M91823				

Approved: June 22, 2010

Page: 2

Microbac Laboratories Inc.

Data Checklist

Date: 14-JUN-2010
Analyst: MES
Analyst: NA
Method: 8260/624
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 34729
Analytical Workgroups: WG334239

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	NA
Project/Client Specific Requirements	NA
Special Standards	NA
Blanks	NA
TCL's	NA
Surrogates	NA
LCS (Laboratory Control Sample)	NA
Recoveries	NA
Surrogates	NA
MS/MSD/Duplicates	NA
Samples	NA
TCL Hits	NA
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Library Searches	NA
Calculations & Correct Factors	NA
Dilutions Run	NA
Reruns	NA
Manual Integrations	NA
Case Narrative	NA
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
15-JUN-2010

Secondary Reviewer:
15-JUN-2010

CHECKLIST1 - Modified 03/05/2008
Generated: JUN-15-2010 16:01:17

Microbac Laboratories Inc.

Data Checklist

Date: 15-JUN-2010
Analyst: MES
Analyst: NA
Method: 8260/624
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 34740
Analytical Workgroups: WG334296,WG334408

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	X
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	NA
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
15-JUN-2010

Secondary Reviewer:
16-JUN-2010

CHECKLIST1 - Modified 03/05/2008
Generated: JUN-16-2010 09:02:47

Microbac Laboratories Inc.

Data Checklist

Date: 18-JUN-2010
Analyst: MES
Analyst: NA
Method: 8260
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 34847
Analytical Workgroups: WG334769

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
21-JUN-2010

Secondary Reviewer:
22-JUN-2010

CHECKLIST1 - Modified 03/05/2008
Generated: JUN-22-2010 14:37:48

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00115956

Analytical Method: 8260B AAB#: WG334769

Login Number: L10060495

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
12WW20-101506	01	06/15/10							14		06/18/10	3.4	14	
12WW21-101506	02	06/15/10							14		06/18/10	3.4	14	
12WW22-101506	03	06/15/10							14		06/18/10	3.4	14	
12WW22-101506-FD	04	06/15/10							14		06/18/10	3.4	14	
12WW23-101606	05	06/16/10							14		06/18/10	2.5	14	
12WW24-101606	06	06/16/10							14		06/18/10	2.5	14	
TRIP BLANK	07	06/16/10							14		06/18/10	2.8	14	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1705545
Report generated 06/23/2010 09:39

Microbac Laboratories Inc.
SURROGATE STANDARDS

Login Number: L10060495
Instrument Id: HPMS6
Workgroup (AAB#): WG334769

Method: 8260
CAL ID: HPMS6-14-JUN-10
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L10060495-01	1.00	01	98.1	103	103	101
L10060495-02	1.00	01	101	102	104	101
L10060495-03	1.00	01	98.8	102	100	100
L10060495-04	1.00	01	99.2	100	102	101
L10060495-05	1.00	01	97.8	102	103	99.8
L10060495-06	1.00	01	101	101	103	98.0
L10060495-07	1.00	01	97.7	100	102	100
WG334769-01	1.00	01	101	103	106	103
WG334769-02	1.00	01	98.8	102	104	102
WG334769-03	1.00	01	98.3	102	102	102

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1705553
Report generated: 06/23/2010 09:40

METHOD BLANK SUMMARY

Login Number: L10060495
Work Group: WG334769
Blank File ID: 6M91804
Blank Sample ID: WG334769-01
Prep Date: 06/18/10 16:12
Instrument ID: HPMS6
Analyzed Date: 06/18/10 16:12
Method: 8260B
Analyst: ADC

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG334769-02	6M91805	06/18/10 16:44	01
LCS2	WG334769-03	6M91806	06/18/10 17:16	01
TRIP BLANK	L10060495-07	6M91808	06/18/10 18:20	01
12WW20-101506	L10060495-01	6M91809	06/18/10 18:53	01
12WW21-101506	L10060495-02	6M91810	06/18/10 19:25	01
12WW22-101506	L10060495-03	6M91811	06/18/10 19:57	01
12WW22-101506-FD	L10060495-04	6M91812	06/18/10 20:28	01
12WW23-101606	L10060495-05	6M91813	06/18/10 21:01	01
12WW24-101606	L10060495-06	6M91814	06/18/10 21:33	01

Report Name: BLANK_SUMMARY
PDF File ID: 1705546
Report generated 06/23/2010 09:39

Login Number:L10060495 Prep Date:06/18/10 16:12 Sample ID:WG334769-01
Instrument ID:HPMS6 Run Date:06/18/10 16:12 Prep Method:5030B/5030C/503
File ID:6M91804 Analyst:ADC Method:8260B
Workgroup (AAB#):WG334769 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-14-JUN-10

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

Report Name:BLANK
PDF ID: 1705547
23-JUN-2010 09:39

Login Number:L10060495 Prep Date:06/18/10 16:12 Sample ID:WG334769-01
Instrument ID:HPMS6 Run Date:06/18/10 16:12 Prep Method:5030B/5030C/503
File ID:6M91804 Analyst:ADC Method:8260B
Workgroup (AAB#):WG334769 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-14-JUN-10

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	103	86 - 118	PASS
1,2-Dichloroethane-d4	101	80 - 120	PASS
Toluene-d8	103	88 - 110	PASS
4-Bromofluorobenzene	106	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1705547
23-JUN-2010 09:39

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number:L10060495 Analyst:ADC Prep Method:5030B/5030C/503
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG334769 Units:ug/L
QC Key:STD Lot #:STD39797

Sample ID:WG334769-02 LCS File ID:6M91805 Run Date:06/18/2010 16:44
Sample ID:WG334769-03 LCS2 File ID:6M91806 Run Date:06/18/2010 17:16

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	19.3	96.4	20.0	20.1	100	4.02	40 - 180	20	
Benzene	20.0	21.4	107	20.0	21.4	107	0.159	80 - 121	20	
Bromobenzene	20.0	21.5	108	20.0	21.4	107	0.631	80 - 120	20	
Bromochloromethane	20.0	21.0	105	20.0	21.0	105	0.356	65 - 130	20	
Bromodichloromethane	20.0	24.9	125	20.0	24.5	123	1.80	80 - 131	20	
Bromoform	20.0	22.6	113	20.0	22.4	112	0.922	70 - 130	20	
Bromomethane	20.0	20.9	105	20.0	21.7	108	3.56	30 - 145	20	
2-Butanone	20.0	19.7	98.7	20.0	20.2	101	2.48	10 - 170	20	
n-Butylbenzene	20.0	21.3	106	20.0	21.7	109	2.06	80 - 131	20	
sec-Butylbenzene	20.0	21.0	105	20.0	21.2	106	1.10	80 - 127	20	
tert-Butylbenzene	20.0	20.7	103	20.0	20.8	104	0.437	80 - 126	20	
Carbon disulfide	20.0	23.8	119	20.0	24.1	121	1.50	58 - 128	20	
Carbon tetrachloride	20.0	22.6	113	20.0	22.8	114	1.11	65 - 140	20	
Chlorobenzene	20.0	20.4	102	20.0	20.4	102	0.404	80 - 120	20	
Chlorodibromomethane	20.0	21.9	109	20.0	21.4	107	2.00	60 - 135	20	
Chloroethane	20.0	21.5	108	20.0	21.6	108	0.164	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	20.3	102	20.0	19.8	98.9	2.80	45 - 160	20	
Chloroform	20.0	21.0	105	20.0	21.2	106	1.16	80 - 125	20	
Chloromethane	20.0	23.8	119	20.0	23.7	118	0.771	40 - 125	20	
2-Chlorotoluene	20.0	22.5	113	20.0	22.2	111	1.32	80 - 127	20	
4-Chlorotoluene	20.0	19.6	97.9	20.0	20.0	100	2.12	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	22.0	110	20.0	21.2	106	3.76	50 - 130	20	
1,2-Dibromoethane	20.0	21.6	108	20.0	21.4	107	0.940	80 - 129	20	
Dibromomethane	20.0	21.8	109	20.0	21.6	108	0.692	75 - 125	20	
1,2-Dichlorobenzene	20.0	20.4	102	20.0	20.5	103	0.345	80 - 125	20	
1,3-Dichlorobenzene	20.0	20.5	102	20.0	20.4	102	0.180	80 - 120	20	
1,4-Dichlorobenzene	20.0	19.9	99.5	20.0	20.0	99.9	0.372	80 - 120	20	
Dichlorodifluoromethane	20.0	21.6	108	20.0	21.9	109	1.56	40 - 160	20	
1,1-Dichloroethane	20.0	21.7	109	20.0	21.8	109	0.245	80 - 125	20	
1,2-Dichloroethane	20.0	21.2	106	20.0	21.3	106	0.249	80 - 129	20	
1,1-Dichloroethene	20.0	20.1	101	20.0	20.2	101	0.357	80 - 132	20	
cis-1,2-Dichloroethene	20.0	21.3	107	20.0	21.6	108	1.51	70 - 125	20	
trans-1,2-Dichloroethene	20.0	20.6	103	20.0	21.3	106	3.13	80 - 127	20	
1,2-Dichloropropane	20.0	21.8	109	20.0	22.1	111	1.59	80 - 120	20	
1,3-Dichloropropane	20.0	20.5	102	20.0	20.6	103	0.711	80 - 120	20	
2,2-Dichloropropane	20.0	20.8	104	20.0	21.7	108	3.90	80 - 133	20	
cis-1,3-Dichloropropene	20.0	23.1	116	20.0	22.7	113	1.96	70 - 130	20	
trans-1,3-Dichloropropene	20.0	20.3	101	20.0	20.5	103	1.36	80 - 130	20	
1,1-Dichloropropene	20.0	20.9	105	20.0	21.1	105	0.814	75 - 130	20	
Ethylbenzene	20.0	21.7	109	20.0	21.8	109	0.265	80 - 122	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1703358
Report generated: 06/23/2010 09:39

Microbac Laboratories Inc.

LABORATORY CONTROL SAMPLE (LCS)

Login Number: L10060495 Analyst: ADC Prep Method: 5030B/5030C/503

Instrument ID: HPMS6 Matrix: Water Method: 8260B

Workgroup (AAB#): WG334769 Units: ug/L

QC Key: STD Lot #: STD39797

Sample ID: WG334769-02 LCS File ID: 6M91805 Run Date: 06/18/2010 16:44

Sample ID: WG334769-03 LCS2 File ID: 6M91806 Run Date: 06/18/2010 17:16

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	19.3	96.3	20.0	19.4	97.1	0.837	55 - 130	20	
Hexachlorobutadiene	20.0	20.4	102	20.0	21.2	106	3.72	72 - 132	20	
Isopropylbenzene	20.0	19.4	97.0	20.0	19.6	97.9	0.937	80 - 122	20	
p-Isopropyltoluene	20.0	20.8	104	20.0	21.0	105	0.982	80 - 122	20	
4-Methyl-2-pentanone	20.0	19.7	98.5	20.0	19.6	97.8	0.652	64 - 140	20	
Methylene chloride	20.0	21.1	105	20.0	21.1	105	0.0332	80 - 123	20	
Naphthalene	20.0	19.4	96.9	20.0	19.5	97.6	0.686	59 - 149	20	
n-Propylbenzene	20.0	22.1	110	20.0	22.1	111	0.263	80 - 129	20	
Styrene	20.0	22.1	111	20.0	22.0	110	0.316	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	21.5	107	20.0	21.2	106	1.12	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	21.1	105	20.0	20.8	104	1.16	79 - 125	20	
Tetrachloroethene	20.0	20.0	99.8	20.0	19.9	99.5	0.333	80 - 124	20	
Toluene	20.0	21.5	108	20.0	21.8	109	1.20	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	20.0	100	20.0	20.2	101	0.684	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	18.5	92.6	20.0	19.5	97.6	5.23	65 - 135	20	
1,1,1-Trichloroethane	20.0	21.0	105	20.0	21.3	107	1.63	80 - 134	20	
1,1,2-Trichloroethane	20.0	20.6	103	20.0	20.7	104	0.903	80 - 125	20	
Trichloroethene	20.0	22.0	110	20.0	21.8	109	0.943	80 - 122	20	
Trichlorofluoromethane	20.0	19.6	97.9	20.0	19.7	98.7	0.836	62 - 151	20	
1,2,3-Trichloropropane	20.0	20.0	100	20.0	19.9	99.5	0.579	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	22.5	113	20.0	22.8	114	1.00	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	22.3	112	20.0	22.4	112	0.0473	80 - 127	20	
Vinyl acetate	20.0	10.2	50.9	20.0	9.75	48.8	4.33	10 - 190	20	
Vinyl chloride	20.0	23.1	116	20.0	22.5	113	2.68	50 - 170	20	
o-Xylene	20.0	21.2	106	20.0	21.2	106	0.184	80 - 122	20	
m-,p-Xylene	40.0	43.5	109	40.0	43.5	109	0.214	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	98.8	98.3	80 - 120	PASS
Dibromofluoromethane	102	102	86 - 118	PASS
4-Bromofluorobenzene	104	102	86 - 115	PASS
Toluene-d8	102	102	88 - 110	PASS

* EXCEEDS %REC LIMIT

\# EXCEEDS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008

PDF File ID: 1703358

Report generated: 06/23/2010 09:39

BFB

Login Number: L10060495
Instrument: HPMS6
Analyst: MES
Workgroup: WG334239

Tune ID: WG334239-01
Run Date: 06/14/2010
Run Time: 16:03
File ID: 6M91680
Cal ID: HPMS6 -

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	19.7	8423	PASS
75.0	95.0	30.0	60.0	43.6	18594	PASS
95.0	95.0	100	100	100	42682	PASS
96.0	95.0	5.00	9.00	7.01	2994	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	83.3	35573	PASS
175	174	5.00	9.00	7.11	2529	PASS
176	174	95.0	101	98.6	35072	PASS
177	176	5.00	9.00	6.52	2285	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG334239-02	STD	01	06/14/2010 16:29	
WG334239-03	STD	01	06/14/2010 17:01	
WG334239-04	STD	01	06/14/2010 17:33	
WG334239-05	STD	01	06/14/2010 18:05	
WG334239-06	STD	01	06/14/2010 18:37	
WG334239-07	STD	01	06/14/2010 19:10	
WG334239-08	STD-CCV	01	06/14/2010 19:42	
WG334239-09	STD	01	06/14/2010 20:14	
WG334239-10	STD	01	06/14/2010 20:46	
WG334239-11	STD	01	06/14/2010 21:19	
WG334239-12	SSCV	01	06/14/2010 22:23	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1705550
Report generated 06/23/2010 09:39

BFB

Login Number: L10060495
Instrument: HPMS6
Analyst: MES
Workgroup: WG334407

Tune ID: WG334407-01
Run Date: 06/15/2010
Run Time: 16:11
File ID: 6M91710
Cal ID: HPMS6 - 14-JUN-10

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	19.1	9023	PASS
75.0	95.0	30.0	60.0	43.2	20461	PASS
95.0	95.0	100	100	100	47357	PASS
96.0	95.0	5.00	9.00	6.35	3007	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	86.4	40898	PASS
175	174	5.00	9.00	6.55	2677	PASS
176	174	95.0	101	98.3	40194	PASS
177	176	5.00	9.00	6.61	2656	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG334239-13	SSCV	01	06/15/2010 18:11	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1705550
Report generated 06/23/2010 09:39

BFB

Login Number: L10060495
Instrument: HPMS6
Analyst: ADC
Workgroup: WG334767

Tune ID: WG334767-01
Run Date: 06/18/2010
Run Time: 14:36
File ID: 6M91801
Cal ID: HPMS6-14-JUN-10

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	20.8	13411	PASS
75.0	95.0	30.0	60.0	46.0	29693	PASS
95.0	95.0	100	100	100	64482	PASS
96.0	95.0	5.00	9.00	6.65	4288	PASS
173	174	0	2.00	0.652	360	PASS
174	95.0	50.0	100	85.7	55248	PASS
175	174	5.00	9.00	7.35	4059	PASS
176	174	95.0	101	98.7	54512	PASS
177	176	5.00	9.00	6.44	3510	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG334767-02	CCV	01	06/18/2010 15:01	
WG334769-01	BLANK	01	06/18/2010 16:12	
WG334769-02	LCS	01	06/18/2010 16:44	
WG334769-03	LCS2	01	06/18/2010 17:16	
L10060495-07	TRIP BLANK	01	06/18/2010 18:20	
L10060495-01	12WW20-101506	01	06/18/2010 18:53	
L10060495-02	12WW21-101506	01	06/18/2010 19:25	
L10060495-03	12WW22-101506	01	06/18/2010 19:57	
L10060495-04	12WW22-101506-FD	01	06/18/2010 20:28	
L10060495-05	12WW23-101606	01	06/18/2010 21:01	
L10060495-06	12WW24-101606	01	06/18/2010 21:33	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1705550
Report generated 06/23/2010 09:39

Login Number: L10060495 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 14-JUN-10 21:19
ICAL Workgroup: WG334239 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
1,1-Dichloroethene	CCC	0.3649	18.6	0.99900	
1,2-Dichloropropane	CCC	0.2455	8.75		
Chloroform	CCC	0.4133	7.68		
Ethylbenzene	CCC	0.4668	13.0		
Toluene	CCC	1.301	8.97		
Vinyl Chloride	CCC	0.2286	15.3		1.00000
1,1,2,2-Tetrachloroethane	SPCC	0.3885	12.5		
1,1-Dichloroethane	SPCC	0.4475	9.16		
Bromoform	SPCC	0.1187	22.2	0.99800	
Chlorobenzene	SPCC	0.9126	5.01		
Chloromethane	SPCC	0.3371	6.97		
1,1,1,2-Tetrachloroethane		0.2775	17.8	0.99900	
1,1,1-Trichloroethane		0.3214	20.1	1.00000	
1,1,2-Trichloroethane		0.2119	7.55		
1,1-Dichloropropene		0.3133	7.15		
1,2,3-Trichlorobenzene		0.7039	9.60		
1,2,3-Trichloropropane		0.1215	10.3		
1,2,4-Trichlorobenzene		0.8637	8.20		
1,2,4-Trimethylbenzene		2.183	10.7		
1,2-Dibromo-3-Chloropropane		0.05067	10.7		
1,2-Dibromoethane		0.2077	14.6		
1,2-Dichlorobenzene		1.200	8.51		
1,2-Dichloroethane		0.2536	9.57		
1,3,5-Trimethylbenzene		2.091	13.8		
1,3-Dichlorobenzene		1.391	6.61		
1,3-Dichloropropane		0.3560	7.06		
1,4-Dichlorobenzene		1.435	5.65		
2,2-Dichloropropane		0.2785	23.1	0.99900	
2-Butanone		0.05805	4.69		
2-Chloroethyl Vinyl Ether		0.09960	10.4		
2-Chlorotoluene		1.916	9.50		
2-Hexanone		0.1038	5.34		
4-Chlorotoluene		1.857	7.57		
4-Methyl-2-Pentanone		0.04672	6.48		
Acetone		0.03813	6.66		
Benzene		0.9236	6.13		
Bromobenzene		0.7223	11.1		
Bromochloromethane		0.1535	7.45		
Bromodichloromethane		0.2509	13.1		
Bromomethane		0.1535	5.89		
Carbon Disulfide		0.6203	5.83		
Carbon Tetrachloride		0.2496	31.0	0.99800	
Chloroethane		0.1740	6.98		
Dibromochloromethane		0.2271	19.4	0.99900	
Dibromomethane		0.1076	12.4		

INT_CAL - Modified 03/06/2008
PDF File ID: 1705548
Report generated 06/23/2010 09:39

Login Number: L10060495 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 14-JUN-10 21:19
ICAL Workgroup: WG334239 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
Dichlorodifluoromethane		0.2698	7.08		
Hexachlorobutadiene		0.3413	13.8		
Isopropylbenzene		1.351	14.1		
Methylene Chloride		0.2421	3.67		
Naphthalene		1.416	8.80		
Styrene		0.8891	13.9		
Tetrachloroethene		0.3537	15.5	1.00000	
Trichloroethene		0.2657	14.8		
Trichlorofluoromethane		0.3455	27.0	0.99900	
Vinyl Acetate		0.2198	9.37		
cis-1,2-Dichloroethene		0.2663	10.3		
cis-1,3-Dichloropropene		0.2998	12.0		
m-,p-Xylene		0.5679	11.0		
n-Butylbenzene		2.029	7.52		
n-Propylbenzene		3.011	12.9		
o-Xylene		0.5428	9.34		
p-Isopropyltoluene		2.436	8.11		
sec-Butylbenzene		2.732	6.05		
tert-Butylbenzene		0.4899	6.76		
trans-1,2-Dichloroethene		0.2482	8.99		
trans-1,3-Dichloropropene		0.3438	14.4		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

If the %RSD is greater than the limit specified by the method or project QAP, then linear or quadratic equations will be used.

INT_CAL - Modified 03/06/2008
PDF File ID: 1705548
Report generated 06/23/2010 09:39

Login Number: L10060495 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 14-JUN-10 21:19
Column ID: F

Analyte	WG334239-02			WG334239-03			WG334239-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	2526.00000	0.2033	1.00	10872.0000	0.3596
1,2-Dichloropropane	NA	NA	NA	0.400	2536.00000	0.2041	1.00	6873.00000	0.2273
Chloroform	0.300	4030.00000	0.4195	0.400	4189.00000	0.3371	1.00	12187.0000	0.4031
Ethylbenzene	NA	NA	NA	0.400	3019.00000	0.3365	1.00	9626.00000	0.4304
Toluene	NA	NA	NA	0.400	9746.00000	1.086	1.00	26619.0000	1.190
Vinyl Chloride	NA	NA	NA	0.400	1972.00000	0.1587	1.00	7740.00000	0.2560
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	1297.00000	0.2838	1.00	4415.00000	0.3879
1,1-Dichloroethane	NA	NA	NA	0.400	4472.00000	0.3599	1.00	12757.0000	0.4220
Bromoform	NA	NA	NA	NA	NA	NA	1.00	1674.00000	0.07490
Chlorobenzene	NA	NA	NA	0.400	7332.00000	0.8172	1.00	19982.0000	0.8935
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	11757.0000	0.3889
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	1729.00000	0.1927	1.00	5264.00000	0.2354
1,1,1-Trichloroethane	NA	NA	NA	0.400	2259.00000	0.1818	1.00	8671.00000	0.2868
1,1,2-Trichloroethane	NA	NA	NA	0.400	1597.00000	0.1780	1.00	4518.00000	0.2020
1,1-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	8465.00000	0.2800
1,2,3-Trichlorobenzene	0.300	2412.00000	0.6838	0.400	2447.00000	0.5354	1.00	8233.00000	0.7233
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	1118.00000	0.09820
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	3249.00000	0.7109	1.00	9959.00000	0.8750
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	7751.00000	1.696	1.00	22977.0000	2.019
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	1278.00000	0.1424	1.00	4164.00000	0.1862
1,2-Dichlorobenzene	0.300	3992.00000	1.132	0.400	4422.00000	0.9676	1.00	13502.0000	1.186
1,2-Dichloroethane	NA	NA	NA	0.400	2511.00000	0.2021	1.00	7093.00000	0.2346
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	6696.00000	1.465	1.00	22584.0000	1.984
1,3-Dichlorobenzene	NA	NA	NA	0.400	5394.00000	1.180	1.00	15962.0000	1.402
1,3-Dichloropropane	NA	NA	NA	0.400	2835.00000	0.3160	1.00	7137.00000	0.3191
1,4-Dichlorobenzene	0.300	5204.00000	1.475	0.400	5695.00000	1.246	1.00	16965.0000	1.491
2,2-Dichloropropane	NA	NA	NA	0.400	1849.00000	0.1488	1.00	7146.00000	0.2364
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	NA	NA	NA	0.400	7020.00000	1.536	1.00	20305.0000	1.784
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	7341.00000	1.606	1.00	20913.0000	1.837
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	10200.0000	0.8209	1.00	26722.0000	0.8839
Bromobenzene	0.300	1985.00000	0.5627	0.400	2804.00000	0.6136	1.00	8407.00000	0.7386
Bromochloromethane	NA	NA	NA	0.400	1630.00000	0.1312	1.00	4443.00000	0.1470
Bromodichloromethane	NA	NA	NA	0.400	2322.00000	0.1869	1.00	7070.00000	0.2339
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	4075.00000	0.1348
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	16399.0000	0.5424
Carbon Tetrachloride	NA	NA	NA	0.400	1126.00000	0.09060	1.00	6216.00000	0.2056

INT_CAL - Modified 03/06/2008
PDF File ID: 1705548
Report generated 06/23/2010 09:39

Login Number: L10060495 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 14-JUN-10 21:19
Column ID: F

Analyte	WG334239-05			WG334239-06			WG334239-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	23298.0000	0.3768	5.00	56631.0000	0.3666	20.0	254105.000	0.4065
1,2-Dichloropropane	2.00	14765.0000	0.2388	5.00	37853.0000	0.2451	20.0	164395.000	0.2630
Chloroform	2.00	26064.0000	0.4216	5.00	61893.0000	0.4007	20.0	273976.000	0.4383
Ethylbenzene	2.00	20873.0000	0.4670	5.00	52090.0000	0.4646	20.0	222544.000	0.4938
Toluene	2.00	57715.0000	1.291	5.00	142332.000	1.270	20.0	624669.000	1.386
Vinyl Chloride	2.00	15832.0000	0.2561	5.00	38933.0000	0.2521	20.0	155990.000	0.2496
1,1,2,2-Tetrachloroethane	2.00	10440.0000	0.4580	5.00	23720.0000	0.4110	20.0	92938.0000	0.3945
1,1-Dichloroethane	2.00	27889.0000	0.4511	5.00	68355.0000	0.4426	20.0	299538.000	0.4792
Bromoform	2.00	4617.00000	0.1033	5.00	11639.0000	0.1038	20.0	54354.0000	0.1206
Chlorobenzene	2.00	42545.0000	0.9520	5.00	100603.000	0.8973	20.0	424611.000	0.9421
Chloromethane	2.00	20857.0000	0.3373	5.00	51305.0000	0.3322	20.0	201916.000	0.3230
1,1,1,2-Tetrachloroethane	2.00	11853.0000	0.2652	5.00	28962.0000	0.2583	20.0	129356.000	0.2870
1,1,1-Trichloroethane	2.00	19332.0000	0.3127	5.00	49734.0000	0.3220	20.0	223480.000	0.3575
1,1,2-Trichloroethane	2.00	10171.0000	0.2276	5.00	23878.0000	0.2130	20.0	99864.0000	0.2216
1,1-Dichloropropene	2.00	18247.0000	0.2951	5.00	45580.0000	0.2951	20.0	205200.000	0.3283
1,2,3-Trichlorobenzene	2.00	17083.0000	0.7494	5.00	40463.0000	0.7011	20.0	167554.000	0.7113
1,2,3-Trichloropropane	2.00	3176.00000	0.1393	5.00	7440.00000	0.1289	20.0	28423.0000	0.1207
1,2,4-Trichlorobenzene	2.00	20061.0000	0.8801	5.00	47900.0000	0.8299	20.0	201240.000	0.8543
1,2,4-Trimethylbenzene	2.00	50620.0000	2.221	5.00	123914.000	2.147	20.0	544939.000	2.313
1,2-Dibromo-3-Chloropropane	2.00	1057.00000	0.04640	5.00	2516.00000	0.04360	20.0	11275.0000	0.04790
1,2-Dibromoethane	2.00	9239.00000	0.2067	5.00	24145.0000	0.2154	20.0	101051.000	0.2242
1,2-Dichlorobenzene	2.00	30222.0000	1.326	5.00	70508.0000	1.222	20.0	289116.000	1.227
1,2-Dichloroethane	2.00	16062.0000	0.2598	5.00	39682.0000	0.2569	20.0	169742.000	0.2716
1,3,5-Trimethylbenzene	2.00	46511.0000	2.041	5.00	118837.000	2.059	20.0	531052.000	2.254
1,3-Dichlorobenzene	2.00	33595.0000	1.474	5.00	78594.0000	1.362	20.0	334754.000	1.421
1,3-Dichloropropane	2.00	16932.0000	0.3789	5.00	40426.0000	0.3606	20.0	169750.000	0.3766
1,4-Dichlorobenzene	2.00	34918.0000	1.532	5.00	81238.0000	1.408	20.0	340390.000	1.445
2,2-Dichloropropane	2.00	16516.0000	0.2671	5.00	40848.0000	0.2645	20.0	195139.000	0.3122
2-Butanone	NA	NA	NA	5.00	9188.00000	0.05950	20.0	37408.0000	0.05980
2-Chloroethyl Vinyl Ether	2.00	4815.00000	0.07790	5.00	14796.0000	0.09580	20.0	64109.0000	0.1026
2-Chlorotoluene	2.00	44089.0000	1.934	5.00	112029.000	1.941	20.0	487692.000	2.070
2-Hexanone	NA	NA	NA	5.00	11154.0000	0.09950	20.0	49611.0000	0.1101
4-Chlorotoluene	2.00	45817.0000	2.010	5.00	102533.000	1.777	20.0	439240.000	1.865
4-Methyl-2-Pentanone	NA	NA	NA	5.00	6632.00000	0.04290	20.0	30780.0000	0.04920
Acetone	NA	NA	NA	5.00	6317.00000	0.04090	20.0	24789.0000	0.03970
Benzene	2.00	56587.0000	0.9152	5.00	137834.000	0.8924	20.0	607589.000	0.9720
Bromobenzene	2.00	18211.0000	0.7989	5.00	42651.0000	0.7390	20.0	182015.000	0.7727
Bromochloromethane	2.00	9295.00000	0.1503	5.00	24066.0000	0.1558	20.0	103818.000	0.1661
Bromodichloromethane	2.00	14917.0000	0.2413	5.00	36534.0000	0.2365	20.0	166470.000	0.2663
Bromomethane	2.00	9367.00000	0.1515	5.00	23695.0000	0.1534	20.0	98131.0000	0.1570
Carbon Disulfide	2.00	38290.0000	0.6193	5.00	97092.0000	0.6286	20.0	404362.000	0.6469
Carbon Tetrachloride	2.00	14563.0000	0.2355	5.00	36471.0000	0.2361	20.0	176426.000	0.2822

INT_CAL - Modified 03/06/2008
PDF File ID: 1705548
Report generated 06/23/2010 09:39

Login Number: L10060495
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 14-JUN-10 21:19
Column ID: F

Analyte	WG334239-08			WG334239-09			WG334239-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	643773.000	0.4091	100	1271509.00	0.4061	200	2475862.00	0.3910
1,2-Dichloropropane	50.0	415723.000	0.2642	100	827800.000	0.2644	200	1625370.00	0.2567
Chloroform	50.0	685413.000	0.4356	100	1369398.00	0.4373	200	2702988.00	0.4268
Ethylbenzene	50.0	576029.000	0.5087	100	1159964.00	0.5213	200	2277700.00	0.5119
Toluene	50.0	1596780.00	1.410	100	3153279.00	1.417	200	6037962.00	1.357
Vinyl Chloride	50.0	376273.000	0.2391	100	689271.000	0.2201	200	1245497.00	0.1967
1,1,2,2-Tetrachloroethane	50.0	236541.000	0.4015	100	450421.000	0.3922	200	879207.000	0.3788
1,1-Dichloroethane	50.0	753370.000	0.4788	100	1502107.00	0.4797	200	2955472.00	0.4667
Bromoform	50.0	154540.000	0.1365	100	323706.000	0.1455	200	649626.000	0.1460
Chlorobenzene	50.0	1072412.00	0.9470	100	2109035.00	0.9478	200	4022446.00	0.9041
Chloromethane	50.0	517810.000	0.3291	100	1025119.00	0.3274	200	2035858.00	0.3215
1,1,1,2-Tetrachloroethane	50.0	359906.000	0.3178	100	742648.000	0.3338	200	1467664.00	0.3299
1,1,1-Trichloroethane	50.0	574841.000	0.3653	100	1168973.00	0.3733	200	2355318.00	0.3719
1,1,2-Trichloroethane	50.0	250317.000	0.2211	100	494960.000	0.2224	200	930319.000	0.2091
1,1-Dichloropropene	50.0	525904.000	0.3342	100	1037635.00	0.3314	200	2084519.00	0.3292
1,2,3-Trichlorobenzene	50.0	432168.000	0.7336	100	875801.000	0.7626	200	1704613.00	0.7344
1,2,3-Trichloropropane	50.0	73333.0000	0.1245	100	140526.000	0.1224	200	271046.000	0.1168
1,2,4-Trichlorobenzene	50.0	531455.000	0.9022	100	1078397.00	0.9391	200	2131033.00	0.9181
1,2,4-Trimethylbenzene	50.0	1397637.00	2.373	100	2773161.00	2.415	200	5296658.00	2.282
1,2-Dibromo-3-Chloropropane	50.0	31493.0000	0.05350	100	64645.0000	0.05630	200	130792.000	0.05630
1,2-Dibromoethane	50.0	263136.000	0.2324	100	516977.000	0.2323	200	988178.000	0.2221
1,2-Dichlorobenzene	50.0	739037.000	1.255	100	1449408.00	1.262	200	2842113.00	1.225
1,2-Dichloroethane	50.0	430692.000	0.2737	100	848905.000	0.2711	200	1641889.00	0.2593
1,3,5-Trimethylbenzene	50.0	1366148.00	2.319	100	2722051.00	2.370	200	5190542.00	2.236
1,3-Dichlorobenzene	50.0	848075.000	1.440	100	1666595.00	1.451	200	3235099.00	1.394
1,3-Dichloropropane	50.0	420095.000	0.3710	100	827618.000	0.3719	200	1573706.00	0.3537
1,4-Dichlorobenzene	50.0	855893.000	1.453	100	1678917.00	1.462	200	3257958.00	1.404
2,2-Dichloropropane	50.0	518453.000	0.3295	100	1051632.00	0.3358	200	2114524.00	0.3339
2-Butanone	50.0	95554.0000	0.06070	100	184875.000	0.05900	200	343156.000	0.05420
2-Chloroethyl Vinyl Ether	50.0	167794.000	0.1066	100	337427.000	0.1078	200	645808.000	0.1020
2-Chlorotoluene	50.0	1243001.00	2.110	100	2254872.00	1.964	200	4621861.00	1.991
2-Hexanone	50.0	125117.000	0.1105	100	233881.000	0.1051	200	439712.000	0.09880
4-Chlorotoluene	50.0	1117134.00	1.896	100	2363726.00	2.058	200	4185753.00	1.803
4-Methyl-2-Pentanone	50.0	79875.0000	0.05080	100	149435.000	0.04770	200	279793.000	0.04420
Acetone	50.0	63812.0000	0.04060	100	115238.000	0.03680	200	225525.000	0.03560
Benzene	50.0	1540553.00	0.9791	100	3077050.00	0.9827	200	5970000.00	0.9428
Bromobenzene	50.0	457129.000	0.7760	100	883621.000	0.7695	200	1694245.00	0.7299
Bromochloromethane	50.0	260921.000	0.1658	100	501721.000	0.1602	200	958930.000	0.1514
Bromodichloromethane	50.0	438734.000	0.2788	100	889293.000	0.2840	200	1768506.00	0.2793
Bromomethane	50.0	255848.000	0.1626	100	499463.000	0.1595	200	988024.000	0.1560
Carbon Disulfide	50.0	1014081.00	0.6445	100	2006160.00	0.6407	200	3924364.00	0.6197
Carbon Tetrachloride	50.0	475262.000	0.3020	100	1005146.00	0.3210	200	2049482.00	0.3236

INT_CAL - Modified 03/06/2008
PDF File ID: 1705548
Report generated 06/23/2010 09:39

Login Number: L10060495
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 14-JUN-10 21:19
Column ID: F

Analyte	WG334239-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	518549.000	0.05510
2-Chloroethyl Vinyl Ether	300	983404.000	0.1045
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	662237.000	0.09880
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	428615.000	0.04550
Acetone	300	331694.000	0.03520
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1705548
Report generated 06/23/2010 09:39

Login Number: L10060495
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 14-JUN-10 21:19
Column ID: F

Analyte	WG334239-02			WG334239-03			WG334239-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	5275.00000	0.1745
Dibromochloromethane	NA	NA	NA	0.400	1445.00000	0.1610	1.00	4055.00000	0.1813
Dibromomethane	NA	NA	NA	0.400	1006.00000	0.08100	1.00	2801.00000	0.09270
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	7211.00000	0.2385
Hexachlorobutadiene	NA	NA	NA	0.400	1120.00000	0.2451	1.00	3797.00000	0.3336
Isopropylbenzene	NA	NA	NA	0.400	8332.00000	0.9286	1.00	28140.0000	1.258
Methylene Chloride	NA	NA	NA	NA	NA	NA	1.00	6980.00000	0.2309
Naphthalene	NA	NA	NA	0.400	5249.00000	1.149	1.00	15214.0000	1.337
Styrene	NA	NA	NA	0.400	5900.00000	0.6576	1.00	17370.0000	0.7767
Tetrachloroethene	NA	NA	NA	0.400	2059.00000	0.2295	1.00	7431.00000	0.3323
Trichloroethene	NA	NA	NA	0.400	2185.00000	0.1759	1.00	7524.00000	0.2489
Trichlorofluoromethane	NA	NA	NA	0.400	1565.00000	0.1260	1.00	9697.00000	0.3208
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	2625.00000	0.2113	1.00	7452.00000	0.2465
cis-1,3-Dichloropropene	NA	NA	NA	0.400	3055.00000	0.2459	1.00	7754.00000	0.2565
m-,p-Xylene	NA	NA	NA	0.800	7980.00000	0.4447	2.00	23666.0000	0.5291
n-Butylbenzene	NA	NA	NA	NA	NA	NA	1.00	20476.0000	1.799
n-Propylbenzene	NA	NA	NA	0.400	10138.0000	2.218	1.00	31068.0000	2.730
o-Xylene	NA	NA	NA	0.400	4016.00000	0.4476	1.00	11125.0000	0.4975
p-Isopropyltoluene	NA	NA	NA	NA	NA	NA	1.00	24169.0000	2.124
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	1.00	28333.0000	2.489
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	1.00	4844.00000	0.4256
trans-1,2-Dichloroethene	NA	NA	NA	0.400	2479.00000	0.1995	1.00	7325.00000	0.2423
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	5871.00000	0.2625

INT_CAL - Modified 03/06/2008
PDF File ID: 1705548
Report generated 06/23/2010 09:39

Login Number: L10060495
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 14-JUN-10 21:19
Column ID: F

Analyte	WG334239-05			WG334239-06			WG334239-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	10310.0000	0.1668	5.00	28232.0000	0.1828	20.0	117453.000	0.1879
Dibromochloromethane	2.00	9114.00000	0.2039	5.00	23837.0000	0.2126	20.0	108577.000	0.2409
Dibromomethane	2.00	7025.00000	0.1136	5.00	17175.0000	0.1112	20.0	72519.0000	0.1160
Dichlorodifluoromethane	2.00	15887.0000	0.2570	5.00	43409.0000	0.2810	20.0	182297.000	0.2916
Hexachlorobutadiene	2.00	7549.00000	0.3312	5.00	18586.0000	0.3220	20.0	82566.0000	0.3505
Isopropylbenzene	2.00	61883.0000	1.385	5.00	150278.000	1.340	20.0	663127.000	1.471
Methylene Chloride	2.00	15345.0000	0.2482	5.00	37191.0000	0.2408	20.0	158485.000	0.2535
Naphthalene	2.00	33997.0000	1.492	5.00	81573.0000	1.413	20.0	338522.000	1.437
Styrene	2.00	38433.0000	0.8600	5.00	97770.0000	0.8720	20.0	440687.000	0.9778
Tetrachloroethene	2.00	16531.0000	0.3699	5.00	38538.0000	0.3437	20.0	174107.000	0.3863
Trichloroethene	2.00	16743.0000	0.2708	5.00	41428.0000	0.2682	20.0	182801.000	0.2924
Trichlorofluoromethane	2.00	21759.0000	0.3519	5.00	60374.0000	0.3909	20.0	252783.000	0.4044
Vinyl Acetate	NA	NA	NA	5.00	32217.0000	0.2086	20.0	125200.000	0.2003
cis-1,2-Dichloroethene	2.00	16279.0000	0.2633	5.00	40015.0000	0.2591	20.0	179229.000	0.2867
cis-1,3-Dichloropropene	2.00	17683.0000	0.2860	5.00	44327.0000	0.2870	20.0	201086.000	0.3217
m-,p-Xylene	4.00	50502.0000	0.5650	10.0	121433.000	0.5415	40.0	548662.000	0.6087
n-Butylbenzene	2.00	44690.0000	1.961	5.00	108498.000	1.880	20.0	487991.000	2.072
n-Propylbenzene	2.00	70861.0000	3.109	5.00	170170.000	2.948	20.0	776294.000	3.296
o-Xylene	2.00	24399.0000	0.5459	5.00	58693.0000	0.5235	20.0	260050.000	0.5770
p-Isopropyltoluene	2.00	52958.0000	2.323	5.00	131604.000	2.280	20.0	600035.000	2.547
sec-Butylbenzene	2.00	59722.0000	2.620	5.00	150813.000	2.613	20.0	672805.000	2.856
tert-Butylbenzene	2.00	11127.0000	0.4882	5.00	27148.0000	0.4704	20.0	119261.000	0.5063
trans-1,2-Dichloroethene	2.00	15462.0000	0.2501	5.00	36814.0000	0.2383	20.0	164487.000	0.2631
trans-1,3-Dichloropropene	2.00	13460.0000	0.3012	5.00	36059.0000	0.3216	20.0	163246.000	0.3622

INT_CAL - Modified 03/06/2008
PDF File ID: 1705548
Report generated 06/23/2010 09:39

Login Number: L10060495
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 14-JUN-10 21:19
Column ID: F

Analyte	WG334239-08			WG334239-09			WG334239-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	289366.000	0.1839	100	529135.000	0.1690	200	969395.000	0.1531
Dibromochloromethane	50.0	301273.000	0.2661	100	619142.000	0.2782	200	1214810.00	0.2730
Dibromomethane	50.0	185184.000	0.1177	100	364070.000	0.1163	200	712658.000	0.1125
Dichlorodifluoromethane	50.0	452234.000	0.2874	100	857782.000	0.2739	200	1640587.00	0.2591
Hexachlorobutadiene	50.0	215826.000	0.3664	100	442776.000	0.3856	200	919423.000	0.3961
Isopropylbenzene	50.0	1712557.00	1.512	100	3344015.00	1.503	200	6257956.00	1.407
Methylene Chloride	50.0	389746.000	0.2477	100	762208.000	0.2434	200	1456791.00	0.2300
Naphthalene	50.0	881596.000	1.497	100	1772874.00	1.544	200	3385948.00	1.459
Styrene	50.0	1137436.00	1.005	100	2244125.00	1.009	200	4252561.00	0.9558
Tetrachloroethene	50.0	437491.000	0.3863	100	867455.000	0.3898	200	1741778.00	0.3915
Trichloroethene	50.0	457357.000	0.2907	100	916566.000	0.2927	200	1810320.00	0.2859
Trichlorofluoromethane	50.0	632051.000	0.4017	100	1239830.00	0.3959	200	2360347.00	0.3727
Vinyl Acetate	50.0	351206.000	0.2232	100	706480.000	0.2256	200	1294725.00	0.2045
cis-1,2-Dichloroethene	50.0	454200.000	0.2887	100	906409.000	0.2895	200	1807641.00	0.2855
cis-1,3-Dichloropropene	50.0	521982.000	0.3317	100	1061773.00	0.3391	200	2093202.00	0.3305
m-,p-Xylene	100	1412474.00	0.6237	200	2812239.00	0.6319	400	5325412.00	0.5985
n-Butylbenzene	50.0	1273005.00	2.161	100	2535044.00	2.208	200	4928511.00	2.123
n-Propylbenzene	50.0	1981359.00	3.363	100	3857263.00	3.359	200	7118128.00	3.067
o-Xylene	50.0	665463.000	0.5877	100	1320690.00	0.5935	200	2535852.00	0.5700
p-Isopropyltoluene	50.0	1541264.00	2.616	100	3056251.00	2.661	200	5797391.00	2.498
sec-Butylbenzene	50.0	1710491.00	2.904	100	3347028.00	2.915	200	6327260.00	2.726
tert-Butylbenzene	50.0	303246.000	0.5148	100	599669.000	0.5222	200	1164070.00	0.5015
trans-1,2-Dichloroethene	50.0	416745.000	0.2649	100	832158.000	0.2658	200	1655120.00	0.2614
trans-1,3-Dichloropropene	50.0	432617.000	0.3820	100	873537.000	0.3926	200	1709847.00	0.3843

INT_CAL - Modified 03/06/2008
PDF File ID: 1705548
Report generated 06/23/2010 09:39

Login Number: L10060495
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 14-JUN-10 21:19
Column ID: F

Analyte	WG334239-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	300	2412182.00	0.2563
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1705548
Report generated 06/23/2010 09:39

Microbac Laboratories Inc.

ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L10060495 Run Date: 06/14/2010 Sample ID: WG334239-12

Instrument ID: HPMS6 Run Time: 22:23 Method: 8260B

File ID: 6M91692 Analyst: MES QC Key: STD

ICal Workgroup: WG334239 Cal ID: HPMS6 - 14-JUN-10

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	50.0	53.0	ug/L	0.438	5.90	30	
1,1-Dichloroethene	CCC	50.0	50.6	ug/L	0.403	1.30	30	
1,2-Dichloropropane	CCC	50.0	55.2	ug/L	0.271	10.4	30	
Ethylbenzene	CCC	50.0	55.5	ug/L	0.519	11.1	30	
Toluene	CCC	50.0	54.6	ug/L	1.42	9.20	30	
Vinyl Chloride	CCC	50.0	48.5	ug/L	0.231	3.00	30	
Bromoform	SPCC	50.0	49.3	ug/L	0.140	1.40	30	
Chlorobenzene	SPCC	50.0	51.6	ug/L	0.942	3.20	30	
Chloromethane	SPCC	50.0	48.7	ug/L	0.328	2.60	30	
1,1-Dichloroethane	SPCC	50.0	54.2	ug/L	0.485	8.40	30	
1,1,2,2-Tetrachloroethane	SPCC	50.0	53.3	ug/L	0.414	6.60	30	
Acetone		50.0	50.7	ug/L	0.0387	1.40	30	
Benzene		50.0	53.6	ug/L	0.989	7.10	30	
Bromobenzene		50.0	53.9	ug/L	0.779	7.90	30	
Bromochloromethane		50.0	53.8	ug/L	0.165	7.60	30	
Bromodichloromethane		50.0	58.8	ug/L	0.295	17.6	30	
Bromomethane		50.0	48.0	ug/L	0.147	4.00	30	
2-Butanone		50.0	52.9	ug/L	0.0614	5.80	30	
n-Butylbenzene		50.0	53.8	ug/L	2.18	7.70	30	
sec-Butylbenzene		50.0	53.1	ug/L	2.90	6.20	30	
tert-Butylbenzene		50.0	52.6	ug/L	0.515	5.20	30	
Carbon Disulfide		50.0	56.6	ug/L	0.702	13.1	30	
Carbon Tetrachloride		50.0	50.0	ug/L	0.316	0	30	
Dibromochloromethane		50.0	51.4	ug/L	0.278	2.90	30	
Chloroethane		50.0	51.4	ug/L	0.179	2.80	30	
2-Chloroethyl Vinyl Ether		50.0	55.0	ug/L	0.110	10.1	30	
2-Chlorotoluene		50.0	55.7	ug/L	2.13	11.3	30	
4-Chlorotoluene		50.0	50.1	ug/L	1.86	0.300	30	
1,2-Dibromo-3-Chloropropane		50.0	52.9	ug/L	0.0536	5.80	30	
1,2-Dibromoethane		50.0	56.3	ug/L	0.234	12.6	30	
Dibromomethane		50.0	54.8	ug/L	0.118	9.50	30	
1,2-Dichlorobenzene		50.0	52.7	ug/L	1.26	5.30	30	
1,3-Dichlorobenzene		50.0	52.0	ug/L	1.45	4.00	30	
1,4-Dichlorobenzene		50.0	50.3	ug/L	1.44	0.600	30	
Dichlorodifluoromethane		50.0	55.5	ug/L	0.299	11.0	30	
1,2-Dichloroethane		50.0	53.7	ug/L	0.273	7.50	30	
cis-1,2-Dichloroethene		50.0	54.2	ug/L	0.289	8.40	30	
trans-1,2-Dichloroethene		50.0	53.2	ug/L	0.264	6.30	30	
1,3-Dichloropropane		50.0	53.2	ug/L	0.379	6.50	30	
2,2-Dichloropropane		50.0	47.4	ug/L	0.314	5.10	30	
cis-1,3-Dichloropropene		50.0	56.2	ug/L	0.337	12.4	30	
trans-1,3-Dichloropropene		50.0	51.2	ug/L	0.352	2.30	30	

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1705549
Report generated 06/23/2010 09:39

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L10060495 Run Date: 06/14/2010 Sample ID: WG334239-12
Instrument ID: HPMS6 Run Time: 22:23 Method: 8260B
File ID: 6M91692 Analyst: MES QC Key: STD
ICal Workgroup: WG334239 Cal ID: HPMS6 - 14-JUN-10

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	52.1	ug/L	0.327	4.20	30	
2-Hexanone		50.0	51.4	ug/L	0.107	2.80	30	
Hexachlorobutadiene		50.0	53.1	ug/L	0.363	6.20	30	
Isopropylbenzene		50.0	49.3	ug/L	1.33	1.40	30	
p-Isopropyltoluene		50.0	53.3	ug/L	2.60	6.70	30	
4-Methyl-2-Pentanone		50.0	52.8	ug/L	0.0493	5.60	30	
Methylene Chloride		50.0	51.7	ug/L	0.250	3.30	30	
Naphthalene		50.0	53.9	ug/L	1.53	7.90	30	
n-Propylbenzene		50.0	55.0	ug/L	3.31	10.0	30	
Styrene		50.0	56.5	ug/L	1.01	13.1	30	
1,1,1,2-Tetrachloroethane		50.0	50.4	ug/L	0.328	0.800	30	
Tetrachloroethene		50.0	49.4	ug/L	0.384	1.30	30	
1,2,3-Trichlorobenzene		50.0	53.5	ug/L	0.753	7.00	30	
1,2,4-Trichlorobenzene		50.0	51.4	ug/L	0.887	2.70	30	
1,1,1-Trichloroethane		50.0	50.2	ug/L	0.371	0.500	30	
1,1,2-Trichloroethane		50.0	53.9	ug/L	0.228	7.80	30	
Trichloroethene		50.0	54.5	ug/L	0.290	9.00	30	
Trichlorofluoromethane		50.0	48.9	ug/L	0.376	2.20	30	
1,2,3-Trichloropropane		50.0	51.9	ug/L	0.126	3.70	30	
1,2,4-Trimethylbenzene		50.0	57.6	ug/L	2.51	15.2	30	
1,3,5-Trimethylbenzene		50.0	56.5	ug/L	2.36	13.0	30	
Vinyl Acetate		50.0	33.4	ug/L	0.147	33.1	40	
o-Xylene		50.0	53.6	ug/L	0.582	7.20	30	
m-,p-Xylene		100	110	ug/L	0.625	10.0	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115978

Login Number: L10060495 Run Date: 06/18/2010 Sample ID: WG334767-02

Instrument ID: HPMS6 Run Time: 15:01 Method: 8260B

File ID: 6M91802 Analyst: ADC QC Key: STD

Workgroup (AAB#): WG334769 Cal ID: HPMS6 - 14-JUN-10

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	52.6	ug/L	0.435	5.23	20	
1,1-Dichloroethene	CCC	50.0	51.9	ug/L	0.413	3.78	20	
1,2-Dichloropropane	CCC	50.0	53.0	ug/L	0.260	5.96	20	
Ethylbenzene	CCC	50.0	55.2	ug/L	0.515	10.3	20	
Toluene	CCC	50.0	54.5	ug/L	1.42	8.97	20	
Vinyl Chloride	CCC	50.0	50.2	ug/L	0.239	0.404	20	
Bromoform	SPCC	50.0	55.3	ug/L	0.158	10.6	40	
Chlorobenzene	SPCC	50.0	51.6	ug/L	0.942	3.19	40	
Chloromethane	SPCC	50.0	50.5	ug/L	0.341	1.04	40	
1,1-Dichloroethane	SPCC	50.0	54.0	ug/L	0.483	7.95	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	53.2	ug/L	0.413	6.38	40	
Acetone		50.0	51.0	ug/L	0.0389	2.09	40	
Benzene		50.0	53.0	ug/L	0.979	6.04	40	
Bromobenzene		50.0	55.9	ug/L	0.807	11.8	40	
Bromochloromethane		50.0	51.9	ug/L	0.159	3.85	40	
Bromodichloromethane		50.0	58.0	ug/L	0.291	16.0	40	
Bromomethane		50.0	50.2	ug/L	0.154	0.368	40	
2-Butanone		50.0	50.0	ug/L	0.0581	0.0884	40	
n-Butylbenzene		50.0	58.1	ug/L	2.36	16.3	40	
sec-Butylbenzene		50.0	57.1	ug/L	3.12	14.1	40	
tert-Butylbenzene		50.0	55.7	ug/L	0.546	11.4	40	
Carbon Disulfide		50.0	53.4	ug/L	0.662	6.72	40	
Carbon Tetrachloride		50.0	56.7	ug/L	0.358	13.3	40	
Dibromochloromethane		50.0	53.5	ug/L	0.290	7.06	40	
Chloroethane		50.0	48.8	ug/L	0.170	2.37	40	
2-Chloroethyl Vinyl Ether		50.0	49.6	ug/L	0.0987	0.861	40	
2-Chlorotoluene		50.0	57.5	ug/L	2.20	14.9	40	
4-Chlorotoluene		50.0	56.3	ug/L	2.09	12.5	40	
1,2-Dibromo-3-Chloropropane		50.0	57.5	ug/L	0.0582	14.9	40	
1,2-Dibromoethane		50.0	53.2	ug/L	0.221	6.46	40	
Dibromomethane		50.0	51.9	ug/L	0.112	3.87	40	
1,2-Dichlorobenzene		50.0	54.2	ug/L	1.30	8.47	40	
1,3-Dichlorobenzene		50.0	52.9	ug/L	1.47	5.75	40	
1,4-Dichlorobenzene		50.0	51.5	ug/L	1.48	3.02	40	
Dichlorodifluoromethane		50.0	35.8	ug/L	0.193	28.3	40	
1,2-Dichloroethane		50.0	52.0	ug/L	0.264	4.05	40	
cis-1,2-Dichloroethene		50.0	54.3	ug/L	0.289	8.51	40	
trans-1,2-Dichloroethene		50.0	53.2	ug/L	0.264	6.31	40	
1,3-Dichloropropane		50.0	50.6	ug/L	0.360	1.22	40	
2,2-Dichloropropane		50.0	56.6	ug/L	0.375	13.1	40	
cis-1,3-Dichloropropene		50.0	56.5	ug/L	0.339	13.0	40	
trans-1,3-Dichloropropene		50.0	57.3	ug/L	0.394	14.7	40	

CCV - Modified 03/05/2008

PDF File ID: 1705551

Report generated 06/23/2010 09:40

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00115979

Login Number: L10060495 Run Date: 06/18/2010 Sample ID: WG334767-02

Instrument ID: HPMS6 Run Time: 15:01 Method: 8260B

File ID: 6M91802 Analyst: ADC QC Key: STD

Workgroup (AAB#): WG334769 Cal ID: HPMS6 - 14-JUN-10

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	53.1	ug/L	0.333	6.19	40	
2-Hexanone		50.0	50.7	ug/L	0.105	1.39	40	
Hexachlorobutadiene		50.0	58.2	ug/L	0.398	16.5	40	
Isopropylbenzene		50.0	55.8	ug/L	1.51	11.6	40	
p-Isopropyltoluene		50.0	57.7	ug/L	2.81	15.4	40	
4-Methyl-2-Pentanone		50.0	50.3	ug/L	0.0470	0.518	40	
Methylene Chloride		50.0	50.9	ug/L	0.246	1.73	40	
Naphthalene		50.0	52.1	ug/L	1.47	4.15	40	
n-Propylbenzene		50.0	60.3	ug/L	3.63	20.7	40	
Styrene		50.0	56.0	ug/L	0.996	12.0	40	
1,1,1,2-Tetrachloroethane		50.0	52.7	ug/L	0.343	5.46	40	
Tetrachloroethene		50.0	49.5	ug/L	0.385	1.01	40	
1,2,3-Trichlorobenzene		50.0	53.5	ug/L	0.753	7.00	40	
1,2,4-Trichlorobenzene		50.0	54.1	ug/L	0.935	8.29	40	
1,1,1-Trichloroethane		50.0	52.1	ug/L	0.385	4.14	40	
1,1,2-Trichloroethane		50.0	50.7	ug/L	0.215	1.35	40	
Trichloroethene		50.0	52.4	ug/L	0.278	4.80	40	
Trichlorofluoromethane		50.0	48.8	ug/L	0.375	2.45	40	
1,2,3-Trichloropropane		50.0	51.5	ug/L	0.125	3.01	40	
1,2,4-Trimethylbenzene		50.0	57.9	ug/L	2.53	15.8	40	
1,3,5-Trimethylbenzene		50.0	59.5	ug/L	2.49	19.0	40	
Vinyl Acetate		50.0	55.3	ug/L	0.243	10.6	40	
o-Xylene		50.0	54.4	ug/L	0.591	8.86	40	
m-,p-Xylene		100	109	ug/L	0.620	9.19	40	
1,2-Dichloroethene		100	107	ug/L	0.276	7.41	40	
Xylenes		150	164	ug/L	0.606	9.08	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1705551
Report generated 06/23/2010 09:40

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number:L10060495
Instrument ID:HPMS6
Workgroup (AAB#):WG334769

CCV Number:WG334767-02
CAL ID: HPMS6-14-JUN-10
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG334767-02	NA	NA	294119	602862	852513
Upper Limit	NA	NA	588238	1205724	1705026
Lower Limit	NA	NA	147060	301431	426257
L10060495-01	1.00	01	269861	531475	719030
L10060495-02	1.00	01	262325	521645	710314
L10060495-03	1.00	01	265774	523375	709230
L10060495-04	1.00	01	259772	509866	699271
L10060495-05	1.00	01	258549	516008	699829
L10060495-06	1.00	01	257830	519998	704806
L10060495-07	1.00	01	268867	532722	716434
WG334769-01	1.00	01	276812	547923	745121
WG334769-02	1.00	01	286952	552733	754463
WG334769-03	1.00	01	289549	555050	765660

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1705552
Report generated 06/23/2010 09:40

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

00115981

Login Number:L10060495
Instrument ID:HPMS6
Workgroup (AAB#):WG334769

CCV Number:WG334767-02
CAL ID: HPMS6 - 14-JUN-10
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG334767-02	NA	NA	19.32	15.75	11.25
Upper Limit	NA	NA	19.82	16.25	11.75
Lower Limit	NA	NA	18.82	15.25	10.75
L10060495-01	1.00	01	19.32	15.74	11.24
L10060495-02	1.00	01	19.31	15.75	11.24
L10060495-03	1.00	01	19.32	15.74	11.24
L10060495-04	1.00	01	19.32	15.74	11.24
L10060495-05	1.00	01	19.32	15.75	11.24
L10060495-06	1.00	01	19.32	15.75	11.25
L10060495-07	1.00	01	19.32	15.74	11.24
WG334769-01	1.00	01	19.32	15.74	11.24
WG334769-02	1.00	01	19.32	15.74	11.24
WG334769-03	1.00	01	19.32	15.74	11.24

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1705554
Report generated 06/23/2010 09:40

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
June 23, 2010

ADC – ANTHONY D. CANTER
AJF – AMANDA J. FICKIESEN
ALB – ANNIE L. BROWN
AML – TONY M. LONG
BLG – BRENDA L. GREENWALT
BRG – BRENDA R. GREGORY
CAA – CASSIE A. AUGENSTEIN
CAF – CHERYL A. FLOWERS
CAH – CHUCK A. HALL
CEB – CHAD E. BARNES
CLC – CHRYS L. CRAWFORD
CLW – CHARISSA L. WINTERS
CPD – CHAD P. DAVIS
CSH – CHRIS S. HILL
DDE – DEBRA D. ELLIOTT
DEL – DON E. LIGHTFRITZ
DEV – DAVID E. VANDENBERG
DGB – DOUGLAS G. BUTCHER
DIH – DEANNA I. HESSON
DLB – DAVID L. BUMGARNER
DLP – DOROTHY L. PAYNE
DLR – DIANNA L. RAUCH
DR – DEANNA ROBERTS
ECL – ERIC C. LAWSON
EDA – ERIN D. AGEE
ERP – ERIN R. PORTER
FJB – FRANCES J. BOLDEN
HAV – HEMA VILASAGAR
HJR – HOLLY J. REED
JBK – JEREMY B. KINNEY
JDH – JUSTIN D. HESSON
JKT – JANE K. THOMPSON
JWR – JOHN W. RICHARDS
JWS – JACK W. SHEAVES
JYH – JI Y. HU
KEB – KATIE E. BARNES
KHR – KIM H. RHODES
KRA – KATHY R. ALBERTSON
LKN – LINDA K. NEDEFF
LMK – LOURAY M. KERN
LSB – LESLIE S. BUCINA
MDA – MIKE D. ALBERTSON
MDC – MIKE D. COCHRAN
MES – MARY E. SCHILLING
MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR
MSW – MATT S. WILSON
PD – PAUL DENT
PDM – PIERCE D. MORRIS
RAH – ROY A. HALSTEAD
RB – BOB BUCHANAN
REK – BOB E. KYER
RLK – ROBIN L. KLINGER
RWC – RODNEY W. CAMPBELL
SLM – STEPHANIE L. MOSSBURG
SLP – SHERI L. PFALZGRAF
TIP – TAE I. PARRISH
TMB – TIFFANY M. BAILEY
TMM – TAMMY M. MORRIS
VC – VICKI COLLIER
WTD – WADE T. DELONG

Microbac Laboratories Inc.
List of Valid Qualifiers
June 23, 2010

Qualkey: STD_ND=U

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
C	Confirmed by GC/MS
CG	Confluent growth
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
FL	Free Liquid
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria fail. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Not detected at or above adjusted sample detection limit
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

Chain of Custody

NO. 5874

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: MICROBAC Address: 158 STARLITE DR. MARIETTA, OH. Contact: STEPHANIE MOSSBURG.

Project Name: LHAAP Project Location: KARNACK, TX.

Project No.: 117591.0008B105. Project Contact: KAY EVERETT Project Telephone No.: 281-531-3121

Point of Contact: Scott Beesinger Telephone No.: 903-679-3448

Project Manager/Supervisor: PRAVEEN SRIVASTAV

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOC	Remarks
1	12WW20-101506	6/15/10	8:50		✓	W	SITE 12	2	✓	
2	12WW21-101506	6/15/10	10:00		✓	W	SITE 12	2	✓	
3	12WW22-101506	6/15/10	11:05		✓	W	SITE 12	2	✓	
4	12WW22-101506-FD	6/15/10	11:05		✓	W	SITE 12	2	✓	
5	12WW23-101606	6/16/10	9:45		✓	W	SITE 12	2	✓	
6	12WW24-101606	6/16/10	10:45		✓	W	SITE 12	2	✓	
7	TRIPBLANK					W		2	✓	
8										
9										
10										

Analysis and Method Desired (Indicate separate containers)

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time
Scott Beesinger	6/16/10 2:00		

Special Instructions: STANDARD TAT

FedEx Airbill No.: 221000006965

Sampler's Signature: Scott Beesinger

TAT: ____ Standard ____ Rush Date ____ Seals: ____Y ____N ____Cold

Microbac OVD
Received: 06/17/2010 10:11
By: ROBIN KLINGER
Robin L. Klinger

Form Number: 433_2
Rev. 10-19-07

00115985

COOLER INSPECTION

Received: 06/17/2010 10:11
Delivery Method: UPS
Opened By: Robin Klinger
Comments:

Login(s): L10060495

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0014198	H	3.0	1Z66V7250199287849	5874	

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	Yes	Were samples received within EPA hold times?
9	Yes	Were correct perservatives used? (water only)
10	NA	Were pH ranges acceptable? (voa's excluded)
11	Yes	Were VOA samples free of headspace (<6mm)?

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L10060495
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 28-JUN-2010

Samplenum	Container ID	Products
L10060495-01	705307	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-JUN-2010 14:06	ALB	
2	ANALYZ	V1	ORG4	17-JUN-2010 15:02	MES	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-JUN-2010 14:06	ALB	
2	ANALYZ	V1	ORG4	17-JUN-2010 15:02	MES	RLK

Samplenum	Container ID	Products
L10060495-02	705308	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-JUN-2010 14:06	ALB	
2	ANALYZ	V1	ORG4	17-JUN-2010 15:02	MES	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-JUN-2010 14:06	ALB	
2	ANALYZ	V1	ORG4	17-JUN-2010 15:02	MES	RLK

Samplenum	Container ID	Products
L10060495-03	705309	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-JUN-2010 14:06	ALB	
2	ANALYZ	V1	ORG4	17-JUN-2010 15:02	MES	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-JUN-2010 14:06	ALB	
2	ANALYZ	V1	ORG4	17-JUN-2010 15:02	MES	RLK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L10060495
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 28-JUN-2010

Samplenum	Container ID	Products
L10060495-04	705310	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-JUN-2010 14:06	ALB	
2	ANALYZ	V1	ORG4	17-JUN-2010 15:02	MES	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-JUN-2010 14:06	ALB	
2	ANALYZ	V1	ORG4	17-JUN-2010 15:02	MES	RLK

Samplenum	Container ID	Products
L10060495-05	705311	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-JUN-2010 14:06	ALB	
2	ANALYZ	V1	ORG4	17-JUN-2010 15:02	MES	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-JUN-2010 14:06	ALB	
2	ANALYZ	V1	ORG4	17-JUN-2010 15:02	MES	RLK

Samplenum	Container ID	Products
L10060495-06	705312	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-JUN-2010 14:06	ALB	
2	ANALYZ	V1	ORG4	17-JUN-2010 15:02	MES	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-JUN-2010 14:06	ALB	
2	ANALYZ	V1	ORG4	17-JUN-2010 15:02	MES	RLK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L10060495
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 28-JUN-2010

Samplenum	Container ID	Products
L10060495-07	705313	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-JUN-2010 14:06	ALB	
2	ANALYZ	V1	ORG4	17-JUN-2010 15:02	MES	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-JUN-2010 14:06	ALB	
2	ANALYZ	V1	ORG4	17-JUN-2010 15:02	MES	RLK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

NELAP Addendum - May 28, 2010

Non-NELAP LIMS Product and Description

The following is a list of those tests that are not included in the Microbac – OVL NELAP Scope of Accreditation:

Heat of Combustion (BTU)
Total Halide by Bomb Combustion (TX)
Particle Sizing - 200 Mesh (PS200)
Sulfate (SO4)
Specific Gravity/Density (SPGRAV)
Total Residual Chlorine (CL-TRL)
Total Volatile Solids (all forms) (TVS)
Total Coliform Bacteria (all methods)
Fecal Coliform Bacteria (all methods)
Sulfite (SO3)
Perchlorate (6850 – LCMS)
Hexamethylphosphoramide (XMPA-LCMS)
Thiodiglycol (TDG-LCMS)
1,4-Dioxane – 8270C (827-DIOXANE)
Phosphorus – 6010B
Zirconium - 6010B

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVL HPLC02/HPLC-UV

Nitroglycerin
Nitroguanidine
Acetic acid
Butyric acid
Lactic acid
Propionic acid
Pyruvic acid

OVL KNITRO-C-WUV-VIS

Nitrocellulose

OVL MSS01/GC-MS

1,4-Phenylenediamine
1-Methylnaphthalene
2, 3, 4, 6-Tetrachlorophenol
2-Chloronaphthalene
Benzaldehyde
Biphenyl
Caprolactam
Hexamethylphosphoramide (HMPA)
Pentachlorobenzene

Pentachloroethane

OVL MSSO4/GC-MS

Atrazine
Bolstar (Sulprofos)
Chlorpyrifos
Diazinon
Ethoprop
Merphos
Ronnel
Tokuthion (Prothiophos)
Trichloronate

OVL MSV0I/GC-MS

1, 1, 2-Trichloro-1,2,2-trifluoroethane
1,3-Butadiene
alpha-Methylstyrene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
lsoprene
lsopropyl ether
Methylacetate
Methylcyclohexane
T-amylmethylether (TAME)
Tetrahydrofuran (THF)

OVL RSKOl/GC-FID**

lsobutane
n-Butane
Propane
Propylene
Propyne

SOLID AND HAZARDOUS CHEMICALS

OVL HPLCOS-HPLC-UV **

Nitroguanidine

OVL KNITRO-C-S/UV-VIS**

OVL MSS0I/GC-MS

1,4-Phenylenediamine
1-Methylnaphthalene

Benzaldehyde
Biphenyl
Caprolactam
Pentachloroethane

OVL MSS04/GC-MS

Atrazine
Bolstar (Sulprofos)
Chlorpyrifos
Diazinon
Ethoprop
Merphos
Ronnel
Simazine
Tokuthion (Prothiophos)
Trichloronate

OVL MSV0I/GC-MS

1.3-Butadiene
alpha-Methylstyrene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
lsoprene
lsopropylether
Methylacetate
Methylcyclohexane
n-Hexane
T-amylmethylether (TAME)

Microbac

Laboratory Report Number: L11060272

Jennifer Hoang
Shaw E & I, Inc.
1401 Enclave Parkway
Houston, TX 77077

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

This report was reviewed on 06/13/2011 16:38

Stephanie Mossburg

Stephanie Mossburg – Team Chemist/Data Specialist
(740) 373-4071
Stephanie.Mossburg@microbac.com

I certify that all test results meet all of the requirements of the accrediting authority listed blow. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless speciified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be repordcuced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

This report was certified on 06/13/2011 16:38

David E. Vandenberg

David Vandenberg – Managing Director

State of Origin: TX
Accrediting Authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac OVD

Microbac

Lab Report #: L11060272
Lab Project #: 2773.025
Project Name: Longhorn AAP
Lab Contact: Stephanie Mossburg

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

The following discrepancies were noted:

Discrepancy	Resolution
The sample TB-110607 has headspace >6mm.	Please proceed with the analysis.

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #
0016069	H	2		1Z66V7250194212204

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers and labels intact and match COC?	Yes
7	Were the correct containers and volumes received?	Yes
8	Were samples received within EPA hold times?	Yes
9	Were correct perservatives used? (water only)	Yes
10	Were pH ranges acceptable? (voa's excluded)	NA
11	Were VOA samples free of headspace (less than 6mm)?	No

Microbac

Lab Report #: L11060272
Lab Project #: 2773.025
Project Name: Longhorn AAP
Lab Contact: Stephanie Mossburg

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
12MW20-110607	L11060272-01	06/07/2011 08:50	06/09/2011 09:38
12MW21-110607	L11060272-02	06/07/2011 12:50	06/09/2011 09:38
12MW22-110607	L11060272-03	06/07/2011 10:05	06/09/2011 09:38
12MW22-110607-FD	L11060272-04	06/07/2011 10:05	06/09/2011 09:38
12MW23-110607	L11060272-05	06/07/2011 15:05	06/09/2011 09:38
12MW24-110607	L11060272-06	06/07/2011 11:20	06/09/2011 09:38
TB-110607	L11060272-07	06/07/2011 00:01	06/09/2011 09:38

Microbac Laboratories
Case Narrative
Generated at 06/13/2011 14:45

Login Number: L11060272

Department: Volatiles

Analyst: Anthony Canter

METHOD

Preparation SW-846 5030C/5035A

Analysis SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: The percent difference was out of range for the following analytes: Dichlorodifluoromethane. Please see the applicable QC report for a detailed presentation of the failures.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: Recoveries out of range were observed for the following analytes: Trichloroethene, 2-Chlorotoluene, 4-Chlorotoluene. Please see the applicable QC report for a detailed presentation of the failures.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Other: None.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak. In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak. This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline. There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous. Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 30281
Approved By: Michael Albertson

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

Login Number: L11060272

Department: Volatiles

Analyst: Anthony Canter

METHOD

Preparation SW-846 5030C/5035A

Analysis SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: The percent difference was out of range for the following analytes: Dichlorodifluoromethane. Please see the applicable QC report for a detailed presentation of the failures.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: Recoveries out of range were observed for the following analytes: Trichloroethene, 2-Chlorotoluene, 4-Chlorotoluene. Please see the applicable QC report for a detailed presentation of the failures.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group (SDG), due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac Laboratories recommends site specific MS/MSD samples to avoid possible data qualifications.

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Other: None.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak. In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak. This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline. There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous. Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Managing Director or the QAO will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 30281
Approved By: Michael Albertson

LABORATORY REPORT

L11060272

06/13/11 16:35

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
1401 Enclave Parkway
Suite 250
Houston, TX 77077
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 557440

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
12MW20-110607	L11060272-01	8260B	1	09-JUN-11
12MW21-110607	L11060272-02	8260B	1	09-JUN-11
12MW22-110607	L11060272-03	8260B	1	09-JUN-11
12MW22-110607-FD	L11060272-04	8260B	1	09-JUN-11
12MW23-110607	L11060272-05	8260B	1	09-JUN-11
12MW24-110607	L11060272-06	8260B	1	09-JUN-11
TB-110607	L11060272-07	8260B	1	09-JUN-11

Report Number: **L11060272**
Report Date : **June 13, 2011**

00116004

Sample Number: **L11060272-01**
Client ID: **12MW20-110607**
Matrix: **Water**
Workgroup Number: **WG367274**
Collect Date: **06/07/2011 08:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/10/2011 19:22**
Cal Date: **05/28/2011 00:23**
Run Date: **06/10/2011 19:22**
File ID: **6M100150**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	0.263	J	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L11060272**
Report Date : **June 13, 2011**

00116005

Sample Number: **L11060272-01**
Client ID: **12MW20-110607**
Matrix: **Water**
Workgroup Number: **WG367274**
Collect Date: **06/07/2011 08:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/10/2011 19:22**
Cal Date: **05/28/2011 00:23**
Run Date: **06/10/2011 19:22**
File ID: **6M100150**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	110	86	118	
1,2-Dichloroethane-d4	89.5	80	120	
Toluene-d8	89.3	88	110	
4-Bromofluorobenzene	88.0	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L11060272**
Report Date : **June 13, 2011**

00116006

Sample Number: **L11060272-02**
Client ID: **12MW21-110607**
Matrix: **Water**
Workgroup Number: **WG367274**
Collect Date: **06/07/2011 12:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/10/2011 19:54**
Cal Date: **05/28/2011 00:23**
Run Date: **06/10/2011 19:54**
File ID: **6M100151**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L11060272**
Report Date : **June 13, 2011**

00116007

Sample Number: **L11060272-02**
Client ID: **12MW21-110607**
Matrix: **Water**
Workgroup Number: **WG367274**
Collect Date: **06/07/2011 12:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/10/2011 19:54**
Cal Date: **05/28/2011 00:23**
Run Date: **06/10/2011 19:54**
File ID: **6M100151**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	108	86	118	
1,2-Dichloroethane-d4	88.7	80	120	
Toluene-d8	90.0	88	110	
4-Bromofluorobenzene	87.2	86	115	

U Not detected at or above adjusted sample detection limit

Report Number: **L11060272**
Report Date : **June 13, 2011**

00116008

Sample Number: **L11060272-03**
Client ID: **12MW22-110607**
Matrix: **Water**
Workgroup Number: **WG367274**
Collect Date: **06/07/2011 10:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/10/2011 20:27**
Cal Date: **05/28/2011 00:23**
Run Date: **06/10/2011 20:27**
File ID: **6M100152**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L11060272**
Report Date : **June 13, 2011**

00116009

Sample Number: **L11060272-03**
Client ID: **12MW22-110607**
Matrix: **Water**
Workgroup Number: **WG367274**
Collect Date: **06/07/2011 10:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/10/2011 20:27**
Cal Date: **05/28/2011 00:23**
Run Date: **06/10/2011 20:27**
File ID: **6M100152**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	108	86	118	
1,2-Dichloroethane-d4	89.4	80	120	
Toluene-d8	90.5	88	110	
4-Bromofluorobenzene	89.8	86	115	

U Not detected at or above adjusted sample detection limit

Report Number: **L11060272**
Report Date : **June 13, 2011**

00116010

Sample Number: **L11060272-04**
Client ID: **12MW22-110607-FD**
Matrix: **Water**
Workgroup Number: **WG367274**
Collect Date: **06/07/2011 10:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/10/2011 21:00**
Cal Date: **05/28/2011 00:23**
Run Date: **06/10/2011 21:00**
File ID: **6M100153**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L11060272**
Report Date : **June 13, 2011**

00116011

Sample Number: **L11060272-04**
Client ID: **12MW22-110607-FD**
Matrix: **Water**
Workgroup Number: **WG367274**
Collect Date: **06/07/2011 10:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/10/2011 21:00**
Cal Date: **05/28/2011 00:23**
Run Date: **06/10/2011 21:00**
File ID: **6M100153**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	109	86	118	
1,2-Dichloroethane-d4	88.6	80	120	
Toluene-d8	91.0	88	110	
4-Bromofluorobenzene	87.1	86	115	

U Not detected at or above adjusted sample detection limit

Report Number: **L11060272**
Report Date : **June 13, 2011**

00116012

Sample Number: **L11060272-05**
Client ID: **12MW23-110607**
Matrix: **Water**
Workgroup Number: **WG367274**
Collect Date: **06/07/2011 15:05**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/10/2011 21:32**
Cal Date: **05/28/2011 00:23**
Run Date: **06/10/2011 21:32**
File ID: **6M100154**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Sample Number: L11060272-05
Client ID: 12MW23-110607
Matrix: Water
Workgroup Number: WG367274
Collect Date: 06/07/2011 15:05
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 5030B/5030C/5035
Analytical Method: 8260B
Analyst: ADC
Dilution: 1
Units: ug/L

Instrument: HPMS6
Prep Date: 06/10/2011 21:32
Cal Date: 05/28/2011 00:23
Run Date: 06/10/2011 21:32
File ID: 6M100154

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	108	86	118	
1,2-Dichloroethane-d4	89.9	80	120	
Toluene-d8	90.4	88	110	
4-Bromofluorobenzene	86.9	86	115	

U Not detected at or above adjusted sample detection limit

Report Number: **L11060272**
Report Date : **June 13, 2011**

00116014

Sample Number: **L11060272-06**
Client ID: **12MW24-110607**
Matrix: **Water**
Workgroup Number: **WG367274**
Collect Date: **06/07/2011 11:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/10/2011 22:05**
Cal Date: **05/28/2011 00:23**
Run Date: **06/10/2011 22:05**
File ID: **6M100155**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2	0.229	J	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7	3.24		1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	1.46		1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3	0.303	J	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	25.3		1.00	0.250
trans-1,2-Dichloroethene	156-60-5	0.684	J	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
Tetrachloroethene	127-18-4	0.577	J	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	147		1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L11060272**
Report Date : **June 13, 2011**

00116015

Sample Number: **L11060272-06**
Client ID: **12MW24-110607**
Matrix: **Water**
Workgroup Number: **WG367274**
Collect Date: **06/07/2011 11:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/10/2011 22:05**
Cal Date: **05/28/2011 00:23**
Run Date: **06/10/2011 22:05**
File ID: **6M100155**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4	0.358	J	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	111	86	118	
1,2-Dichloroethane-d4	90.0	80	120	
Toluene-d8	90.0	88	110	
4-Bromofluorobenzene	86.9	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L11060272**
Report Date : **June 13, 2011**

00116016

Sample Number: **L11060272-07**
Client ID: **TB-110607**
Matrix: **Water**
Workgroup Number: **WG367274**
Collect Date: **06/07/2011 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/10/2011 18:49**
Cal Date: **05/28/2011 00:23**
Run Date: **06/10/2011 18:49**
File ID: **6M100149**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3	0.820	J	1.00	0.500
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L11060272**
Report Date : **June 13, 2011**

00116017

Sample Number: **L11060272-07**
Client ID: **TB-110607**
Matrix: **Water**
Workgroup Number: **WG367274**
Collect Date: **06/07/2011 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **ADC**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/10/2011 18:49**
Cal Date: **05/28/2011 00:23**
Run Date: **06/10/2011 18:49**
File ID: **6M100149**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	107	86	118	
1,2-Dichloroethane-d4	88.2	80	120	
Toluene-d8	90.0	88	110	
4-Bromofluorobenzene	88.3	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 010311
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 14
Method: 624 SOP: MSV10 Rev: 8
Method: 5030B/5030C/5035A SOP: PAT01 Rev: 12
Maintenance Log ID: 35980

Internal Standard: STD42959 Surrogate Standard: STD43146
CCV: STD43238/STD43184 LCS: STD43256 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG352959,WG352992

Comments: Rerun MDLs for methylene chloride,1,3-butadiene, and APPIX.

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M96750	RINSE	NA	1	1		01/03/11 08:10
2	6M96751	RINSE	NA	1	1		01/03/11 08:41
3	6M96752	RINSE	NA	1	1		01/03/11 09:16
4	6M96753	WG352958-01 50NG BFB STD 8260	NA	1	1	STD42828	01/03/11 09:46
5	6M96754	WG352958-01 50NG BFB STD 8260	NA	1	1	STD42828	01/03/11 10:00
6	6M96755	WG352958-02 50ug/L WATER STD 8260	NA	1	1	STD43238	01/03/11 10:25
7	6M96756	WG352958-02 50ug/L WATER STD 8260	NA	1	1	STD43238	01/03/11 10:59
8	6M96757	RINSE	NA	1	1		01/03/11 11:31
9	6M96758	WG352959-01 VBLK0103 BLANK 8260	NA	1	1		01/03/11 12:02
10	6M96759	WG352959-02 20ug/L LCS 8260	NA	1	1	STD43256	01/03/11 12:33
11	6M96760	WG352959-03 20ug/L LCSDUP 8260	NA	1	1	STD43256	01/03/11 13:05
12	6M96761	RINSE	NA	1	1		01/03/11 13:37
12.5	6M96762	L11010003-01 826-SPE	NA	1	1	STD43270	01/03/11 14:13
14	6M96763	L11010006-02 826-SPE	NA	1	1	STD43270	01/03/11 14:45
15	6M96764	L11010006-03 826-SPE	NA	1	1	STD43270	01/03/11 15:18
16	6M96765	L11010006-04 826-SPE	NA	1	1	STD43270	01/03/11 15:50
17	6M96766	L11010006-05 826-SPE	NA	1	1	STD43270	01/03/11 16:22
18	6M96767	L11010006-06 826-SPE	NA	1	1	STD43270	01/03/11 16:54
19	6M96768	L11010006-07 826-SPE	NA	1	1	STD43270	01/03/11 17:27
20	6M96769	L11010006-05 826-SPE	NA	1	1	STD43270	01/03/11 17:59
21	6M96770	WG352992-02 5ug/L APPIX STD	NA	1	1	STD43184	01/03/11 18:30
22	6M96771	WG352992-03 20 ug/L APPIX STD	NA	1	1	STD43184	01/03/11 19:03
23	6M96772	WG352992-04 50 ug/L APPIX STD	NA	1	1	STD43184	01/03/11 19:34
24	6M96773	WG352992-05 100 ug/L APPIX STD	NA	1	1	STD43184	01/03/11 20:06
25	6M96774	WG352992-06 200 ug/L APPIX STD	NA	1	1	STD43184	01/03/11 20:37
26	6M96775	WG352992-07 300 ug/L APPIX STD	NA	1	1	STD43184	01/03/11 21:09
27	6M96776	WG352992-08 400 ug/L APPIX STD	NA	1	1	STD43184	01/03/11 21:40
28	6M96777	WG352992-09 500 ug/L APPIX STD	NA	1	1	STD43184	01/03/11 22:12
29	6M96778	RINSE	NA	1	1		01/03/11 22:43
30	6M96779	RINSE	NA	1	1		01/03/11 23:15

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Approved: January 04, 2011

Microbac Laboratories Inc.

Instrument Run Log

Instrument:	HPMS6	Dataset:	010311		
Analyst1:	MES	Analyst2:	NA		
Method:	8260B	SOP:	MSV01	Rev:	14
Method:	624	SOP:	MSV10	Rev:	8
Method:	5030B/5030C/5035A	SOP:	PAT01	Rev:	12
Maintenance Log ID:	35980				

Internal Standard: STD42959 Surrogate Standard: STD43146

CCV: STD43238/STD43184 LCS: STD43256 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA

Workgroups: WG352959,WG352992

Comments: Rerun MDLs for methylene chloride,1,3-butadiene, and APPIX.

Comments

Seq.	Rerun	Dil.	Reason	Analytes
4				
File ID: 6M96753				
	RR, BFB failed.			
6				
File ID: 6M96755				
	RR for AF40.			

Approved: January 04, 2011

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 010411
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 14
Method: 624 SOP: MSV10 Rev: 8
Method: 5030B/5030C/5035A SOP: PAT01 Rev: 12
Maintenance Log ID: 36012

Internal Standard: STD43010 Surrogate Standard: STD43010
CCV: STD43238/STD43184 LCS: STD43256 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG353022

Comments: RR MDLs AND LOD for Isobutanol and cyclohexanone

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M96780	WG353021-01 50NG BFB STD 8260	NA	1	1	STD42828	01/04/11 08:41
2	6M96781	WG353021-01 50NG BFB STD 8260	NA	1	1	STD42828	01/04/11 08:57
3	6M96782	WG353021-02 50ug/L WATER STD 8260	NA	1	1	STD43238	01/04/11 09:24
4	6M96783	WG353023-01 100ug/L APPIX/FOO CCV	NA	1	1	STD43184	01/04/11 09:55
5	6M96784	WG353022-01 VBLK0104 BLANK 8260	NA	1	1		01/04/11 10:27
6	6M96785	WG353022-02 20ug/L LCS 8260	NA	1	1	STD43256	01/04/11 10:59
7	6M96786	WG353022-03 20ug/L LCSDUP 8260	NA	1	1	STD43256	01/04/11 11:30
8	6M96787	WG352992-10 100ug/L APPIX ALT SOURC	NA	1	1	STD43281	01/04/11 12:02
9	6M96788	L10120869-01 B D1 10X 826-SPE	<2	1	10		01/04/11 12:35
10	6M96789	L10120869-04 B D1 10X 826-SPE	<2	1	10		01/04/11 13:07
11	6M96790	L10120881-01 B D1 826-SPE	<2	1	1		01/04/11 13:39
12	6M96791	L10120869-02 B 826-SPE	<2	1	1		01/04/11 14:11
13	6M96792	L11010006-01 826-SPE	NA	1	1	STD43270	01/04/11 14:43
14	6M96793	L11010006-02 826-SPE	NA	1	1	STD43270	01/04/11 15:16
15	6M96794	L11010006-03 826-SPE	NA	1	1	STD43270	01/04/11 15:49
16	6M96795	L11010006-04 826-SPE	NA	1	1	STD43270	01/04/11 16:21
17	6M96796	L11010006-05 826-SPE	NA	1	1	STD43270	01/04/11 16:54
18	6M96797	L11010006-06 826-SPE	NA	1	1	STD43270	01/04/11 17:27
19	6M96798	L11010006-07 826-SPE	NA	1	1	STD43270	01/04/11 17:59
20	6M96799	L11010001-01 826-SPE	NA	1	1	STD43270	01/04/11 18:31
21	6M96800	L10120854-11 A 8260	<2	1	1		01/04/11 19:03
22	6M96801	L10120854-12 A 8260	<2	1	1		01/04/11 19:35
23	6M96802	L10120854-13 A 8260	<2	1	1		01/04/11 20:07
24	6M96803	L10120857-01 A 10X 826-TC	NA	17	10		01/04/11 20:38
25	6M96804	RINSE	NA	1	1		01/04/11 21:10
26	6M96805	WG353022-04 624 BLANK	NA	1	1		01/04/11 21:41
27	6M96806	L11010013-29 A 624-SPE	7	2	1		01/04/11 22:13
28	6M96807	L11010013-01 A 624-SPE	7	2	1		01/04/11 22:44
29	6M96808	L11010013-02 A 624-SPE	7	2	1		01/04/11 23:15
30	6M96809	L11010013-03 A 624-SPE	7	2	1		01/04/11 23:47
31	6M96810	L11010013-04 A 624-SPE	7	2	1		01/05/11 00:18
32	6M96811	L11010013-05 A 624-SPE	7	2	1		01/05/11 00:50
33	6M96812	L11010013-24 A 624-SPE	7	2	1		01/05/11 01:21
34	6M96813	L11010013-25 A 624-SPE	7	2	1		01/05/11 01:52

Approved: January 06, 2011

Microbac

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 010411
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 14
Method: 624 SOP: MSV10 Rev: 8
Method: 5030B/5030C/5035A SOP: PAT01 Rev: 12
Maintenance Log ID: 36012

Internal Standard: STD43010 Surrogate Standard: STD43010
CCV: STD43238/STD43184 LCS: STD43256 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG353022

Comments: RR MDLs AND LOD for Isobutanol and cyclohexanone

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
35	6M96814	L11010013-26 A 624-SPE	7	2	1		01/05/11 02:23
36	6M96815	L11010013-27 A 624-SPE	7	2	1		01/05/11 02:54
37	6M96816	L11010013-28 A 624-SPE	7	2	1		01/05/11 03:26
38	6M96817	RINSE	NA	1	1		01/05/11 03:57
39	6M96818	L10120549-04 B 826-REF-BLK	<2	1	1		01/05/11 04:28
40	6M96819	LCS STUDY 10/19/10	NA	1	1		01/05/11 05:00
41	6M96820	LCS STUDY 10/19/10	NA	1	1		01/05/11 05:32
42	6M96821	RINSE	NA	1	1		01/05/11 06:03
43	6M96822	RINSE	NA	1	1		01/05/11 06:34

Comments

Seq.	Rerun	Dil.	Reason	Analytes
1				
File ID: 6M96780				
	RR, BFB failed.			

Approved: January 06, 2011

Page: 2

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 052711
Analyst1: MDA Analyst2: MES
Method: 8260B SOP: MSV01 Rev: 14
Method: 5030B/5030C/5035A SOP: PAT01 Rev: 13
Method: 624 SOP: MSV10 Rev: 8
Maintenance Log ID: 37638

Internal Standard: STD45508 Surrogate Standard: STD45507
CCV: STD45718,STD45743 LCS: STD45702,STD45738 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG365938,WG366025,WG366028

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M99706	WG365937-01 50ng BFB	NA	1	1	STD45401	05/27/11 08:42
2	6M99707	WG365937-01 50ng BFB	NA	1	1	STD45401	05/27/11 09:13
3	6M99708	WG365937-01 50ng BFB	NA	1	1	STD45401	05/27/11 09:44
4	6M99709	WG365937-02 50ug/L CCV 8260	NA	1	1	STD45718	05/27/11 10:15
5	6M99710	WG365938-01 VBLK0527 BLANK 8260	NA	1	1		05/27/11 10:48
6	6M99711	WG365938-02 20ug/L LCS 8260	NA	1	1	STD45702	05/27/11 11:21
7	6M99712	L11050862-17 A 826-BETX	<2	1	1		05/27/11 11:59
8	6M99713	L11050862-18 A 826-BETX	<2	1	1		05/27/11 12:32
9	6M99714	L11050862-19 A 826-BETX	<2	1	1		05/27/11 13:04
10	6M99715	L11050862-21 A 826-BETX	<2	1	1		05/27/11 13:37
11	6M99716	RINSE	NA	1	1		05/27/11 14:09
12	6M99717	WG365938-06 20ug/L LCSDUP 8260	NA	1	1	STD45702	05/27/11 14:42
13	6M99718	RINSE	NA	1	1		05/27/11 15:14
14	6M99719	RINSE	NA	1	1		05/27/11 16:23
15	6M99720	RINSE	NA	1	1		05/27/11 16:55
16	6M99723	WG366025-01 50NG BFB STD 8260	NA	1	1	STD45401	05/27/11 17:58
17	6M99724	WG366025-02 0.3ug/L WATER STD 8260	NA	1	1	STD45743	05/27/11 18:36
18	6M99725	WG366025-01 50NG BFB STD 8260	NA	1	1	STD45401	05/27/11 19:04
19	6M99726	WG366025-02 0.3ug/L WATER STD 8260	NA	1	1	STD45743	05/27/11 19:29
20	6M99727	WG366025-03 0.4ug/L WATER STD 8260	NA	1	1	STD45743	05/27/11 20:01
21	6M99728	WG366025-04 1 ug/L WATER STD 8260	NA	1	1	STD45743	05/27/11 20:33
22	6M99729	WG366025-05 2 ug/L WATER STD 8260	NA	1	1	STD45743	05/27/11 21:05
23	6M99730	WG366025-06 5 ug/L WATER STD 8260	NA	1	1	STD45743	05/27/11 21:37
24	6M99731	WG366025-07 20 ug/L WATER STD 8260	NA	1	1	STD45743	05/27/11 22:11
25	6M99732	WG366025-08 50 ug/L WATER STD 8260	NA	1	1	STD45743	05/27/11 22:44
26	6M99733	WG366025-09 100 ug/L WATER STD 8260	NA	1	1	STD45743	05/27/11 23:16
27	6M99734	WG366025-10 200 ug/L WATER STD 8260	NA	1	1	STD45743	05/27/11 23:49
28	6M99735	WG366025-11 300 ug/L WATER STD 8260	NA	1	1	STD45743	05/28/11 00:23
29	6M99736	RINSE	NA	1	1		05/28/11 00:55
30	6M99737	WG366025-12 50ug/L ALT SOURCE	NA	1	1	STD45738	05/28/11 01:28
31	6M99738	WG366028-01 VBLK0527 BLANK 8260	NA	1	1		05/28/11 02:01
32	6M99739	WG366028-02 20ug/L LCS 8260	NA	1	1	STD45738	05/28/11 02:33
33	6M99740	WG366028-03 20ug/L LCSDUP 8260	NA	1	1	STD45738	05/28/11 03:07
34	6M99741	L11050862-18 B D1 50X 826-BETX	<2	1	50		05/28/11 03:40

Approved: May 31, 2011

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 052711
Analyst1: MDA Analyst2: MES
Method: 8260B SOP: MSV01 Rev: 14
Method: 5030B/5030C/5035A SOP: PAT01 Rev: 13
Method: 624 SOP: MSV10 Rev: 8
Maintenance Log ID: 37638

Internal Standard: STD45508 Surrogate Standard: STD45507
CCV: STD45718,STD45743 LCS: STD45702,STD45738 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG365938,WG366025,WG366028

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
35	6M99742	L11050862-19 B D1 50X 826-BETX	<2	1	50		05/28/11 04:13
36	6M99743	L11050862-21 B D1 100X 826-BETX	<2	1	100		05/28/11 04:45
37	6M99744	L11050861-01 A 826-SPE	<2	1	1		05/28/11 05:18
38	6M99745	L11050861-02 A 826-SPE	<2	1	1		05/28/11 05:51
39	6M99746	L11050861-03 A 826-SPE	<2	1	1		05/28/11 06:24
40	6M99747	L11050861-04 A 826-SPE	<2	1	1		05/28/11 06:56

Comments

Seq.	Rerun	Dil.	Reason	Analytes
1				
File ID: 6M99706				
	RR, BFB failed.			
2				
File ID: 6M99707				
	RR, BFB failed. Retuned.			
8	X	50	Over Calibration Range	BETX
File ID: 6M99713				
9	X	50	Over Calibration Range	BTX
File ID: 6M99714				
10	X	100	Over Calibration Range	BETX
File ID: 6M99715				

Approved: May 31, 2011

Page: 2

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 061011
Analyst1: ADC Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 14
Method: 5030B/5030C/5035A SOP: PAT01 Rev: 13

Maintenance Log ID: 37829

Internal Standard: STD45508 Surrogate Standard: STD45791
CCV: STD45884 LCS: STD45852 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG367274

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M100135	WG367273-01 50ng BFB STD 8260	NA	1	1	STD45401	06/10/11 11:22
2	6M100136	WG367273-02 50ug/L CCV STD 8260	NA	1	1	STD45799	06/10/11 11:48
3	6M100137	WG360000-01 100ug/L A9 CCV STD 8260	NA	1	1	STD45453	06/10/11 12:24
4	6M100138	WG367274-01 VBLK0610 BLANK STD 826	NA	1	1		06/10/11 12:56
5	6M100139	WG367274-02 20ug/L LCS STD 8260	NA	1	1	STD45771	06/10/11 13:28
6	6M100140	WG367274-03 20ug/L LCSDUP STD 8260	NA	1	1	STD45771	06/10/11 14:01
7	6M100141	L11060039-07 B 100X 826-A9-SPE	<2	1	100		06/10/11 14:33
8	6M100142	L11060081-01 B 100X 826-A9-SPE	<2	1	100		06/10/11 15:05
9	6M100143	L11060081-02 B 50X 826-A9-SPE	<2	1	50		06/10/11 15:36
10	6M100144	L11060081-03 B 100X 826-A9-SPE	<2	1	100		06/10/11 16:09
11	6M100145	L11060081-04 B 10X 826-A9-SPE	<2	1	10		06/10/11 16:41
12	6M100146	L11060103-03 B 100X 826-A9-SPE	<2	1	100		06/10/11 17:12
13	6M100147	L11060315-02 A 826-SPE	<2	1	1		06/10/11 17:44
14	6M100148	L11060315-14 A 826-SPE	<2	1	1		06/10/11 18:17
15	6M100149	L11060272-07 A 826-SPE	<2	1	1		06/10/11 18:49
16	6M100150	L11060272-01 A 826-SPE	<2	1	1		06/10/11 19:22
17	6M100151	L11060272-02 A 826-SPE	<2	1	1		06/10/11 19:54
18	6M100152	L11060272-03 A 826-SPE	<2	1	1		06/10/11 20:27
19	6M100153	L11060272-04 A 826-SPE	<2	1	1		06/10/11 21:00
20	6M100154	L11060272-05 A 826-SPE	<2	1	1		06/10/11 21:32
21	6M100155	L11060272-06 A 826-SPE	<2	1	1		06/10/11 22:05
22	6M100156	L11060172-01 A 10X 826-SPE	<2	1	10		06/10/11 22:37
23	6M100157	L11060172-02 A 10X 826-SPE	<2	1	10		06/10/11 23:10
24	6M100158	RINSE	NA	1	1		06/10/11 23:43
25	6M100159	RINSE	NA	1	1		06/11/11 00:16
26	6M100160	RINSE	NA	1	1		06/11/11 00:48

Comments

Seq.	Rerun	Dil.	Reason	Analytes
12	X	500	Over Calibration Range	CB
File ID: 6M100146				
L11060103-03 DNR				
13	X		Carry-over contamination	CB

Approved: June 13, 2011

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 061011
Analyst1: ADC Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 14
Method: 5030B/5030C/5035A SOP: PAT01 Rev: 13

Maintenance Log ID: 37829

Internal Standard: STD45508 Surrogate Standard: STD45791
CCV: STD45884 LCS: STD45852 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG367274

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 6M100147				
	L11060315-02 DNR			
22	X		Analyzed too dilute	
File ID: 6M100156				
	L11060172-01 DNR			
23	X		Analyzed too dilute	
File ID: 6M100157				
	L11060172-02 DNR			

Approved: June 13, 2011

Page: 2

Microbac Laboratories Inc.

Data Checklist

Date: 03-JAN-2011
Analyst: MES
Analyst: NA
Method: 8260/624
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 38364
Analytical Workgroups: WG352959,WG352992

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	X
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	NA
Recoveries	NA
Surrogates	NA
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	X
Manual Integrations	NA
Case Narrative	NA
Results Reporting/Data Qualifiers	NA
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
04-JAN-2011

Secondary Reviewer:
04-JAN-2011

CHECKLIST1 - Modified 03/05/2008
Generated: JAN-04-2011 15:12:56

Microbac Laboratories Inc.

Data Checklist

Date: 04-JAN-2011
Analyst: MES
Analyst: NA
Method: 8260/624
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 38411
Analytical Workgroups: WG353022

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	X
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
06-JAN-2011

Secondary Reviewer:
06-JAN-2011

CHECKLIST1 - Modified 03/05/2008
Generated: JAN-06-2011 15:00:31

Microbac Laboratories Inc.

Data Checklist

Date: 27-MAY-2011
Analyst: MDA
Analyst: MES
Method: 8260/624
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 40797
Analytical Workgroups: WG365938,WG366025,WG366028

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
27-MAY-2011

Secondary Reviewer:
31-MAY-2011

CHECKLIST1 - Modified 03/05/2008
Generated: JUN-02-2011 08:26:09

Microbac Laboratories Inc.

Data Checklist

Date: 10-JUN-2011
Analyst: ADC
Analyst: NA
Method: 8260B
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 41051
Analytical Workgroups: WG367274

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	ADC
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
13-JUN-2011

Secondary Reviewer:
13-JUN-2011

CHECKLIST1 - Modified 03/05/2008
Generated: JUN-13-2011 13:03:52

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00116033

Analytical Method: 8260B

AAB#: WG367274

Login Number: L11060272

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
12MW20-110607	01	06/07/11							14		06/10/11	3.4	14	
12MW21-110607	02	06/07/11							14		06/10/11	3.3	14	
12MW22-110607	03	06/07/11							14		06/10/11	3.4	14	
12MW22-110607-FD	04	06/07/11							14		06/10/11	3.5	14	
12MW23-110607	05	06/07/11							14		06/10/11	3.3	14	
12MW24-110607	06	06/07/11							14		06/10/11	3.4	14	
TB-110607	07	06/07/11							14		06/10/11	3.8	14	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 2042534
Report generated 06/13/2011 13:12

Login Number: L11060272
Instrument Id: HPMS6
Workgroup (AAB#): WG367274

Method: 8260
CAL ID: HPMS6-28-MAY-11
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L11060272-01	1.00	01	89.5	110	88.0	89.3
L11060272-02	1.00	01	88.7	108	87.2	90.0
L11060272-03	1.00	01	89.4	108	89.8	90.5
L11060272-04	1.00	01	88.6	109	87.1	91.0
L11060272-05	1.00	01	89.9	108	86.9	90.4
L11060272-06	1.00	01	90.0	111	86.9	90.0
L11060272-07	1.00	01	88.2	107	88.3	90.0
WG367274-01	1.00	01	86.2	108	88.7	90.4
WG367274-02	1.00	01	88.3	111	86.6	90.2
WG367274-03	1.00	01	87.7	112	86.4	89.4

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 2042172
Report generated: 06/13/2011 13:12

METHOD BLANK SUMMARY

Login Number: L11060272
Work Group: WG367274
Blank File ID: 6M100138
Blank Sample ID: WG367274-01
Prep Date: 06/10/11 12:56
Instrument ID: HPMS6
Analyzed Date: 06/10/11 12:56
Method: 8260B
Analyst: ADC

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG367274-02	6M100139	06/10/11 13:28	01
LCS2	WG367274-03	6M100140	06/10/11 14:01	01
TB-110607	L11060272-07	6M100149	06/10/11 18:49	01
12MW20-110607	L11060272-01	6M100150	06/10/11 19:22	01
12MW21-110607	L11060272-02	6M100151	06/10/11 19:54	01
12MW22-110607	L11060272-03	6M100152	06/10/11 20:27	01
12MW22-110607-FD	L11060272-04	6M100153	06/10/11 21:00	01
12MW23-110607	L11060272-05	6M100154	06/10/11 21:32	01
12MW24-110607	L11060272-06	6M100155	06/10/11 22:05	01

Report Name: BLANK_SUMMARY
PDF File ID: 2042535
Report generated 06/13/2011 13:12

Login Number:L11060272 Prep Date:06/10/11 12:56 Sample ID:WG367274-01
Instrument ID:HPMS6 Run Date:06/10/11 12:56 Prep Method:5030B/5030C/503
File ID:6M100138 Analyst:ADC Method:8260B
Workgroup (AAB#):WG367274 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-28-MAY-11

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

Report Name:BLANK
PDF ID: 2042536
13-JUN-2011 13:12

Login Number:L11060272 Prep Date:06/10/11 12:56 Sample ID:WG367274-01
Instrument ID:HPMS6 Run Date:06/10/11 12:56 Prep Method:5030B/5030C/503
File ID:6M100138 Analyst:ADC Method:8260B
Workgroup (AAB#):WG367274 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-28-MAY-11

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	108	86 - 118	PASS
1,2-Dichloroethane-d4	86.2	80 - 120	PASS
Toluene-d8	90.4	88 - 110	PASS
4-Bromofluorobenzene	88.7	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 2042536
13-JUN-2011 13:12

Login Number:L11060272 Analyst:ADC Prep Method:5030B/5030C/503
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG367274 Units:ug/L
QC Key:STD Lot #:STD45906

Sample ID:WG367274-02 LCS File ID:6M100139 Run Date:06/10/2011 13:28
Sample ID:WG367274-03 LCS2 File ID:6M100140 Run Date:06/10/2011 14:01

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	19.8	98.9	20.0	20.5	103	3.60	40 - 180	20	
Benzene	20.0	21.1	105	20.0	20.6	103	1.98	80 - 121	20	
Bromobenzene	20.0	19.3	96.6	20.0	19.2	96.0	0.674	80 - 120	20	
Bromochloromethane	20.0	24.0	120	20.0	24.1	120	0.136	65 - 130	20	
Bromodichloromethane	20.0	20.8	104	20.0	20.9	104	0.422	80 - 131	20	
Bromoform	20.0	20.9	104	20.0	20.6	103	1.32	70 - 130	20	
Bromomethane	20.0	17.1	85.4	20.0	16.3	81.3	4.89	30 - 145	20	
2-Butanone	20.0	22.3	112	20.0	22.5	113	0.789	10 - 170	20	
n-Butylbenzene	20.0	17.4	87.2	20.0	16.9	84.6	3.00	80 - 131	20	
sec-Butylbenzene	20.0	18.4	92.2	20.0	17.8	88.9	3.66	80 - 127	20	
tert-Butylbenzene	20.0	20.6	103	20.0	19.7	98.5	4.69	80 - 126	20	
Carbon disulfide	20.0	19.7	98.3	20.0	18.8	93.8	4.65	58 - 128	20	
Carbon tetrachloride	20.0	22.9	115	20.0	22.2	111	3.23	65 - 140	20	
Chlorobenzene	20.0	18.7	93.4	20.0	18.0	89.8	3.92	80 - 120	20	
Chlorodibromomethane	20.0	21.2	106	20.0	21.0	105	0.977	60 - 135	20	
Chloroethane	20.0	21.6	108	20.0	21.4	107	0.789	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	17.6	87.9	20.0	17.6	88.2	0.266	45 - 160	20	
Chloroform	20.0	20.5	103	20.0	20.1	101	1.93	80 - 125	20	
Chloromethane	20.0	19.3	96.3	20.0	19.1	95.3	1.00	40 - 125	20	
2-Chlorotoluene	20.0	16.1	80.4	20.0	15.6	77.9	3.13	80 - 127	20	*
4-Chlorotoluene	20.0	16.6	83.0	20.0	15.8	78.9	5.10	80 - 126	20	*
1,2-Dibromo-3-chloropropane	20.0	15.6	78.0	20.0	15.3	76.3	2.24	50 - 130	20	
1,2-Dibromoethane	20.0	20.0	100	20.0	18.9	94.6	5.63	80 - 129	20	
Dibromomethane	20.0	21.1	106	20.0	20.7	104	1.76	75 - 125	20	
1,2-Dichlorobenzene	20.0	18.6	93.2	20.0	18.4	91.9	1.44	80 - 125	20	
1,3-Dichlorobenzene	20.0	18.6	93.1	20.0	18.3	91.3	1.98	80 - 120	20	
1,4-Dichlorobenzene	20.0	18.8	93.9	20.0	18.2	91.1	3.00	80 - 120	20	
Dichlorodifluoromethane	20.0	30.9	155	20.0	29.8	149	3.75	40 - 160	20	
1,1-Dichloroethane	20.0	19.6	98.0	20.0	19.3	96.6	1.44	80 - 125	20	
1,2-Dichloroethane	20.0	18.6	93.0	20.0	18.7	93.4	0.409	80 - 129	20	
1,1-Dichloroethene	20.0	18.9	94.7	20.0	18.3	91.7	3.22	80 - 132	20	
cis-1,2-Dichloroethene	20.0	23.0	115	20.0	22.1	111	3.89	70 - 125	20	
trans-1,2-Dichloroethene	20.0	22.0	110	20.0	21.4	107	2.70	80 - 127	20	
1,2-Dichloropropane	20.0	19.7	98.6	20.0	19.6	97.8	0.781	80 - 120	20	
1,3-Dichloropropane	20.0	17.0	85.0	20.0	16.6	83.2	2.09	80 - 120	20	
2,2-Dichloropropane	20.0	21.7	108	20.0	21.1	105	2.63	80 - 133	20	
cis-1,3-Dichloropropene	20.0	20.8	104	20.0	20.4	102	1.86	70 - 130	20	
trans-1,3-Dichloropropene	20.0	16.1	80.7	20.0	15.9	79.7	1.21	80 - 130	20	*
1,1-Dichloropropene	20.0	22.5	112	20.0	21.6	108	3.88	75 - 130	20	
Ethylbenzene	20.0	18.6	93.2	20.0	17.7	88.3	5.45	80 - 122	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 2042171
Report generated: 06/13/2011 13:12

Microbac Laboratories Inc.

LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11060272 Analyst: ADC Prep Method: 5030B/5030C/503

Instrument ID: HPMS6 Matrix: Water Method: 8260B

Workgroup (AAB#): WG367274 Units: ug/L

QC Key: STD Lot #: STD45906

Sample ID: WG367274-02 LCS File ID: 6M100139 Run Date: 06/10/2011 13:28

Sample ID: WG367274-03 LCS2 File ID: 6M100140 Run Date: 06/10/2011 14:01

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	18.1	90.4	20.0	18.7	93.6	3.52	55 - 130	20	
Hexachlorobutadiene	20.0	22.8	114	20.0	21.6	108	5.53	72 - 132	20	
Isopropylbenzene	20.0	16.6	83.2	20.0	16.0	79.9	4.09	80 - 122	20	*
p-Isopropyltoluene	20.0	17.9	89.4	20.0	17.3	86.3	3.54	80 - 122	20	
4-Methyl-2-pentanone	20.0	19.5	97.7	20.0	19.6	98.0	0.345	64 - 140	20	
Methylene chloride	20.0	19.6	97.8	20.0	19.4	96.9	0.916	80 - 123	20	
Naphthalene	20.0	16.1	80.5	20.0	16.0	80.0	0.522	59 - 149	20	
n-Propylbenzene	20.0	17.0	84.8	20.0	16.4	82.0	3.38	80 - 129	20	
Styrene	20.0	18.9	94.6	20.0	18.2	90.8	4.14	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	21.4	107	20.0	20.7	104	3.13	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	17.0	84.9	20.0	17.1	85.6	0.826	79 - 125	20	
Tetrachloroethene	20.0	21.8	109	20.0	21.2	106	2.91	80 - 124	20	
Toluene	20.0	18.2	91.0	20.0	17.7	88.6	2.62	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	18.4	92.2	20.0	17.8	89.2	3.30	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	17.8	89.2	20.0	17.8	88.8	0.409	65 - 135	20	
1,1,1-Trichloroethane	20.0	22.1	111	20.0	21.6	108	2.50	80 - 134	20	
1,1,2-Trichloroethane	20.0	17.3	86.3	20.0	17.4	86.8	0.562	80 - 125	20	
Trichloroethene	20.0	24.6	123	20.0	23.8	119	3.28	80 - 122	20	*
Trichlorofluoromethane	20.0	22.3	112	20.0	21.5	108	3.54	62 - 151	20	
1,2,3-Trichloropropane	20.0	18.7	93.3	20.0	18.7	93.6	0.359	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	18.2	91.2	20.0	17.5	87.7	3.93	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	18.6	92.8	20.0	17.9	89.5	3.60	80 - 127	20	
Vinyl acetate	20.0	16.3	81.6	20.0	16.1	80.7	1.21	10 - 190	20	
Vinyl chloride	20.0	19.8	98.8	20.0	18.3	91.7	7.44	50 - 170	20	
o-Xylene	20.0	18.9	94.5	20.0	18.0	90.0	4.78	80 - 122	20	
m-,p-Xylene	40.0	37.0	92.5	40.0	35.4	88.6	4.27	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	88.3	87.7	80 - 120	PASS
Dibromofluoromethane	111	112	86 - 118	PASS
4-Bromofluorobenzene	86.6	86.4	86 - 115	PASS
Toluene-d8	90.2	89.4	88 - 110	PASS

* EXCEEDS %REC LIMIT

EXCEEDS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008

PDF File ID: 2042171

Report generated: 06/13/2011 13:12

BFB

Login Number: L11060272
Instrument: HPMS6
Analyst: MES
Workgroup: WG366025

Tune ID: WG366025-01
Run Date: 05/27/2011
Run Time: 19:04
File ID: 6M99725
Cal ID: HPMS6-28-MAY-11

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	23.6	2996	PASS
75.0	95.0	30.0	60.0	52.9	6714	PASS
95.0	95.0	100	100	100	12698	PASS
96.0	95.0	5.00	9.00	7.19	913	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	64.1	8142	PASS
175	174	5.00	9.00	8.24	671	PASS
176	174	95.0	101	96.4	7850	PASS
177	176	5.00	9.00	6.25	491	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG366025-02	STD	01	05/27/2011 19:29	
WG366025-03	STD	01	05/27/2011 20:01	
WG366025-04	STD	01	05/27/2011 20:33	
WG366025-05	STD	01	05/27/2011 21:05	
WG366025-06	STD	01	05/27/2011 21:37	
WG366025-07	STD	01	05/27/2011 22:11	
WG366025-08	STD-CCV	01	05/27/2011 22:44	
WG366025-09	STD	01	05/27/2011 23:16	
WG366025-10	STD	01	05/27/2011 23:49	
WG366025-11	STD	01	05/28/2011 00:23	
WG366025-12	SSCV	01	05/28/2011 01:28	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 2042539
Report generated 06/13/2011 13:12

BFB

Login Number: L11060272
Instrument: HPMS6
Analyst: ADC
Workgroup: WG367273

Tune ID: WG367273-01
Run Date: 06/10/2011
Run Time: 11:22
File ID: 6M100135
Cal ID: HPMS6-28-MAY-11

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	24.0	3678	PASS
75.0	95.0	30.0	60.0	52.3	8008	PASS
95.0	95.0	100	100	100	15306	PASS
96.0	95.0	5.00	9.00	6.36	973	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	81.3	12437	PASS
175	174	5.00	9.00	7.18	893	PASS
176	174	95.0	101	99.0	12307	PASS
177	176	5.00	9.00	6.60	812	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG367273-02	CCV	01	06/10/2011 11:48	
WG367274-01	BLANK	01	06/10/2011 12:56	
WG367274-02	LCS	01	06/10/2011 13:28	
WG367274-03	LCS2	01	06/10/2011 14:01	
L11060272-07	TB-110607	01	06/10/2011 18:49	
L11060272-01	12MW20-110607	01	06/10/2011 19:22	
L11060272-02	12MW21-110607	01	06/10/2011 19:54	
L11060272-03	12MW22-110607	01	06/10/2011 20:27	
L11060272-04	12MW22-110607-FD	01	06/10/2011 21:00	
L11060272-05	12MW23-110607	01	06/10/2011 21:32	
L11060272-06	12MW24-110607	01	06/10/2011 22:05	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 2042539
Report generated 06/13/2011 13:12

Login Number: L11060272 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 28-MAY-11 00:23
ICAL Workgroup: WG366025 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
1,1-Dichloroethene	CCC	0.5190	9.53		
1,2-Dichloropropane	CCC	0.3067	5.22		
Chloroform	CCC	0.5051	3.84		
Ethylbenzene	CCC	0.5613	7.51		
Toluene	CCC	1.681	2.94		
Vinyl Chloride	CCC	0.4286	17.4		1.00000
1,1,2,2-Tetrachloroethane	SPCC	0.6376	17.4		1.00000
1,1-Dichloroethane	SPCC	0.5920	5.00		
Bromoform	SPCC	0.1420	15.6	0.99800	
Chlorobenzene	SPCC	1.065	5.02		
Chloromethane	SPCC	0.6256	7.03		
1,1,1,2-Tetrachloroethane		0.3393	10.2		
1,1,1-Trichloroethane		0.3987	11.8		
1,1,2-Trichloroethane		0.2823	8.72		
1,1-Dichloropropene		0.3715	11.1		
1,2,3-Trichlorobenzene		0.7812	12.1		
1,2,3-Trichloropropane		0.1672	21.3	0.99900	
1,2,4-Trichlorobenzene		0.9357	10.4		
1,2,4-Trimethylbenzene		2.897	5.53		
1,2-Dibromo-3-Chloropropane		0.09362	23.3	0.99900	
1,2-Dibromoethane		0.2274	22.2		1.00000
1,2-Dichlorobenzene		1.378	11.2		
1,2-Dichloroethane		0.3850	3.70		
1,3,5-Trimethylbenzene		2.778	5.19		
1,3-Dichlorobenzene		1.558	9.29		
1,3-Dichloropropane		0.5028	10.2		
1,4-Dichlorobenzene		1.573	9.34		
2,2-Dichloropropane		0.3791	6.78		
2-Butanone		0.08102	18.4	0.99800	
2-Chloroethyl Vinyl Ether		0.1225	7.59		
2-Chlorotoluene		2.782	7.52		
2-Hexanone		0.1516	7.73		
4-Chlorotoluene		2.711	10.3		
4-Methyl-2-Pentanone		0.05818	6.52		
Acetone		0.04922	9.28		
Benzene		1.084	3.59		
Bromobenzene		0.7861	6.54		
Bromochloromethane		0.1352	7.88		
Bromodichloromethane		0.3384	8.14		
Bromomethane		0.1764	8.49		
Carbon Disulfide		0.9445	5.69		
Carbon Tetrachloride		0.3104	17.0	0.99900	
Chloroethane		0.2469	6.75		
Dibromochloromethane		0.2819	9.44		
Dibromomethane		0.1273	5.64		

INT_CAL - Modified 03/06/2008
PDF File ID: 2042537
Report generated 06/13/2011 13:12

Login Number: L11060272 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 28-MAY-11 00:23
ICAL Workgroup: WG366025 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
Dichlorodifluoromethane		0.3241	15.5		
Hexachlorobutadiene		0.3127	17.3	1.00000	
Isopropylbenzene		1.639	4.48		
Methylene Chloride		0.3077	6.42		
Naphthalene		1.564	13.1		
Styrene		1.112	7.31		
Tetrachloroethene		0.3531	4.82		
Trichloroethene		0.2348	7.51		
Trichlorofluoromethane		0.4212	17.4	1.00000	
Vinyl Acetate		0.4548	19.8	0.99900	
cis-1,2-Dichloroethene		0.2838	6.37		
cis-1,3-Dichloropropene		0.3650	6.32		
m-,p-Xylene		0.6972	7.76		
n-Butylbenzene		2.687	4.77		
n-Propylbenzene		4.261	4.49		
o-Xylene		0.6627	5.76		
p-Isopropyltoluene		2.669	5.12		
sec-Butylbenzene		3.285	4.99		
tert-Butylbenzene		0.5167	9.55		
trans-1,2-Dichloroethene		0.2684	7.42		
trans-1,3-Dichloropropene		0.5052	6.07		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

If the %RSD is greater than the limit specified by the method or project QAP, then linear or quadratic equations will be used.

INT_CAL - Modified 03/06/2008
PDF File ID: 2042537
Report generated 06/13/2011 13:12

Login Number: L11060272
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 28-MAY-11 00:23
Column ID: F

Analyte	WG366025-02			WG366025-03			WG366025-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	5553.00000	0.4098	1.00	16828.0000	0.5001
1,2-Dichloropropane	NA	NA	NA	0.400	3784.00000	0.2792	1.00	9734.00000	0.2893
Chloroform	0.300	5043.00000	0.4857	0.400	6516.00000	0.4808	1.00	16367.0000	0.4864
Ethylbenzene	NA	NA	NA	0.400	4351.00000	0.5208	1.00	10906.0000	0.5260
Toluene	NA	NA	NA	0.400	13683.0000	1.638	1.00	34621.0000	1.670
Vinyl Chloride	NA	NA	NA	0.400	5643.00000	0.4164	1.00	17169.0000	0.5102
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	2610.00000	0.6856	1.00	6760.00000	0.7085
1,1-Dichloroethane	NA	NA	NA	0.400	7373.00000	0.5441	1.00	18838.0000	0.5599
Bromoform	NA	NA	NA	NA	NA	NA	1.00	2536.00000	0.1223
Chlorobenzene	NA	NA	NA	0.400	8845.00000	1.059	1.00	22055.0000	1.064
Chloromethane	NA	NA	NA	0.400	9801.00000	0.7233	1.00	21689.0000	0.6446
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	2611.00000	0.3125	1.00	6370.00000	0.3072
1,1,1-Trichloroethane	NA	NA	NA	0.400	4136.00000	0.3052	1.00	11893.0000	0.3535
1,1,2-Trichloroethane	NA	NA	NA	0.400	2425.00000	0.2902	1.00	5969.00000	0.2879
1,1-Dichloropropene	NA	NA	NA	0.400	3945.00000	0.2911	1.00	11378.0000	0.3381
1,2,3-Trichlorobenzene	0.300	2341.00000	0.8243	0.400	3549.00000	0.9322	1.00	7499.00000	0.7860
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	2069.00000	0.2169
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	4098.00000	1.076	1.00	9395.00000	0.9847
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	11068.0000	2.907	1.00	26117.0000	2.737
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	2344.00000	0.2806	1.00	5130.00000	0.2474
1,2-Dichlorobenzene	0.300	3717.00000	1.309	0.400	6179.00000	1.623	1.00	13161.0000	1.379
1,2-Dichloroethane	NA	NA	NA	0.400	4894.00000	0.3612	1.00	12509.0000	0.3718
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	10282.0000	2.701	1.00	25296.0000	2.651
1,3-Dichlorobenzene	NA	NA	NA	0.400	6874.00000	1.806	1.00	15662.0000	1.642
1,3-Dichloropropane	NA	NA	NA	0.400	4199.00000	0.5026	1.00	10537.0000	0.5082
1,4-Dichlorobenzene	0.300	4840.00000	1.704	0.400	6928.00000	1.820	1.00	14237.0000	1.492
2,2-Dichloropropane	NA	NA	NA	0.400	4388.00000	0.3238	1.00	12482.0000	0.3710
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	1.00	4655.00000	0.1383
2-Chlorotoluene	NA	NA	NA	0.400	11116.0000	2.920	1.00	26374.0000	2.764
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	12207.0000	3.206	1.00	25484.0000	2.671
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	15344.0000	1.132	1.00	34273.0000	1.019
Bromobenzene	0.300	2165.00000	0.7624	0.400	3171.00000	0.8329	1.00	7854.00000	0.8232
Bromochloromethane	NA	NA	NA	0.400	1622.00000	0.1197	1.00	3928.00000	0.1167
Bromodichloromethane	NA	NA	NA	0.400	4113.00000	0.3035	1.00	10219.0000	0.3037
Bromomethane	NA	NA	NA	0.400	2334.00000	0.1722	1.00	5525.00000	0.1642
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	28860.0000	0.8577
Carbon Tetrachloride	NA	NA	NA	0.400	2750.00000	0.2029	1.00	9563.00000	0.2842

INT_CAL - Modified 03/06/2008
PDF File ID: 2042537
Report generated 06/13/2011 13:12

Login Number: L11060272 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 28-MAY-11 00:23
Column ID: F

Analyte	WG366025-05			WG366025-06			WG366025-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	34136.0000	0.5139	5.00	86597.0000	0.5173	20.0	376099.000	0.5554
1,2-Dichloropropane	2.00	21841.0000	0.3288	5.00	50529.0000	0.3018	20.0	215156.000	0.3177
Chloroform	2.00	34951.0000	0.5262	5.00	81645.0000	0.4877	20.0	354703.000	0.5238
Ethylbenzene	2.00	24763.0000	0.6082	5.00	51335.0000	0.5142	20.0	222469.000	0.5440
Toluene	2.00	71003.0000	1.744	5.00	159314.000	1.596	20.0	683531.000	1.671
Vinyl Chloride	2.00	32980.0000	0.4965	5.00	76396.0000	0.4563	20.0	307943.000	0.4547
1,1,2,2-Tetrachloroethane	2.00	16372.0000	0.8670	5.00	26875.0000	0.5716	20.0	121623.000	0.6011
1,1-Dichloroethane	2.00	39688.0000	0.5975	5.00	96331.0000	0.5754	20.0	420147.000	0.6204
Bromoform	2.00	5916.00000	0.1453	5.00	10379.0000	0.1040	20.0	57516.0000	0.1406
Chlorobenzene	2.00	48302.0000	1.186	5.00	100576.000	1.008	20.0	421805.000	1.031
Chloromethane	2.00	39995.0000	0.6021	5.00	104136.000	0.6221	20.0	414673.000	0.6123
1,1,1,2-Tetrachloroethane	2.00	15362.0000	0.3773	5.00	28562.0000	0.2861	20.0	137513.000	0.3362
1,1,1-Trichloroethane	2.00	27130.0000	0.4084	5.00	66208.0000	0.3955	20.0	284262.000	0.4198
1,1,2-Trichloroethane	2.00	13778.0000	0.3384	5.00	26822.0000	0.2687	20.0	111965.000	0.2738
1,1-Dichloropropene	2.00	24966.0000	0.3759	5.00	59551.0000	0.3557	20.0	273430.000	0.4038
1,2,3-Trichlorobenzene	2.00	17565.0000	0.9302	5.00	32763.0000	0.6968	20.0	146976.000	0.7264
1,2,3-Trichloropropane	2.00	4161.00000	0.2203	5.00	7106.00000	0.1511	20.0	31637.0000	0.1564
1,2,4-Trichlorobenzene	2.00	20417.0000	1.081	5.00	39617.0000	0.8425	20.0	176202.000	0.8709
1,2,4-Trimethylbenzene	2.00	58674.0000	3.107	5.00	124126.000	2.640	20.0	566596.000	2.801
1,2-Dibromo-3-Chloropropane	2.00	2604.00000	0.1379	5.00	3907.00000	0.08310	20.0	18032.0000	0.08910
1,2-Dibromoethane	2.00	11989.0000	0.2944	5.00	22513.0000	0.2255	20.0	84886.0000	0.2076
1,2-Dichlorobenzene	2.00	31403.0000	1.663	5.00	59094.0000	1.257	20.0	264094.000	1.305
1,2-Dichloroethane	2.00	26524.0000	0.3993	5.00	63156.0000	0.3773	20.0	271251.000	0.4005
1,3,5-Trimethylbenzene	2.00	56243.0000	2.978	5.00	120298.000	2.558	20.0	549174.000	2.714
1,3-Dichlorobenzene	2.00	32200.0000	1.705	5.00	64719.0000	1.376	20.0	295810.000	1.462
1,3-Dichloropropane	2.00	25247.0000	0.6200	5.00	49096.0000	0.4918	20.0	206413.000	0.5047
1,4-Dichlorobenzene	2.00	33164.0000	1.756	5.00	65805.0000	1.400	20.0	297381.000	1.470
2,2-Dichloropropane	2.00	26770.0000	0.4030	5.00	63954.0000	0.3820	20.0	270768.000	0.3998
2-Butanone	NA	NA	NA	5.00	18142.0000	0.1084	20.0	59109.0000	0.08730
2-Chloroethyl Vinyl Ether	2.00	8040.00000	0.1210	5.00	21280.0000	0.1271	20.0	87908.0000	0.1298
2-Chlorotoluene	2.00	61112.0000	3.236	5.00	123220.000	2.621	20.0	549053.000	2.714
2-Hexanone	NA	NA	NA	5.00	16143.0000	0.1617	20.0	69092.0000	0.1689
4-Chlorotoluene	2.00	56038.0000	2.968	5.00	111972.000	2.381	20.0	487345.000	2.409
4-Methyl-2-Pentanone	NA	NA	NA	5.00	10240.0000	0.06120	20.0	43221.0000	0.06380
Acetone	NA	NA	NA	5.00	9661.00000	0.05770	20.0	34196.0000	0.05050
Benzene	2.00	71535.0000	1.077	5.00	173666.000	1.037	20.0	735187.000	1.086
Bromobenzene	2.00	16716.0000	0.8852	5.00	33771.0000	0.7182	20.0	151011.000	0.7464
Bromochloromethane	2.00	9578.00000	0.1442	5.00	23038.0000	0.1376	20.0	94614.0000	0.1397
Bromodichloromethane	2.00	25341.0000	0.3815	5.00	53544.0000	0.3198	20.0	229110.000	0.3383
Bromomethane	2.00	10999.0000	0.1656	5.00	26732.0000	0.1597	20.0	113562.000	0.1677
Carbon Disulfide	2.00	60772.0000	0.9149	5.00	150839.000	0.9010	20.0	652944.000	0.9642
Carbon Tetrachloride	2.00	19918.0000	0.2999	5.00	49293.0000	0.2945	20.0	224543.000	0.3316

INT_CAL - Modified 03/06/2008
PDF File ID: 2042537
Report generated 06/13/2011 13:12

Login Number: L11060272
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 28-MAY-11 00:23
Column ID: F

Analyte	WG366025-08			WG366025-09			WG366025-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	970518.000	0.5640	100	1985318.00	0.5480	200	4111116.00	0.5438
1,2-Dichloropropane	50.0	539957.000	0.3138	100	1133832.00	0.3129	200	2343497.00	0.3100
Chloroform	50.0	900589.000	0.5234	100	1883173.00	0.5198	200	3868314.00	0.5117
Ethylbenzene	50.0	592175.000	0.5585	100	1312961.00	0.5983	200	2809436.00	0.6201
Toluene	50.0	1782525.00	1.681	100	3784152.00	1.724	200	7813381.00	1.725
Vinyl Chloride	50.0	758149.000	0.4406	100	1375110.00	0.3795	200	2077583.00	0.2748
1,1,2,2-Tetrachloroethane	50.0	302158.000	0.5737	100	601092.000	0.5492	200	1240574.00	0.5441
1,1-Dichloroethane	50.0	1073862.00	0.6241	100	2235563.00	0.6170	200	4516243.00	0.5974
Bromoform	50.0	163832.000	0.1545	100	353469.000	0.1611	200	751583.000	0.1659
Chlorobenzene	50.0	1099237.00	1.037	100	2337318.00	1.065	200	4835120.00	1.067
Chloromethane	50.0	1072011.00	0.6230	100	2102660.00	0.5803	200	4512008.00	0.5969
1,1,1,2-Tetrachloroethane	50.0	372590.000	0.3514	100	805433.000	0.3670	200	1707960.00	0.3770
1,1,1-Trichloroethane	50.0	747485.000	0.4344	100	1579106.00	0.4358	200	3301782.00	0.4368
1,1,2-Trichloroethane	50.0	283080.000	0.2670	100	582696.000	0.2655	200	1210707.00	0.2672
1,1-Dichloropropene	50.0	696543.000	0.4048	100	1466520.00	0.4048	200	3007378.00	0.3978
1,2,3-Trichlorobenzene	50.0	370055.000	0.7026	100	784287.000	0.7166	200	1631656.00	0.7157
1,2,3-Trichloropropane	50.0	77363.0000	0.1469	100	154586.000	0.1413	200	313709.000	0.1376
1,2,4-Trichlorobenzene	50.0	459911.000	0.8732	100	961802.000	0.8788	200	2002075.00	0.8781
1,2,4-Trimethylbenzene	50.0	1555365.00	2.953	100	3346417.00	3.058	200	6770197.00	2.970
1,2-Dibromo-3-Chloropropane	50.0	44415.0000	0.08430	100	91523.0000	0.08360	200	190815.000	0.08370
1,2-Dibromoethane	50.0	184222.000	0.1738	100	356098.000	0.1623	NA	NA	NA
1,2-Dichlorobenzene	50.0	691558.000	1.313	100	1412842.00	1.291	200	2875548.00	1.261
1,2-Dichloroethane	50.0	683796.000	0.3974	100	1407747.00	0.3885	200	2904137.00	0.3842
1,3,5-Trimethylbenzene	50.0	1489587.00	2.828	100	3185834.00	2.911	200	6573654.00	2.883
1,3-Dichlorobenzene	50.0	784790.000	1.490	100	1653842.00	1.511	200	3351427.00	1.470
1,3-Dichloropropane	50.0	501947.000	0.4734	100	1011951.00	0.4611	200	2086742.00	0.4606
1,4-Dichlorobenzene	50.0	795996.000	1.511	100	1660450.00	1.517	200	3396384.00	1.490
2,2-Dichloropropane	50.0	683711.000	0.3973	100	1401618.00	0.3869	200	2790954.00	0.3692
2-Butanone	50.0	131186.000	0.07620	100	270002.000	0.07450	200	514119.000	0.06800
2-Chloroethyl Vinyl Ether	50.0	207647.000	0.1207	100	401758.000	0.1109	200	837405.000	0.1108
2-Chlorotoluene	50.0	1368019.00	2.598	100	2911305.00	2.660	200	6261373.00	2.746
2-Hexanone	50.0	159134.000	0.1501	100	319915.000	0.1458	200	660903.000	0.1459
4-Chlorotoluene	50.0	1431625.00	2.718	100	3040668.00	2.778	200	5821945.00	2.554
4-Methyl-2-Pentanone	50.0	101259.000	0.05880	100	203413.000	0.05610	200	417311.000	0.05520
Acetone	50.0	83691.0000	0.04860	100	168596.000	0.04650	200	357137.000	0.04720
Benzene	50.0	1912661.00	1.112	100	4039052.00	1.115	200	8245063.00	1.091
Bromobenzene	50.0	403165.000	0.7655	100	851338.000	0.7779	200	1739358.00	0.7629
Bromochloromethane	50.0	241643.000	0.1404	100	510752.000	0.1410	200	1072991.00	0.1419
Bromodichloromethane	50.0	607158.000	0.3529	100	1284042.00	0.3544	200	2671032.00	0.3533
Bromomethane	50.0	333496.000	0.1938	100	690999.000	0.1907	200	1488912.00	0.1970
Carbon Disulfide	50.0	1701967.00	0.9891	100	3578946.00	0.9878	200	7536579.00	0.9970
Carbon Tetrachloride	50.0	605040.000	0.3516	100	1317064.00	0.3635	200	2681136.00	0.3547

INT_CAL - Modified 03/06/2008
PDF File ID: 2042537
Report generated 06/13/2011 13:12

Login Number: L11060272
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 28-MAY-11 00:23
Column ID: F

Analyte	WG366025-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	805425.000	0.07170
2-Chloroethyl Vinyl Ether	300	1365236.00	0.1215
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	912569.000	0.1369
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	606359.000	0.05400
Acetone	300	503722.000	0.04480
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 2042537
Report generated 06/13/2011 13:12

Login Number: L11060272
Instrument ID: HPMS6
Analytical Method: 8260B
Initial Calibration Date: 28-MAY-11 00:23
Column ID: F

Analyte	WG366025-02			WG366025-03			WG366025-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	0.400	3163.00000	0.2334	1.00	7787.00000	0.2314
Dibromochloromethane	NA	NA	NA	0.400	2154.00000	0.2578	1.00	5215.00000	0.2515
Dibromomethane	NA	NA	NA	0.400	1648.00000	0.1216	1.00	4179.00000	0.1242
Dichlorodifluoromethane	NA	NA	NA	0.400	2838.00000	0.2094	1.00	11003.0000	0.3270
Hexachlorobutadiene	NA	NA	NA	0.400	747.000000	0.1962	1.00	2716.00000	0.2847
Isopropylbenzene	NA	NA	NA	0.400	12959.0000	1.551	1.00	33010.0000	1.592
Methylene Chloride	NA	NA	NA	0.400	4790.00000	0.3535	1.00	10127.0000	0.3010
Naphthalene	NA	NA	NA	0.400	6600.00000	1.734	1.00	15248.0000	1.598
Styrene	NA	NA	NA	0.400	8879.00000	1.063	1.00	20988.0000	1.012
Tetrachloroethene	NA	NA	NA	0.400	2717.00000	0.3252	1.00	6978.00000	0.3365
Trichloroethene	NA	NA	NA	0.400	2796.00000	0.2063	1.00	7162.00000	0.2128
Trichlorofluoromethane	NA	NA	NA	0.400	3432.00000	0.2533	1.00	13378.0000	0.3976
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	3433.00000	0.2533	1.00	8871.00000	0.2636
cis-1,3-Dichloropropene	NA	NA	NA	0.400	4603.00000	0.3397	1.00	11748.0000	0.3491
m-,p-Xylene	NA	NA	NA	0.800	11645.0000	0.6969	2.00	25997.0000	0.6269
n-Butylbenzene	NA	NA	NA	0.400	9899.00000	2.600	1.00	25034.0000	2.624
n-Propylbenzene	NA	NA	NA	0.400	16602.0000	4.361	1.00	39716.0000	4.163
o-Xylene	NA	NA	NA	0.400	5913.00000	0.7077	1.00	12889.0000	0.6216
p-Isopropyltoluene	NA	NA	NA	0.400	10034.0000	2.636	1.00	23770.0000	2.491
sec-Butylbenzene	NA	NA	NA	0.400	11590.0000	3.044	1.00	31701.0000	3.323
tert-Butylbenzene	NA	NA	NA	0.400	1575.00000	0.4137	1.00	5012.00000	0.5253
trans-1,2-Dichloroethene	NA	NA	NA	0.400	3085.00000	0.2277	1.00	8763.00000	0.2604
trans-1,3-Dichloropropene	NA	NA	NA	0.400	4057.00000	0.4856	1.00	9605.00000	0.4632

INT_CAL - Modified 03/06/2008
PDF File ID: 2042537
Report generated 06/13/2011 13:12

Login Number: L11060272
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 28-MAY-11 00:23
Column ID: F

Analyte	WG366025-05			WG366025-06			WG366025-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	16053.0000	0.2417	5.00	42104.0000	0.2515	20.0	185855.000	0.2744
Dibromochloromethane	2.00	12767.0000	0.3135	5.00	24962.0000	0.2501	20.0	113106.000	0.2766
Dibromomethane	2.00	9490.00000	0.1429	5.00	20850.0000	0.1245	20.0	90021.0000	0.1329
Dichlorodifluoromethane	2.00	21154.0000	0.3185	5.00	57349.0000	0.3426	20.0	249400.000	0.3683
Hexachlorobutadiene	2.00	7039.00000	0.3727	5.00	14155.0000	0.3010	20.0	67622.0000	0.3342
Isopropylbenzene	2.00	71689.0000	1.761	5.00	154811.000	1.551	20.0	665899.000	1.628
Methylene Chloride	2.00	20790.0000	0.3130	5.00	48221.0000	0.2880	20.0	206287.000	0.3046
Naphthalene	2.00	37602.0000	1.991	5.00	66687.0000	1.418	20.0	297912.000	1.473
Styrene	2.00	48134.0000	1.182	5.00	100027.000	1.002	20.0	446653.000	1.092
Tetrachloroethene	2.00	14332.0000	0.3520	5.00	34307.0000	0.3437	20.0	147481.000	0.3606
Trichloroethene	2.00	15409.0000	0.2320	5.00	38803.0000	0.2318	20.0	165134.000	0.2438
Trichlorofluoromethane	2.00	27607.0000	0.4156	5.00	73455.0000	0.4388	20.0	321952.000	0.4754
Vinyl Acetate	NA	NA	NA	5.00	104329.000	0.6232	20.0	332491.000	0.4910
cis-1,2-Dichloroethene	2.00	18783.0000	0.2828	5.00	46255.0000	0.2763	20.0	199830.000	0.2951
cis-1,3-Dichloropropene	2.00	27489.0000	0.4138	5.00	58338.0000	0.3485	20.0	255135.000	0.3767
m-,p-Xylene	4.00	58249.0000	0.7153	10.0	125433.000	0.6283	40.0	548578.000	0.6707
n-Butylbenzene	2.00	55254.0000	2.926	5.00	117358.000	2.496	20.0	539756.000	2.668
n-Propylbenzene	2.00	88381.0000	4.680	5.00	192787.000	4.100	20.0	842428.000	4.164
o-Xylene	2.00	27742.0000	0.6813	5.00	60018.0000	0.6012	20.0	261480.000	0.6394
p-Isopropyltoluene	2.00	53812.0000	2.850	5.00	116344.000	2.474	20.0	531995.000	2.630
sec-Butylbenzene	2.00	67761.0000	3.588	5.00	146646.000	3.119	20.0	661359.000	3.269
tert-Butylbenzene	2.00	10912.0000	0.5778	5.00	22869.0000	0.4864	20.0	103966.000	0.5139
trans-1,2-Dichloroethene	2.00	17957.0000	0.2703	5.00	42963.0000	0.2566	20.0	188044.000	0.2777
trans-1,3-Dichloropropene	2.00	22982.0000	0.5644	5.00	48159.0000	0.4824	20.0	207859.000	0.5082

INT_CAL - Modified 03/06/2008
PDF File ID: 2042537
Report generated 06/13/2011 13:12

Login Number: L11060272
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 28-MAY-11 00:23
Column ID: F

Analyte	WG366025-08			WG366025-09			WG366025-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	458957.000	0.2667	100	896269.000	0.2474	200	1730305.00	0.2289
Dibromochloromethane	50.0	308542.000	0.2910	100	666408.000	0.3037	200	1409540.00	0.3111
Dibromomethane	50.0	216436.000	0.1258	100	447072.000	0.1234	200	929354.000	0.1229
Dichlorodifluoromethane	50.0	633898.000	0.3684	100	1211253.00	0.3343	200	2448161.00	0.3239
Hexachlorobutadiene	50.0	180361.000	0.3425	100	363511.000	0.3322	200	770198.000	0.3378
Isopropylbenzene	50.0	1754539.00	1.655	100	3721962.00	1.696	200	7606351.00	1.679
Methylene Chloride	50.0	522287.000	0.3035	100	1085883.00	0.2997	200	2257152.00	0.2986
Naphthalene	50.0	750041.000	1.424	100	1569921.00	1.435	200	3284985.00	1.441
Styrene	50.0	1218880.00	1.150	100	2626481.00	1.197	200	5440801.00	1.201
Tetrachloroethene	50.0	383671.000	0.3619	100	810752.000	0.3695	200	1699130.00	0.3751
Trichloroethene	50.0	439114.000	0.2552	100	908869.000	0.2509	200	1853470.00	0.2452
Trichlorofluoromethane	50.0	813980.000	0.4730	100	1660627.00	0.4583	200	3459701.00	0.4577
Vinyl Acetate	50.0	683405.000	0.3972	100	1496586.00	0.4131	200	2963663.00	0.3921
cis-1,2-Dichloroethene	50.0	518549.000	0.3014	100	1090764.00	0.3011	200	2242142.00	0.2966
cis-1,3-Dichloropropene	50.0	633724.000	0.3683	100	1317336.00	0.3636	200	2721073.00	0.3600
m-,p-Xylene	100	1501302.00	0.7080	200	3314122.00	0.7551	400	7035130.00	0.7765
n-Butylbenzene	50.0	1439259.00	2.733	100	3035792.00	2.774	200	6107789.00	2.679
n-Propylbenzene	50.0	2218705.00	4.213	100	4696544.00	4.292	200	9377348.00	4.113
o-Xylene	50.0	705687.000	0.6656	100	1508746.00	0.6875	200	3157615.00	0.6970
p-Isopropyltoluene	50.0	1434290.00	2.723	100	3062672.00	2.799	200	6262106.00	2.747
sec-Butylbenzene	50.0	1749197.00	3.321	100	3682549.00	3.365	200	7411805.00	3.251
tert-Butylbenzene	50.0	277158.000	0.5263	100	596448.000	0.5450	200	1243216.00	0.5453
trans-1,2-Dichloroethene	50.0	491152.000	0.2854	100	1031327.00	0.2847	200	2152506.00	0.2847
trans-1,3-Dichloropropene	50.0	533024.000	0.5027	100	1120560.00	0.5106	200	2376043.00	0.5245

INT_CAL - Modified 03/06/2008
PDF File ID: 2042537
Report generated 06/13/2011 13:12

Login Number: L11060272
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 28-MAY-11 00:23
Column ID: F

Analyte	WG366025-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	300	4631177.00	0.4121
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 2042537
Report generated 06/13/2011 13:12

Calibration Table Report
Method: 8260WTR.M
Title: 8260B/624_WATER SOP:OVLMSV01 05/27/11 - HPMS6
Last Calibration: Sat May 28 09:28:26 2011

Calibration Files

Compound		0.3 6M99726.D	0.4 6M99727.D	1 6M99728.D	2 6M99729.D	5 6M99730.D	20 6M99731.D	50 6M99732.D	100 6M99733.D	200 6M99734.D	300 6M99735.D	Avg	%RSD
Fluorobenzene	ISTD												
Dichlorodifluoromethane		0.303	0.327	0.318	0.343	0.368	0.368	0.334	0.324			0.336	6.876
Chloromethane		0.723	0.645	0.602	0.622	0.612	0.623	0.580	0.597			0.626	7.025
Vinyl Chloride		0.416	0.510	0.497	0.456	0.455	0.441	0.380	0.275			0.429	17.430
1,3-Butadiene				0.508	0.388	0.177	0.165	0.153	0.122			0.252	62.426
Bromomethane		0.172	0.164	0.166	0.160	0.168	0.194	0.191	0.197			0.176	8.490
Chloroethane		0.233	0.231	0.242	0.252	0.274	0.267	0.247	0.229			0.247	6.752
Trichlorofluoromethane		0.253	0.398	0.416	0.439	0.475	0.473	0.458	0.458			0.421	17.362
Diethyl ether			0.199	0.207	0.215	0.231	0.224	0.226		0.226		0.218	5.376
Isoprene			0.416	0.439	0.439	0.484	0.496	0.495	0.493			0.466	7.192
Acrolein					0.019	0.022	0.021	0.022	0.024	0.025		0.022	9.623
1,1,2-Trichloro-1,2,2-Trifluoroe			0.217	0.221	0.244	0.261	0.263	0.259	0.264			0.247	8.223
Acetone					0.058	0.050	0.049	0.047	0.047	0.045		0.049	9.283
1,1-Dichloroethene		0.410	0.500	0.514	0.517	0.555	0.564	0.548	0.544			0.519	9.528
Tert-Butyl Alcohol				0.013	0.013	0.014	0.013	0.012		0.012		0.013	5.414
Dimethyl Sulfide			0.384	0.409	0.416	0.444	0.445	0.437	0.440			0.425	5.404
Iodomethane			0.076	0.107	0.135	0.173	0.181	0.158	0.135			0.138	26.996
Methyl acetate				0.184	0.175	0.164	0.159	0.160	0.158			0.167	6.378
Methylene Chloride		0.353	0.301	0.313	0.288	0.305	0.304	0.300	0.299			0.308	6.416
Carbon Disulfide			0.858	0.915	0.901	0.964	0.989	0.988	0.997			0.945	5.686
Acrylonitrile					0.070	0.077	0.075	0.074	0.075	0.065		0.073	5.953
Methyl Tert Butyl Ether			0.557	0.550	0.555	0.594	0.569	0.563	0.581			0.567	2.779
trans-1,2-Dichloroethene		0.228	0.260	0.270	0.257	0.278	0.285	0.285	0.285			0.268	7.415
n-Hexane			0.406	0.417	0.371	0.394	0.395	0.390	0.403			0.397	3.667
Diisopropyl ether			0.860	0.916	0.959	1.006	0.986	0.988		0.962		0.954	5.300
Vinyl Acetate					0.623	0.491	0.397	0.413	0.392	0.412		0.455	19.788
1,1-Dichloroethane		0.544	0.560	0.597	0.575	0.620	0.624	0.617	0.597			0.592	4.997
Ethyl-Tert-Butyl ether			0.758	0.782	0.837	0.872	0.840	0.840		0.844		0.825	4.825
2-Butanone					0.108	0.087	0.076	0.075	0.068	0.072		0.081	18.382
Propionitrile			0.020	0.022	0.022	0.025	0.024	0.023		0.023		0.023	7.542
2,2-Dichloropropane		0.324	0.371	0.403	0.382	0.400	0.397	0.387	0.369			0.379	6.779
cis-1,2-Dichloroethene		0.253	0.264	0.283	0.276	0.295	0.301	0.301	0.297			0.284	6.372
Chloroform	0.486	0.481	0.486	0.526	0.488	0.524	0.523	0.520	0.512			0.505	3.835
1-Bromopropane			0.037	0.040	0.044	0.048	0.045	0.044	0.044	0.051		0.044	10.010
Bromochloromethane		0.120	0.117	0.144	0.138	0.140	0.140	0.141	0.142			0.135	7.882
Tetrahydrofuran			0.045	0.042	0.043	0.047	0.046	0.045		0.046		0.045	3.609
Dibromofluoromethane			0.222	0.193	0.232	0.256	0.260	0.257	0.257			0.240	10.633
1,1,1-Trichloroethane		0.305	0.353	0.408	0.395	0.420	0.434	0.436	0.437			0.399	11.780
Cyclohexane			0.501	0.526	0.513	0.535	0.542	0.532	0.543			0.528	2.942
1,1-Dichloropropene		0.291	0.338	0.376	0.356	0.404	0.405	0.405	0.398			0.372	11.048
Tert-Amyl-Methyl ether			0.519	0.528	0.559	0.574	0.571	0.583		0.573		0.558	4.472
Carbon Tetrachloride		0.203	0.284	0.3	0.294	0.332	0.352	0.364	0.355			0.31036	17.0192
1,2-Dichloroethane-d4			0.286	0.245	0.305	0.308	0.302	0.295	0.289			0.29004	7.37186
Heptane												0	0
1,2-Dichloroethane		0.361	0.372	0.399	0.377	0.401	0.397	0.389	0.384			0.38502	3.69571
Benzene		1.132	1.019	1.077	1.037	1.086	1.112	1.115	1.091			1.08348	3.58987
Trichloroethene		0.206	0.213	0.232	0.232	0.244	0.255	0.251	0.245			0.23475	7.50482
Methylcyclohexane			0.375	0.383	0.373	0.388	0.39	0.38	0.393			0.38328	1.9649
1,2-Dichloropropane		0.279	0.289	0.329	0.302	0.318	0.314	0.313	0.31			0.3067	5.21612
1,4-Dioxane				0.001	0.001	0.001	0.001	0.001		0.001		0.00122	6.50971
Bromodichloromethane		0.304	0.304	0.382	0.32	0.338	0.353	0.354	0.353			0.33844	8.13928
Dibromomethane		0.122	0.124	0.143	0.125	0.133	0.126	0.123	0.123			0.12728	5.63594
2-Chloroethyl Vinyl Ether			0.138	0.121	0.127	0.13	0.121	0.111	0.111	0.121		0.12252	7.58471
4-Methyl-2-Pentanone					0.061	0.064	0.059	0.056	0.055	0.054		0.05819	6.52232
cis-1,3-Dichloropropene		0.34	0.349	0.414	0.348	0.377	0.368	0.364	0.36			0.36497	6.32272
Dimethyl Disulfide					0.176	0.211	0.228	0.234	0.247			0.21915	12.4546
Chlorobenzene-d5	ISTD												
Toluene-d8			1.373	1.219	1.411	1.427	1.429	1.458	1.491			1.40135	6.30431
Toluene		1.638	1.67	1.744	1.596	1.671	1.681	1.724	1.725			1.68109	2.93722
Ethyl Methacrylate			0.334	0.317	0.375	0.39	0.379	0.386	0.387			0.36689	7.91357
Paraldehyde				0.004	0.004	0.005	0.004	0.004		0.004		0.00427	7.8182
trans-1,3-Dichloropropene		0.486	0.463	0.564	0.482	0.508	0.503	0.511	0.524			0.50522	6.07268
1,1,2-Trichloroethane		0.29	0.288	0.338	0.269	0.274	0.267	0.266	0.267			0.28234	8.7151
2-Hexanone					0.162	0.169	0.15	0.146	0.146	0.137		0.15156	7.73299
1,3-Dichloropropane		0.503	0.508	0.62	0.492	0.505	0.473	0.461	0.461			0.50281	10.162
Tetrachloroethene		0.325	0.337	0.352	0.344	0.361	0.362	0.369	0.375			0.35305	4.8196
Dibromochloromethane		0.258	0.251	0.314	0.25	0.277	0.291	0.304	0.311			0.28191	9.44264
1,2-Dibromoethane		0.281	0.247	0.294	0.226	0.208	0.174	0.162				0.22736	22.164
1-Chlorohexane		0.392	0.481	0.509	0.514	0.541	0.541	0.559	0.582			0.5149	11.3813
Chlorobenzene		1.059	1.064	1.186	1.008	1.031	1.037	1.065	1.067			1.06457	5.01816
1,1,1,2-Tetrachloroethane		0.313	0.307	0.377	0.286	0.336	0.351	0.367	0.377			0.33935	10.187
Ethylbenzene		0.521	0.526	0.608	0.514	0.544	0.559	0.598	0.62			0.56126	7.51142
m-,p-Xylene		0.697	0.627	0.715	0.628	0.671	0.708	0.755	0.776			0.69719	7.75839
o-Xylene		0.708	0.622	0.681	0.601	0.639	0.666	0.688	0.697			0.66267	5.75723
Styrene		1.063	1.012	1.182	1.002	1.092	1.15	1.197	1.201			1.11233	7.31442
Bromoform			0.122	0.145	0.104	0.141	0.155	0.161	0.166			0.14196	15.5902
Isopropylbenzene		1.551	1.592	1.761	1.551	1.628	1.655	1.696	1.679			1.63907	4.47955
1,4-Dichlorobenzene-d4	ISTD												
1,1,2,2-Tetrachloroethane		0.686	0.709	0.867	0.572	0.601	0.574	0.549	0.544			0.63761	17.41
p-Bromofluorobenzene			1.108	0.908	1.054	1.07	1.073	1.065	1.044			1.04598	6.13142

1,2,3-Trichloropropane			0.217	0.22	0.151	0.156	0.147	0.141	0.138	0.16721	21.324
trans-1,4-Dichloro-2-Butene			0.227	0.197	0.223	0.218	0.209	0.202	0.202	0.21128	5.45823
n-Propylbenzene		4.361	4.163	4.68	4.1	4.164	4.213	4.291	4.113	4.2606	4.4873
Bromobenzene	0.762	0.833	0.823	0.885	0.718	0.746	0.766	0.778	0.763	0.78607	6.54327
1,3,5-Trimethylbenzene		2.701	2.651	2.978	2.558	2.714	2.828	2.911	2.883	2.77823	5.19371
2-Chlorotoluene		2.92	2.764	3.236	2.621	2.714	2.598	2.66	2.746	2.78233	7.52008
4-Chlorotoluene		3.206	2.671	2.967	2.381	2.409	2.718	2.778	2.554	2.71066	10.2673
a-Methylstyrene			1.38	1.257	1.463	1.479	1.565	1.607	1.601	1.47903	8.63888
tert-Butylbenzene		0.414	0.525	0.578	0.486	0.514	0.526	0.545	0.545	0.5167	9.55403
1,2,4-Trimethylbenzene		2.907	2.737	3.107	2.64	2.8	2.953	3.058	2.969	2.89656	5.5276
sec-Butylbenzene		3.044	3.323	3.588	3.119	3.269	3.321	3.365	3.251	3.28499	4.98969
p-Isopropyltoluene		2.636	2.491	2.85	2.474	2.629	2.723	2.799	2.747	2.66861	5.1166
1,3-Dichlorobenzene		1.806	1.642	1.705	1.376	1.462	1.49	1.511	1.47	1.55776	9.29186
1,4-Dichlorobenzene	1.704	1.82	1.492	1.756	1.399	1.47	1.511	1.517	1.49	1.57335	9.34178
n-Butylbenzene		2.6	2.624	2.926	2.496	2.668	2.733	2.774	2.679	2.68742	4.7745
1,2-Dichlorobenzene	1.309	1.623	1.379	1.663	1.257	1.305	1.313	1.291	1.261	1.37797	11.2252
1,2-Dibromo-3-Chloropropane				0.138	0.083	0.089	0.084	0.084	0.084	0.09363	23.2821
1,2,4-Trichlorobenzene		1.076	0.985	1.081	0.843	0.871	0.873	0.879	0.878	0.93575	10.4308
Hexachlorobutadiene		0.196	0.285	0.373	0.301	0.334	0.342	0.332	0.338	0.31267	17.2892
Naphthalene		1.734	1.598	1.991	1.418	1.472	1.424	1.435	1.441	1.56415	13.0925
1,2,3-Trichlorobenzene	0.824	0.932	0.786	0.93	0.697	0.726	0.703	0.717	0.716	0.78121	12.113

Mon May 30 12:59:35 2011

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L11060272 Run Date: 05/28/2011 Sample ID: WG366025-12
Instrument ID: HPMS6 Run Time: 01:28 Method: 8260B
File ID: 6M99737 Analyst: MES QC Key: STD
ICal Workgroup: WG366025 Cal ID: HPMS6 - 28-MAY-11

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	50.0	51.8	ug/L	0.523	3.60	30	
1,1-Dichloroethene	CCC	50.0	51.4	ug/L	0.533	2.70	30	
1,2-Dichloropropane	CCC	50.0	51.7	ug/L	0.317	3.40	30	
Ethylbenzene	CCC	50.0	50.3	ug/L	0.564	0.500	30	
Toluene	CCC	50.0	50.3	ug/L	1.69	0.700	30	
Vinyl Chloride	CCC	50.0	51.6	ug/L	0.446	3.20	30	
Bromoform	SPCC	50.0	47.9	ug/L	0.154	4.10	30	
Chlorobenzene	SPCC	50.0	48.8	ug/L	1.04	2.50	30	
Chloromethane	SPCC	50.0	54.7	ug/L	0.685	9.40	30	
1,1-Dichloroethane	SPCC	50.0	51.7	ug/L	0.612	3.40	30	
1,1,2,2-Tetrachloroethane	SPCC	50.0	54.0	ug/L	0.618	8.10	30	
Acetone		50.0	61.0	ug/L	0.0600	21.9	30	
Benzene		50.0	51.6	ug/L	1.12	3.20	30	
Bromobenzene		50.0	49.0	ug/L	0.771	1.90	30	
Bromochloromethane		50.0	53.2	ug/L	0.144	6.40	30	
Bromodichloromethane		50.0	52.2	ug/L	0.353	4.40	30	
Bromomethane		50.0	58.8	ug/L	0.207	17.5	30	
2-Butanone		50.0	55.0	ug/L	0.0819	9.90	30	
n-Butylbenzene		50.0	50.6	ug/L	2.72	1.10	30	
sec-Butylbenzene		50.0	50.7	ug/L	3.33	1.40	30	
tert-Butylbenzene		50.0	50.9	ug/L	0.526	1.80	30	
Carbon Disulfide		50.0	48.7	ug/L	0.919	2.70	30	
Carbon Tetrachloride		50.0	50.0	ug/L	0.354	0.100	30	
Dibromochloromethane		50.0	53.5	ug/L	0.302	7.10	30	
Chloroethane		50.0	54.1	ug/L	0.267	8.20	30	
2-Chloroethyl Vinyl Ether		50.0	49.7	ug/L	0.122	0.600	30	
2-Chlorotoluene		50.0	46.8	ug/L	2.61	6.30	30	
4-Chlorotoluene		50.0	49.6	ug/L	2.69	0.700	30	
1,2-Dibromo-3-Chloropropane		50.0	52.3	ug/L	0.0885	4.60	30	
1,2-Dibromoethane		50.0	47.4	ug/L	0.176	5.30	30	
Dibromomethane		50.0	50.4	ug/L	0.128	0.900	30	
1,2-Dichlorobenzene		50.0	47.7	ug/L	1.32	4.60	30	
1,3-Dichlorobenzene		50.0	47.2	ug/L	1.47	5.70	30	
1,4-Dichlorobenzene		50.0	47.2	ug/L	1.48	5.70	30	
Dichlorodifluoromethane		50.0	72.0	ug/L	0.484	44.1	30	*
1,2-Dichloroethane		50.0	51.4	ug/L	0.396	2.90	30	
cis-1,2-Dichloroethene		50.0	53.7	ug/L	0.305	7.30	30	
trans-1,2-Dichloroethene		50.0	53.0	ug/L	0.285	6.00	30	
1,3-Dichloropropane		50.0	47.9	ug/L	0.482	4.20	30	
2,2-Dichloropropane		50.0	48.7	ug/L	0.369	2.70	30	
cis-1,3-Dichloropropene		50.0	49.5	ug/L	0.362	1.00	30	
trans-1,3-Dichloropropene		50.0	45.8	ug/L	0.463	8.40	30	

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 2042538
Report generated 06/13/2011 13:12

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L11060272 Run Date: 05/28/2011 Sample ID: WG366025-12
Instrument ID: HPMS6 Run Time: 01:28 Method: 8260B
File ID: 6M99737 Analyst: MES QC Key: STD
ICal Workgroup: WG366025 Cal ID: HPMS6 - 28-MAY-11

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	55.0	ug/L	0.408	9.90	30	
2-Hexanone		50.0	54.4	ug/L	0.165	8.90	30	
Hexachlorobutadiene		50.0	49.4	ug/L	0.332	1.20	30	
Isopropylbenzene		50.0	44.2	ug/L	1.45	11.6	30	
p-Isopropyltoluene		50.0	47.9	ug/L	2.56	4.20	30	
4-Methyl-2-Pentanone		50.0	55.6	ug/L	0.0648	11.3	30	
Methylene Chloride		50.0	48.8	ug/L	0.300	2.40	30	
Naphthalene		50.0	48.3	ug/L	1.51	3.40	30	
n-Propylbenzene		50.0	48.8	ug/L	4.16	2.40	30	
Styrene		50.0	51.9	ug/L	1.15	3.80	30	
1,1,1,2-Tetrachloroethane		50.0	52.6	ug/L	0.357	5.30	30	
Tetrachloroethene		50.0	50.9	ug/L	0.359	1.70	30	
1,2,3-Trichlorobenzene		50.0	46.8	ug/L	0.731	6.40	30	
1,2,4-Trichlorobenzene		50.0	45.0	ug/L	0.843	9.90	30	
1,1,1-Trichloroethane		50.0	54.6	ug/L	0.435	9.10	30	
1,1,2-Trichloroethane		50.0	49.6	ug/L	0.280	0.900	30	
Trichloroethene		50.0	53.1	ug/L	0.250	6.30	30	
Trichlorofluoromethane		50.0	52.6	ug/L	0.484	5.20	30	
1,2,3-Trichloropropane		50.0	54.7	ug/L	0.155	9.30	30	
1,2,4-Trimethylbenzene		50.0	51.8	ug/L	3.00	3.60	30	
1,3,5-Trimethylbenzene		50.0	52.1	ug/L	2.90	4.30	30	
Vinyl Acetate		50.0	66.9	ug/L	0.552	33.7	40	
o-Xylene		50.0	50.7	ug/L	0.672	1.30	30	
m-,p-Xylene		100	102	ug/L	0.714	2.50	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 2042538
Report generated 06/13/2011 13:12

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00116056

Login Number: L11060272 Run Date: 06/10/2011 Sample ID: WG367273-02

Instrument ID: HPMS6 Run Time: 11:48 Method: 8260B

File ID: 6M100136 Analyst: ADC QC Key: STD

Workgroup (AAB#): WG367274 Cal ID: HPMS6 - 28-MAY-11

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	49.8	ug/L	0.503	0.390	20	
1,1-Dichloroethene	CCC	50.0	46.6	ug/L	0.484	6.71	20	
1,2-Dichloropropane	CCC	50.0	46.3	ug/L	0.284	7.34	20	
Ethylbenzene	CCC	50.0	45.6	ug/L	0.512	8.78	20	
Toluene	CCC	50.0	43.7	ug/L	1.47	12.6	20	
Vinyl Chloride	CCC	50.0	41.3	ug/L	0.366	17.4	20	
Bromoform	SPCC	50.0	54.9	ug/L	0.176	9.70	40	
Chlorobenzene	SPCC	50.0	45.1	ug/L	0.961	9.72	40	
Chloromethane	SPCC	50.0	37.0	ug/L	0.463	26.0	40	
1,1-Dichloroethane	SPCC	50.0	47.3	ug/L	0.560	5.46	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	41.3	ug/L	0.475	17.4	40	
Acetone		50.0	45.1	ug/L	0.0444	9.89	40	
Benzene		50.0	49.1	ug/L	1.06	1.86	40	
Bromobenzene		50.0	47.2	ug/L	0.742	5.64	40	
Bromochloromethane		50.0	55.9	ug/L	0.151	11.7	40	
Bromodichloromethane		50.0	51.5	ug/L	0.349	2.99	40	
Bromomethane		50.0	42.3	ug/L	0.149	15.4	40	
2-Butanone		50.0	49.2	ug/L	0.0739	1.55	40	
n-Butylbenzene		50.0	43.5	ug/L	2.34	12.9	40	
sec-Butylbenzene		50.0	45.4	ug/L	2.98	9.15	40	
tert-Butylbenzene		50.0	51.1	ug/L	0.528	2.15	40	
Carbon Disulfide		50.0	43.7	ug/L	0.825	12.6	40	
Carbon Tetrachloride		50.0	54.3	ug/L	0.385	8.67	40	
Dibromochloromethane		50.0	53.0	ug/L	0.299	5.95	40	
Chloroethane		50.0	50.5	ug/L	0.249	0.950	40	
2-Chloroethyl Vinyl Ether		50.0	40.4	ug/L	0.0989	19.3	40	
2-Chlorotoluene		50.0	39.5	ug/L	2.20	21.0	40	
4-Chlorotoluene		50.0	42.3	ug/L	2.29	15.4	40	
1,2-Dibromo-3-Chloropropane		50.0	39.0	ug/L	0.0664	22.0	40	
1,2-Dibromoethane		50.0	47.3	ug/L	0.175	5.41	40	
Dibromomethane		50.0	48.0	ug/L	0.122	4.06	40	
1,2-Dichlorobenzene		50.0	46.1	ug/L	1.27	7.76	40	
1,3-Dichlorobenzene		50.0	47.8	ug/L	1.49	4.48	40	
1,4-Dichlorobenzene		50.0	47.3	ug/L	1.49	5.50	40	
Dichlorodifluoromethane		50.0	49.5	ug/L	0.333	0.965	40	
1,2-Dichloroethane		50.0	43.6	ug/L	0.336	12.8	40	
cis-1,2-Dichloroethene		50.0	52.5	ug/L	0.298	5.08	40	
trans-1,2-Dichloroethene		50.0	52.0	ug/L	0.279	3.98	40	
1,3-Dichloropropane		50.0	39.8	ug/L	0.401	20.3	40	
2,2-Dichloropropane		50.0	52.2	ug/L	0.396	4.38	40	
cis-1,3-Dichloropropene		50.0	50.5	ug/L	0.369	1.01	40	
trans-1,3-Dichloropropene		50.0	43.5	ug/L	0.440	12.9	40	

CCV - Modified 03/05/2008

PDF File ID: 2042540

Report generated 06/13/2011 13:12

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00116057

Login Number: L11060272 Run Date: 06/10/2011 Sample ID: WG367273-02

Instrument ID: HPMS6 Run Time: 11:48 Method: 8260B

File ID: 6M100136 Analyst: ADC QC Key: STD

Workgroup (AAB#): WG367274 Cal ID: HPMS6 - 28-MAY-11

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	52.1	ug/L	0.387	4.24	40	
2-Hexanone		50.0	43.5	ug/L	0.132	13.1	40	
Hexachlorobutadiene		50.0	55.1	ug/L	0.371	10.2	40	
Isopropylbenzene		50.0	47.3	ug/L	1.55	5.35	40	
p-Isopropyltoluene		50.0	47.9	ug/L	2.56	4.25	40	
4-Methyl-2-Pentanone		50.0	45.1	ug/L	0.0524	9.90	40	
Methylene Chloride		50.0	46.2	ug/L	0.284	7.60	40	
Naphthalene		50.0	37.3	ug/L	1.17	25.4	40	
n-Propylbenzene		50.0	42.2	ug/L	3.59	15.7	40	
Styrene		50.0	47.8	ug/L	1.06	4.49	40	
1,1,1,2-Tetrachloroethane		50.0	52.3	ug/L	0.355	4.65	40	
Tetrachloroethene		50.0	53.3	ug/L	0.376	6.57	40	
1,2,3-Trichlorobenzene		50.0	42.5	ug/L	0.665	14.9	40	
1,2,4-Trichlorobenzene		50.0	44.9	ug/L	0.839	10.3	40	
1,1,1-Trichloroethane		50.0	53.3	ug/L	0.425	6.69	40	
1,1,2-Trichloroethane		50.0	41.1	ug/L	0.232	17.7	40	
Trichloroethene		50.0	58.1	ug/L	0.273	16.2	40	
Trichlorofluoromethane		50.0	52.7	ug/L	0.485	5.32	40	
1,2,3-Trichloropropane		50.0	44.6	ug/L	0.127	10.9	40	
1,2,4-Trimethylbenzene		50.0	44.8	ug/L	2.60	10.3	40	
1,3,5-Trimethylbenzene		50.0	44.8	ug/L	2.49	10.3	40	
Vinyl Acetate		50.0	61.1	ug/L	0.505	22.2	40	
o-Xylene		50.0	46.0	ug/L	0.610	7.96	40	
m-,p-Xylene		100	92.5	ug/L	0.645	7.54	40	
1,2-Dichloroethene		100	105	ug/L	0.289	4.53	40	
Xylenes		150	138	ug/L	0.627	7.68	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 2042540
Report generated 06/13/2011 13:12

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number:L11060272
Instrument ID:HPMS6
Workgroup (AAB#):WG367274

CCV Number:WG367273-02
CAL ID: HPMS6-28-MAY-11
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG367273-02	NA	NA	258251	489148	696298
Upper Limit	NA	NA	516502	978296	1392596
Lower Limit	NA	NA	129126	244574	348149
L11060272-01	1.00	01	210315	427176	589825
L11060272-02	1.00	01	211700	426729	585074
L11060272-03	1.00	01	206243	422517	581473
L11060272-04	1.00	01	207115	416936	589707
L11060272-05	1.00	01	207606	417814	579491
L11060272-06	1.00	01	206149	419694	573130
L11060272-07	1.00	01	209440	422412	574204
WG367274-01	1.00	01	220288	451538	621796
WG367274-02	1.00	01	233012	442992	622912
WG367274-03	1.00	01	237628	454120	629819

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 2042541
Report generated 06/13/2011 13:12

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

00116059

Login Number: L11060272
Instrument ID: HPMS6
Workgroup (AAB#): WG367274

CCV Number: WG367273-02
CAL ID: HPMS6-28-MAY-11
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG367273-02	NA	NA	18.84	15.28	10.77
Upper Limit	NA	NA	19.34	15.78	11.27
Lower Limit	NA	NA	18.34	14.78	10.27
L11060272-01	1.00	01	18.84	15.28	10.77
L11060272-02	1.00	01	18.84	15.28	10.77
L11060272-03	1.00	01	18.84	15.28	10.77
L11060272-04	1.00	01	18.85	15.27	10.77
L11060272-05	1.00	01	18.84	15.28	10.77
L11060272-06	1.00	01	18.84	15.28	10.77
L11060272-07	1.00	01	18.84	15.27	10.77
WG367274-01	1.00	01	18.84	15.27	10.77
WG367274-02	1.00	01	18.84	15.27	10.77
WG367274-03	1.00	01	18.84	15.28	10.77

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 2042542
Report generated 06/13/2011 13:12

3.0 Attachments

Microbac Laboratories Inc.
List of Valid Qualifiers
June 13, 2011

Qualkey: STD_ND=U

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
A	See the report narrative
B	Analyte present in method blank
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
C	Confirmed by GC/MS
CG	Confluent growth
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
FL	Free Liquid
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	The analyte was positively identified, but the quantitation was below the RL
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Not detected at or above adjusted sample detection limit
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

Chain of Custody

NO. 6060

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: MICROBAC Address: 158 STARLITE DR. MARIETTA, OH. Contact: STEPHANIE MOSSBURG

Project Name: LHAAP Project Location: KARNACK, TX.

Project No.: 117591.0008B106 Project Contact: JEN HOANG Project Telephone No.: 281-531-3108

Point of Contact: Scott BEESINGER Project Manager/Supervisor: PRAVEEN SRIVASTAV

Telephone No.: 903-679-3448

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOA							Remarks
1	12WW20-110607	6/7/11	0850		✓	W	SITE 12	2	✓							
2	12WW21-110607	6/7/11	1350		✓	W	SITE 12	2	✓							
3	12WW22-110607	6/7/11	10:05		✓	W	SITE 12	2	✓							
4	12WW22-110607-FD	6/7/11	10:05		✓	W	SITE 12	2	✓							
5	12WW23-110607	6/7/11	1505		✓	W	SITE 12	2	✓							
6	12WW24-110607	6/7/11	11:20		✓	W	SITE 12	2	✓							
7	TB-110607	6/7/11			✓	W	TRIP BLANK	2	✓							
8																
9																
10																

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time
Scott Beesinger	6/8/11 7:00		

Special Instructions: STANDARD TAT

FedEx Airbill No.:

Sampler's Signature: Scott Beesinger

TAT: ____ Standard ____ Rush Date ____

dition ____ Y ____ N ____ Cold

Microbac OVD
221000015554
Received: 06/09/2011 09:38
By: BRENDA GREENWALT
Brenda Greenwalt

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_

Rev. 10-19-07

00116062

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L11060272
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 20-JUN-2011

Samplenum	Container ID	Products
L11060272-01	842887	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	09-JUN-2011 11:26	JKT	
2	ANALYZ	V1	ORG4	09-JUN-2011 12:44	PWD	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	09-JUN-2011 11:26	JKT	
2	ANALYZ	V1	ORG4	09-JUN-2011 12:44	PWD	JKT

Samplenum	Container ID	Products
L11060272-02	842888	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	09-JUN-2011 11:26	JKT	
2	ANALYZ	V1	ORG4	09-JUN-2011 12:44	PWD	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	09-JUN-2011 11:26	JKT	
2	ANALYZ	V1	ORG4	09-JUN-2011 12:44	PWD	JKT

Samplenum	Container ID	Products
L11060272-03	842889	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	09-JUN-2011 11:26	JKT	
2	ANALYZ	V1	ORG4	09-JUN-2011 12:44	PWD	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	09-JUN-2011 11:26	JKT	
2	ANALYZ	V1	ORG4	09-JUN-2011 12:44	PWD	JKT

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L11060272
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 20-JUN-2011

Samplenum	Container ID	Products
L11060272-04	842890	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	09-JUN-2011 11:26	JKT	
2	ANALYZ	V1	ORG4	09-JUN-2011 12:44	PWD	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	09-JUN-2011 11:26	JKT	
2	ANALYZ	V1	ORG4	09-JUN-2011 12:44	PWD	JKT

Samplenum	Container ID	Products
L11060272-05	842891	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	09-JUN-2011 11:26	JKT	
2	ANALYZ	V1	ORG4	09-JUN-2011 12:44	PWD	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	09-JUN-2011 11:26	JKT	
2	ANALYZ	V1	ORG4	09-JUN-2011 12:44	PWD	JKT

Samplenum	Container ID	Products
L11060272-06	842892	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	09-JUN-2011 11:26	JKT	
2	ANALYZ	V1	ORG4	09-JUN-2011 12:44	PWD	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	09-JUN-2011 11:26	JKT	
2	ANALYZ	V1	ORG4	09-JUN-2011 12:44	PWD	JKT

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L11060272
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 20-JUN-2011

Samplenum	Container ID	Products
L11060272-07	842893	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	09-JUN-2011 11:26	JKT	
2	ANALYZ	V1	ORG4	09-JUN-2011 12:44	PWD	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	09-JUN-2011 11:26	JKT	
2	ANALYZ	V1	ORG4	09-JUN-2011 12:44	PWD	JKT

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

NELAP Addendum - March 4, 2011

Non-NELAP LIMS Product and Description

The following is a list of those tests that are not included in the Microbac – OVL NELAP Scope of Accreditation:

Heat of Combustion (BTU)
Total Halide by Bomb Combustion (TX)
Particle Sizing - 200 Mesh (PS200)
Sulfate (SO4) - 9038
Specific Gravity/Density (SPGRAV)
Total Residual Chlorine (CL-TRL)
Total Volatile Solids (all forms) (TVS)
Total Coliform Bacteria (all methods)
Fecal Coliform Bacteria (all methods)
Sulfite (SO3)
Thiodiglycol (TDG-LCMS)

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVL HPLC02/HPLC-UV

Nitroglycerin
Nitroguanidine
Acetic acid
Butyric acid
Lactic acid
Propionic acid
Pyruvic acid

OVL KNITRO-C-WUV-VIS

Nitrocellulose

OVL MSS01/GC-MS

1,4-Phenylenediamine
1-Methylnaphthalene
1,4-Dioxane
Atrazine
Benzaldehyde
Biphenyl
Caprolactam
Hexamethylphosphoramide (HMPA)
Pentachlorobenzene
Pentachloroethane

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVL MSV0I/GC-MS

1, 1, 2-Trichloro-1,2,2-trifluoroethane
1,3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
T-amylmethylether (TAME)
Tetrahydrofuran (THF)

OVL RSKOI/GC-FID

Isobutane
n-Butane
Propane
Propylene
Propyne

OVL HPLC07/HPLC-MS-MS

Hexamethylphosphoramide (XMPA-LCMS)

SOLID AND HAZARDOUS CHEMICALS

OVL HPLCOS-HPLC-UV

Nitroguanidine

OVL KNITRO-C-S/UV-VIS

Nitrocellulose

OVL MSS0I/GC-MS

1-Methylnaphthalene
Benzaldehyde
Biphenyl
Caprolactam
Pentachloroethane

NELAP Accreditation by Laboratory SOP

SOLID AND HAZARDOUS CHEMICALS

OVL MSV0I/GC-MS

1.3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
n-Hexane
T-amylmethylether (TAME)

Final

Feasibility Study for Groundwater
LHAAP-04
Former Pilot Wastewater Treatment Plant
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers – Tulsa District
1645 South 101st, East Avenue
Tulsa, Oklahoma 74128

Prepared by Shaw Environmental, Inc.
1401 Enclave Parkway, Suite 250
Houston, Texas 77077

Contract No. W912QR-04-D-0027, Task Order No. DS02
Project No. 117591
Rev 0
August 2012

Shaw® a world of Solutions™

Shaw® Shaw Environmental, Inc.

Date: ***August 6, 2012***

Project No.:117591

TRANSMITTAL LETTER:

To: Mr. Aaron Williams

Address: US Army Corps of Engineers - Tulsa
CESWT-PP-M
1645 South 101st East Ave
Tulsa, Oklahoma 74128

Re: *Final* Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas

Contract No. W912QR-04-D-0027/DS02

For: Review ____ As Requested ____ Approval ____ Corrections ____ Submittal **X** Other ____

Item No:	***No. of Copies***	***Date:***	***Document Title***
1	2	August 2012	**Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas**

Aaron,
Enclosed are two copies of the above-named document. Copies have been distributed as indicated at the end of this message. Please call with any questions or comments.

Sincerely:

Praveen Srivastav
Project Manager

CC: **Distribution List:**
Mr. J. Lambert – USACE, Tulsa (sent to A. Williams for distribution)
Ms. M. Plitnik – USAEC
Ms. Rose Zeiler – BRAC-LHAAP
Mr. S. Tzhone – EPA Region 6 (2)
Ms. F. Duke– TCEQ, Austin (2)
Mr. D. Vodak– TCEQ, Tyler
Mr. P. Bruckwicki– U.S. Fish and Wildlife Service

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

August 6, 2012

DAIM-ODB-LO

Mr. Stephen Tzhone
US Environmental Protection Agency
Superfund Division (6SF-AT)
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Final Feasibility Study for Groundwater LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas, August 2012

Dear Mr. Tzhone,

The above-referenced document is being transmitted to you for your records. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility.

The point of contact for this action is the undersigned. I ask that Praveen Srivastav, Shaw's Project Manager, be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
F. Duke, TCEQ, Austin, TX
D. Vodak, TCEQ, Tyler, TX
P. Bruckwicki, Caddo Lake NWR, TX
J. Lambert, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
M. Plitnik, USAEC, San Antonio, TX
P. Srivastav, Shaw – Houston, TX (for project files)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

August 6, 2012

DAIM-ODB-LO

Ms. Fay Duke (MC-136)
SSDAT/Superfund Section
Remediation Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Feasibility Study for Groundwater LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas, August 2012
SUP 126

Dear Ms. Duke,

The above-referenced document is being transmitted to you for your records. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility.

The point of contact for this action is the undersigned. I ask that Praveen Srivastav, Shaw's Project Manager be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
S. Tzhone, USEPA Region 6, Dallas, TX
D. Vodak, TCEQ, Tyler, TX
P. Bruckwicki, Caddo Lake NWR, TX
J. Lambert, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
M. Plitnik, USAEC, TX
P. Srivastav, Shaw, Houston, TX (for project files)

From:	Fay Duke
To:	Williams, Aaron K SWT; Watson, Susan; Zeiler, Rose Ms CIV USA OSA
Cc:	Lambert, John R SWT; Srivastav, Praveen; Duffield, Robert; Everett, Kay; Stephen Tzhone
Subject:	RE: Redline Final LHAAP-04 GW FS for Review (UNCLASSIFIED)
Date:	Thursday, August 02, 2012 11:14:10 AM

Rose/Aaron:

The TCEQ concurs with the proposed revisions for the FS.

Thanks, fd

Fay Duke (MC-136)
Remediation Division, TCEQ
PO Box 13087
Austin, Texas 78711-3087
512-239-2443
fay.duke@tceq.texas.gov

-----Original Message-----
From: Williams, Aaron K SWT [mailto:Aaron.K.Williams@usace.army.mil]
Sent: Monday, July 23, 2012 8:32 AM
To: Fay Duke; Watson, Susan; Zeiler, Rose Ms CIV USA OSA
Cc: Lambert, John R SWT; Srivastav, Praveen; Duffield, Robert; Everett, Kay; Stephen Tzhone
Subject: RE: Redline Final LHAAP-04 GW FS for Review (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Fay,

See below, for text in the FS that addresses your concerns:

The objectives of the wells is described in Sections 5.2.2.1, 5.2.3.1, 5.2.4.1, and 5.2.5.1, Additional Site Investigation, which states " Due to concerns about the scarcity of shallow zone monitoring wells in two directions, and the entire lack of any intermediate zone monitoring well, two additional shallow zone monitoring wells (04WW06 and 04WW07) and one intermediate monitoring well (04WW08) will be installed at the approximate locations noted on "...figure.

The number of wells for the performance monitoring network (or long-term operation) is not defined in the FS as described in Sections, 5.2.2.3, 5.2.3.3, 5.2.4.3, and 5.2.5.3, Long-Term Operation, which states "The number of wells to be monitored will be determined in the remedial design. However, for cost estimating purposes, monitoring of eight wells is included for sampling as indicated in the following paragraph.

Please let us know if the text adequately addresses your concerns so that the final document may be produced.

Thanks,

Aaron K. Williams
Environmental Engineer, ARMY/FUDS Section HTRW Design Center Tulsa District U.S. Army Corps of

Engineers
918-669-4915

-----Original Message-----
From: Fay Duke [mailto:fay.duke@tceq.texas.gov]
Sent: Wednesday, June 27, 2012 3:09 PM
To: Watson, Susan; Zeiler, Rose Ms CIV USA OSA
Cc: Williams, Aaron K SWT; Lambert, John R SWT; Srivastav, Praveen; Duffield, Robert; Everett, Kay; Stephen Tzhone
Subject: RE: Redline Final LHAAP-04 GW FS for Review

Rose:

The TCEQ has completed its review of the revised redline version of the Final LHAAP-04 and the various responses to comments. As we have commented on previously, we believe that additional MNA evaluation will be necessary to determine the feasibility of natural attenuation as an effective remedial alternative at this site. However, we believe the LHAAP-04 Feasibility Study report contain sufficient language to document such need.

Additionally, we have identified a concern with the added text in the revised report requiring clarification.
In response to agencies' concern that groundwater plume is not fully delineated, three additional wells will be installed. We noted that in Section 6.3-Individual Analysis of Alternative, the additions of three wells are included in each of the remedial alternatives analysis without the mentioned of the objectives of these wells. Our concern with this approach is that one could interpret it to mean that the current monitoring well network, with the additional three wells, is sufficient to serve as performance monitoring for any of the remedial alternatives. We believe that the performance monitoring network is best determined during the remedial design phase upon the selection of the remedy.

We appreciate your clarification.

Thanks,

Fay Duke (MC-136)
Remediation Division, TCEQ
PO Box 13087
Austin, Texas 78711-3087
512-239-2443
fay.duke@tceq.texas.gov

-----Original Message-----
From: Watson, Susan [mailto:Susan.Watson@shawgrp.com]
Sent: Wednesday, May 30, 2012 7:39 PM
To: Stephen Tzhone; Fay Duke
Cc: Williams, Aaron K SWT; Lambert, John R SWT; Zeiler, Rose Ms CIV USA OSA; Srivastav, Praveen; Duffield, Robert; Everett, Kay
Subject: Redline Final LHAAP-04 GW FS for Review

Steve and Fay,
Attached for your review is the revised Final LHAAP-04 Groundwater Feasibility Study that incorporates your comments including the EPA comment received on May 4, 2012 in an email (see below). The perchlorate sampling result for fire station supply well (04TW01) was added in response to the EPA comment below. Also attached are the final RTC tables, which will also be published with the final document.

The document indicates the tracked changes. Please let us know if you have any additional comments

or need additional information during your review.

Thanks,
Susan Watson, PE
Project Engineer
Applied Science and Engineering
Shaw Environmental & Infrastructure Group
1401 Enclave Parkway, Suite 250
Houston, TX 77077
281.531.3107 direct
281.531.3136 fax
281.531.3100 main
susan.watson@shawgrp.com

ShawT a world of SolutionsT
www.shawgrp.com

Please consider the environment before printing this e-mail.

From: Stephen Tzhone [mailto:Tzhone.Stephen@epamail.epa.gov]
Sent: Friday, May 04, 2012 6:17 PM
To: 'Zeiler, Rose Ms CIV USA OSA'; Lambert, John R SWT; Williams, Aaron K SWT; Plitnik, Marilyn A USA CIV US ; Lanier, Wendy SWT
Cc: Fay Duke; Dale Vodak; Terry Burton; Richard Mayer; Paul Torcoletti; kdbecher@usgs.gov; Forsythe.Barry@epamail.epa.gov
Subject: Re: RTCs - LHAAP-04 D-F FS (TCEQ & EPA) (UNCLASSIFIED)

Hi Rose,

The EPA has reviewed the RTCs and have no further comments.

*However, please update Army's last response to EPA comment #7, to reflect the recently found sampling data on the fire station supply well.

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

****Internet Email Confidentiality Footer**** Privileged/Confidential Information may be contained in this message. If you are not the addressee indicated in this message (or responsible for delivery of the message to such person), you may not copy or deliver this message to anyone. In such case, you should destroy this message and notify the sender by reply email.
Please advise immediately if you or your employer do not consent to Internet email for messages of this kind. Opinions, conclusions and other information in this message that do not relate to the official business of The Shaw Group Inc. or its subsidiaries shall be understood as neither given nor endorsed by it.
_____ The Shaw Group Inc.
http://www.shawgrp.com

Classification: UNCLASSIFIED
Caveats: NONE

From:	Stephen Tzhone
To:	"Zeiler, Rose Ms CIV USA OSA"; Lambert, John R SWT; Williams, Aaron K SWT; Lanier, Wendy SWT; Srivastav, Praveen; Watson, Susan; Everett, Kay; Duffield, Robert
Cc:	Fay Duke; Dale Vodak; Terry Burton; Richard Mayer; Paul Torcoletti; kdbecher@usgs.gov; Forsythe.Barry@epamail.epa.gov
Subject:	Re: Redline Final LHAAP-04 GW FS for Review
Date:	Friday, June 29, 2012 7:50:20 PM
Attachments:	ICTs retained page.pdf 05 2012 DF to FINAL LHAAP-04 GW FS with comparison tracking.docx TCEQ RTCs.pdf TCEQ approves 4-27-12.pdf USEPA RTCs.pdf USEPA approves 5-4-12.pdf

Hi Rose,

The EPA has completed the review of the Redline Final LHAAP-04 GW FS and has no further comments.

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

From: "Watson, Susan" <Susan.Watson@shawgrp.com>

To: Stephen Tzhone/R6/USEPA/US@EPA
Cc: "fduke@tceq.texas.gov" <fduke@tceq.texas.gov>, "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>, "Lambert, John R SWT" <John.R.Lambert@SWT03.usace.army.mil>, "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Srivastav, Praveen" <Praveen.Srivastav@shawgrp.com>, "Duffield, Robert" <robert.duffield@shawgrp.com>, "Everett, Kay"

<Kay.Everett@shawgrp.com>

Date: 05/31/2012 03:59 PM

Subject: RE: Redline Final LHAAP-04 GW FS for Review

Steve,
To follow up on your call today to address EPA's comment on ICTs in Section 4.5.3.2, we have revised Section 4.5.3.2, Summary of Interceptor Trench Process Option, to indicate that the ICTs will be retained as a process option. This page was extracted and is attached for your review.

Please let me know if you have any additional comments.
Thanks,
Susan Watson, PE
Project Engineer
Applied Science and Engineering
Shaw Environmental & Infrastructure Group
1401 Enclave Parkway, Suite 250
Houston, TX 77077
281.531.3107 direct
281.531.3136 fax
281.531.3100 main
susan.watson@shawgrp.com

ShawT a world of SolutionsT
www.shawgrp.com

Please consider the environment before printing this e-mail.

From: "Watson, Susan" <Susan.Watson@shawgrp.com>

To: Stephen Tzhone/R6/USEPA/US@EPA, "fduke@tceq.texas.gov" <fduke@tceq.texas.gov>
Cc: "Williams, Aaron K SWT" <Aaron.K.Williams@usace.army.mil>, "Lambert, John R SWT" <John.R.Lambert@SWT03.usace.army.mil>, "Zeiler, Rose Ms CIV USA OSA" <rose.zeiler@us.army.mil>, "Srivastav, Praveen" <Praveen.Srivastav@shawgrp.com>, "Duffield, Robert" <robert.duffield@shawgrp.com>, "Everett, Kay" <Kay.Everett@shawgrp.com>

Date: 05/30/2012 07:39 PM

Subject: Redline Final LHAAP-04 GW FS for Review

Steve and Fay,
Attached for your review is the revised Final LHAAP-04 Groundwater Feasibility Study that incorporates your comments including the EPA comment received on May 4, 2012 in an email (see below). The perchlorate sampling result for fire station supply well (04TW01) was added in response to the EPA comment below. Also attached are the final RTC tables, which will also be published with the final document.

The document indicates the tracked changes. Please let us know if you have any additional comments or need additional information during your review.

Thanks,
Susan Watson, PE
Project Engineer
Applied Science and Engineering
Shaw Environmental & Infrastructure Group
1401 Enclave Parkway, Suite 250
Houston, TX 77077
281.531.3107 direct
281.531.3136 fax
281.531.3100 main
susan.watson@shawgrp.com

ShawT a world of SolutionsT
www.shawgrp.com

Please consider the environment before printing this e-mail.

From: Stephen Tzhone [mailto:Tzhone.Stephen@epamail.epa.gov]
Sent: Friday, May 04, 2012 6:17 PM
To: 'Zeiler, Rose Ms CIV USA OSA'; Lambert, John R SWT; Williams, Aaron K SWT; Plitnik, Marilyn A USA CIV US ; Lanier, Wendy SWT
Cc: Fay Duke; Dale Vodak; Terry Burton; Richard Mayer; Paul Torcoletti; kdbecher@usgs.gov; Forsythe.Barry@epamail.epa.gov
Subject: Re: RTCs - LHAAP-04 D-F FS (TCEQ & EPA) (UNCLASSIFIED)

Hi Rose,

The EPA has reviewed the RTCs and have no further comments.

*However, please update Army's last response to EPA comment #7, to reflect the recently found sampling data on the fire station supply well.

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

****Internet Email Confidentiality Footer****
Privileged/Confidential Information may be contained in this message. If you are not the addressee indicated in this message (or responsible for delivery of the message to such person), you may not copy or deliver this message to anyone. In such case, you should destroy this message and notify the sender by reply email. Please advise immediately if you or your employer do not consent to Internet email for messages of this kind. Opinions, conclusions and other information in this message that do not relate to the official business of The Shaw Group Inc. or its subsidiaries shall be understood as neither given nor endorsed by it.
_____ The Shaw Group Inc.

http://www.shawgrp.com

Comments on Draft Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant
(published November 2011)
Longhorn Army Ammunition Plant, Karnack, Texas

January/February 2012

Reviewer: U.S. Environmental Protection Agency (Comments emailed by Stephen Tzhone 1-3-2012, 2-16-2012, and 5-4-2012)
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	Comments to Responses	C, D[1], E or X	Response to Comments to Responses	A or D[2]
1		General	Per current dispute on LHAAP-16, LHAAP-17, and MMRP-1 and MMRP-3, the following references to groundwater clean-up levels and land use controls may require modification to this document and future documents on LHAAP-04: <u>*Groundwater clean-up level</u>: • Page ES-2, third paragraph: GW-Ind. • Section 1.1, page 1-1, second sentence from bottom of page: GW-Ind. • Section 1.3, page 1-5: GW-Ind. • Section 2.2.2, page 2-2: GW-Ind. • Page 2-3: Multiple references to the GW-Ind MSC. Also in Table 2-2. Note that a change from GW-Ind also potentially affects the assessment of manganese. • Page 2-4: Reference to GW-Ind in last sentence on page. • Section 3.1, page 3-1. • Section 3.2.2.4: Entire section. • Section 3.3. • Table 3-1. • Table 3-2. • Section 4-1, page 4-1. • Section 6.3.1.1, page 6-5. • Section 6.3.2.1, page 6-6. • Section 6.3.3.1, page 6-10. • Section 6.3.3.3, page 6-11. • Section 6.3.2.2, page 6-7: Depending on outcome of dispute resolution regarding groundwater cleanup levels, the projected timeframe to achieve cleanup levels may be more than the 12 years indicated. Same for last sentence under “Duration of Remedial Activities” on page 6-9. • Section 6.3.3, page 6-10: Depending on outcome of dispute resolution regarding groundwater cleanup levels, the projected timeframe to achieve cleanup levels may be more than the 6 years indicated. Same for last sentence under “Chemical-Specific ARARs on page 6-11 and under “Duration of Remedial Activities” on page 6-16. • Section 6.3.4, page 6-14. • Section 6.3.4.1, page 6-14. • Section 6.3.4.3, page 6-15. <u>*LUCs</u>: • Section 4.5.2, page 4-5 to 4-6: This entire section addresses LUCs in a manner the EPA has disputed at other locations. • Each of the alternatives presented in Sections 5 and 6 contain one or more subsections addressing LUCs.	C C	Noted. When the current dispute is resolved, the document may require revisions. Noted. When the current dispute is resolved, the document may require revisions.	A A				

Comments on Draft Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant
(published November 2011)
Longhorn Army Ammunition Plant, Karnack, Texas

January/February 2012

Reviewer: U.S. Environmental Protection Agency (Comments emailed by Stephen Tzhone 1-3-2012, 2-16-2012, and 5-4-2012)
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	Comments to Responses	C, D[1], E or X	Response to Comments to Responses	A or D[2]
2		General	Cost estimates associated with long-term operation are optimistic and will change depending on the outcome of the dispute resolution. EPA recommends that the cost estimate for long-term operation for monitoring be no less than the 30-year evaluation period	C	Noted. When the current dispute is resolved, the document may require revisions.	A				
3		General	All monitoring wells constructed at LHAAP-04 are also completed in the shallow groundwater zone. It is unclear to EPA as to why there are no intermediate or deep wells. If it is because there are no lower water-bearing formations, then that should be clearly stated, as well providing any supporting evidence. Otherwise, it appears that the research is incomplete. For example: Both intermediate and deep groundwater zones are present at LHAAP-35(58) and contamination of the intermediate groundwater zones has been demonstrated at other locations at LHAAP (including nearby sites LHAAP-47 and LHAAP-29). Thus, if intermediate groundwater is present at LHAAP-04, a minimum of at least one monitoring well should be installed in the intermediate zone near or below the area of highest perchlorate concentration in the shallow groundwater zone. The potential need for additional investigation of the intermediate and/or deep groundwater zones at LHAAP-04 can be determined once data from the intermediate zone are available.	C	One intermediate zone monitoring well will be added to Alternatives 2, 3, and 4. Both installation and monitoring will be included in the cost estimate.	D	The Army's response indicates that they will install one intermediate zone well. The Army needs to provide the location of this well on a figure or accurately describe the location in a narrative.	C	The proposed intermediate zone monitoring well is expected to be within 30 feet of monitoring well 04WW04. The location of this well will be added to the Figures. See revised **Figure 2-1** for example. The location is subject to revision and will be coordinated with regulators.	A
4		General	In addition, the perchlorate plume in shallow groundwater cannot be adequately determined from available data. Data gaps are present in the shallow zone groundwater monitoring well network, most notably in the area between monitoring wells 04WW01 and LHSMW01. The representativeness of data from monitoring well 04WW05 (screened in clay below what appears to be a saturated sand layer) is also suspect. The relatively long distance between LHSMW02 and 04WW04 contributes to uncertainty in plume geometry to the east of the high concentration area around 04WW04. The EPA does note that Section 6.3.3 states "…the hydrogeologic conditions and current extent of contamination has not been fully defined." and believes that additional data collection is needed to evaluate hydrogeologic conditions and better define the plume so that an appropriate remedy can be designed and applied.	C	Two additional shallow zone monitoring wells will be added to Alternatives 2, 3, and 4. One in the field southeast of 04WW04 in the gap between 04WW01 and LHSMW01, and one to the north of Building LHAAP-60 to replace LHSMW02 sampling. Installation of two new wells and sampling one additional well will be included in the cost estimate.	D	The Army's agreement to install two additional shallow monitoring wells (and one intermediate well) is responsive and appreciated. It is difficult to evaluate the Army's proposed shallow monitoring well locations based on the general descriptions provided. To clarify the EPA's thinking on this topic, these shallow wells should be located, to the extent practical, with the intent of attempting to address uncertainties related to both migration direction and delineation of the high concentration area surrounding 04WW04. For perspective, it seems appropriate to locate these wells within approximately 100-125 ft of 04WW04 (similar to the distance between 04WW04 and 04WW05). At this time, it seems premature to remove LHSMW02 from the monitoring program.	C	The suggested radial distances from monitoring well 04WW04 match the intended placement of the additional shallow wells. Proposed well locations will be added to the Figures. The proposed locations are subject to revision and will be coordinated with regulators. See revised **Figure-2-1** for example. Monitoring well LHSMW02 has never exceeded the perchlorate cleanup level, and would be the farthest well from the plume. As requested, monitoring well LHSMW02 will be retained in the monitoring program.	A
5		General	Cutting-edge technologies should also be presented within the FS, even if they are unlikely to be practical. For example, anaerobic composting, patented-chemical amendments, horizontal flow wells, biobarriers, etc. It will present the document as exhaustively-researched, which is what the FS should appear. For example: although phytoremediation is not practical for this site, it was promulgated, and discussed.	E	Perchlorate is an emerging contaminant and the most applicable proven process options for perchlorate for this size plume were evaluated.	D	EPA disagrees with Army's response. At a minimum, all technologies mentioned in this fact sheet should be evaluated and retained for further consideration: http://www.epa.gov/fedfac/documents/emerging_contaminant_perchlorate.pdf See also EPA's comments on Army's RTC to EPA comment No. 24 and No. 25.	C	The technologies in the fact sheet are: The Ex Situ technologies: Ion Exchange, Bioremediation, Liquid Phase Carbon Adsorption, and Membrane Technologies. And the In Situ Technologies: Bioremediation, Permeable Reactive Barrier, Phytoremediation. The technologies were evaluated as per the FS guidance, and only those technologies appropriate to LHAAP-04 are retained for	A

Comments on Draft Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant
(published November 2011)
Longhorn Army Ammunition Plant, Karnack, Texas

January/February 2012

Reviewer: U.S. Environmental Protection Agency (Comments emailed by Stephen Tzhone 1-3-2012, 2-16-2012, and 5-4-2012)
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	Comments to Responses	C, D[1], E or X	Response to Comments to Responses	A or D[2]
5 *(cont.)*									further evaluation. Alternative 3 already uses in situ bioremediation, Alternative 4 already encompasses ex situ use of ion exchange filters. The U.S. Army will also prepare one additional alternative using ICTs instead of extraction wells. Please see the Attached **Figure-5-4** – Alternative 5: ICTs, Extraction and Treatment, LUC. The text of this alternative is attached.	
6		General	The Army must be careful about the appearance of favoring one remedy over another at this stage. For example, it is inconsistent to state that MNA will work, only to later state for bioremediation that there is limited data on the nature of the plume. Limited data on the nature of the plume is actually an argument against MNA as well. The Army should be clearer that the plume is shrinking, if that is the case. Given the mobility of perchlorate, this is an important issue that will affect remedy selection and public perception.	C	Noted. Also see responses to USEPA comments #3, #4, #13, and TCEQ comment #3.	A				
7		General	There is a water production well near the fire station which is used by personnel at the Station for ice and washing. It appears that this well may be within 300 ft of monitoring well 04WW04 (the most contaminated well). Please include its location on the Figures. Also, please provide the screened interval (depth range) in which water is withdrawn and any previous sampling results.	D	The water production well draws from a much deeper aquifer (128 feet vs. 20 feet). A hydrogeology section will be added to the document that will describe the shallow groundwater versus the deeper aquifer.	D	The EPA does not understand the reluctance to show the location of the nearby production well on a map and generally describe associated information in the text (construction information and water quality data, if any). Regardless if this well is relatively deep and unlikely to become contaminated, this information is useful in understanding overall site characteristics, water quality conditions at a potential point of exposure, and will support the Army's proposed hydrogeology section. Please fulfill the EPA's request that this water production well near the fire station be included on a figure(s) depicting the perchlorate plumes, as well as, the screened interval (depth range) in which water is withdrawn and any previous sampling results.	C	The water production well (Firehouse Well) near the fire station will be added to **Figure 1-2**. It is 417 feet away from monitoring well 04WW04. The State of Texas Well Report shows the screened interval from 58 to 128 feet bgs. Sands were identified from 60 to 83 feet below ground surface (bgs) and 121 to 128 feet bgs. Other layers were identified as clay, rock or shale to 460 feet bgs. A pump test was performed on this Firehouse Well which did not determine a sustainable long-term pumping rate. The well was tested as 04TW01 in October 2002 and showed no detectable perchlorate (<4 µg/L) according to the database. The STEP report (STEP, 2005) shows 04TW01 with no detectable perchlorate (<1.45 µg/L) in a sample collected during the dry season of 2002, nominally September. These are likely the same result. **Figure 1-2** is attached.	A
8		General	For each well on the Figures indicating contaminate concentrations, do the boxes include every sampling result for each well on the Figure? In the executive summary pages, it indicates that groundwater sampling began in 1993, but the boxes do not show any result earlier than 2000. Is that statement correct? If not, please correct.	C	The statement is correct. Wells were sampled beginning in 1993. Testing for perchlorate began in 2000.	D	The EPA understands that the statement is factually correct. Please make it clear in the text that sampling began in 1993 with perchlorate being added to the sampling program in 2000.	C	For clarity, the following parenthetical statement will be added at the end of the sentence in the executive summary: "Various sampling events were conducted at LHAAP-04 since 1993 to assess contamination from the operations at LHAAP-04 (testing for perchlorate began in 2000)."	A

Comments on Draft Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant
(published November 2011)
Longhorn Army Ammunition Plant, Karnack, Texas

January/February 2012

Reviewer: U.S. Environmental Protection Agency (Comments emailed by Stephen Tzhone 1-3-2012, 2-16-2012, and 5-4-2012)
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	Comments to Responses	C, D[1], E or X	Response to Comments to Responses	A or D[2]
9		Table ES-1	Please provide the cost estimate timeframes for each alternative (Alternatives2 thru 4).	C.	Expected active durations will be added to the tables. All estimates continue through 30 years with 5-year reviews.	A				
10	pg 1-1	Sec 1.1	Please revise the sentence to more correctly read as follows: "No *unacceptable* human health risk or hazard to a hypothetical future maintenance worker was identified at LHAAP-04 during the risk assessment…" (emphasis added).	C	Text will be revised as indicated.	A				
11	pg 1-3	Sec 1.2 Figs 1-3 & 1-4	Please present a possible explanation(s) for the groundwater mound observed at LHAAP-04.	C	Text will be revised by adding new text to the third paragraph: ". . . Figure 4. There are several potential explanations for the mounding, with no strong evidence to choose one over another explanation. The piping that was removed during excavation may have leaked water into the area, surface water runoff from the surrounding paved areas and former buildings may have been directed to this area, dust suppression during demolition of the former buildings, or periodic water releases from the nearby firehouse. Rising . . ."	A				
12	pg 1-3	Sec 1.2.2	Please justify the statement that "…the overall movement is to the northeast as shown in Figure 1-4." No data or information is provided in Figure 1-4 or Figure 1-3 that demonstrates overall groundwater movement to the northeast. Figure 1-3 also has an arrow showing flow to the southwest, which doesn't match the text. Basically, all that is shown is radial flow in all directions.	C	The overall groundwater flow direction is to the northeast. This very local map is too detailed to show the larger pattern. The overall shallow GW gradient from 2007 will be added to Figure 1-2 and the figure reference changed.	A				
13		Fig 1-4	Also, based upon acknowledged heterogeneous subsurface conditions and the groundwater elevation contour map presented in Figure 1-4 demonstrating radial flow, data gaps appear to be present in the shallow groundwater zone at LHAAP-04. While it is a reasonable assumption that the highest groundwater concentration is located below the area of former highest soil concentration, a single monitoring well at that location (04WW04) is not definitive. Based on the groundwater contours presented in Figure 1-4, it is unclear why the inferred direction of groundwater flow (illustrated by three arrows) was limited to an approximate 90 degree arc from south to west (i.e. between 04WW01 and LHSMW02). Groundwater flow from the inferred high concentration area (04WW04) is also likely directed to the area between monitoring wells 04WW01 and LHSMW01. Additional monitoring wells are necessary to close this data gap. Monitoring wells should specifically target the sandy unit screened by well 04WW04 (Figure 1-5), or similar saturated higher permeability zones, if present.	C	Context is the key. On Figure 1-3, 04WW04 does not yet exist, so the local flow direction across the LHAAP-04 site is inferred to move from higher to lower elevations recorded in 2007 at the 3 wells nearest the site. On Figure 1-4, 04WW04 and 04WW05 now exist, and a more detailed picture of interior GW elevations was obtained. The 3 arrows point to the 3 wells most likely to show evidence of migration since the gradient is steeper in these areas. See response to USEPA comment #4.	D	The Army indicates that the 3 arrows point to the 3 wells most likely to show evidence of migration due to the steepness of the hydraulic gradient. The steepness of the hydraulic gradient in an inadequately characterized heterogeneous aquifer is not, in and of itself, a sufficient basis for depicting arrows indicative of likely migration direction. Anisotropic conditions are possible and preferential flow may be present. Please show dashed arrows depicting the potential for migration in additional directions (e.g. between 04WW01 and LHSMW01) consistent with the groundwater elevation contours and the plume area (e.g. >72 ug/L) depicted on Figure 2-1.	C	The groundwater flow direction arrows will be removed from **Figure 1-3** and **Figure 1-4** and the groundwater elevation contours will be left more clearly visible.	A

Comments on Draft Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant
(published November 2011)
Longhorn Army Ammunition Plant, Karnack, Texas

January/February 2012

Reviewer: U.S. Environmental Protection Agency (Comments emailed by Stephen Tzhone 1-3-2012, 2-16-2012, and 5-4-2012)
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	Comments to Responses	C, D[1], E or X	Response to Comments to Responses	A or D[2]
14		Fig 1-5	The screened interval of 04WW05 is completed within clay below the thin sand layer that may be acting as a preferential pathway for contaminant migration (and possibly screened by 04WW04). As a result, data from well 04WW05 may not be representative of contaminant concentrations in shallow groundwater at this location. This potential must be considered and evaluated during remedial design.	C	Noted. This will be included as a consideration for the remedial design.	A				
15	pg 2-1	Sec 2.0	Performing inspections and information reviews on five year intervals is not protective and is not adequate. Please revise to reflect performing inspections and information reviews on an annual basis.	C	Note: The issue of how often to submit documentation to the regulators remains unresolved.	A				
16	pg 2-3	Sec 2.3.1	The text indicates that manganese was eliminated as a COC because the HQ was less than or equal to 0.1, whereas note 2 in Table 2-2 indicates manganese was excluded as a COC because the concentration was below the background concentration in a perimeter well. Please resolve this discrepancy.	C	The discrepancy will be corrected. Both indicated reasons are valid for eliminating manganese.	A				
17	pg 2-4	Sec 2.4	The concluding paragraph contains a statement that indicates recent surface water samples collected near the site were below Texas Water Quality Standards. Please provide those results and the sampling locations.	C	The results are presented at RAB meetings. The recent surface water samples were from Goose Prairie Creek. No flowing creeks are adjacent to the site.	D	Does Army's response mean that the surface water sampling data are only presented in RAB meetings and not published in any other site-related public document? Please clarify or expand the discussion regarding surface water sampling results and reference appropriate documents containing these results, if applicable. The EPA's original comment stems from an inadequate description on results and sampling locations, as part of Army's concluding paragraph for Section 2.4	C	There is no regular independent publication of surface water sample results. The minutes of the RAB meetings and information presented at those meetings, are made part of the administrative record. The administrative record is available to the public. Earlier presentations of surface water sample results in this area include the Final Installation-Wide Baseline Ecological Risk Assessment (Shaw, 2007), and the Final Baseline Human Health and Screening Ecological Risk Assessment for the Group 4 Sites (Jacobs, 2003).The surface water sample locations will be added to **Figure 1-2**. A table of recent surface water sampling results will be added as **Table 2-3**.	A
18		Fig 2-1	In light of perchlorate detections at both 04WW01 and LHSMW02, please explain the basis for the dashed contour representing the "possible past extent of perchlorate". What is the purpose of showing this contour?	C	The dashed line is a past projection of possible perchlorate extent meant to illustrate the plume has shrunk. 04WW01 and LHSMW02 appear unlikely to have exceeded 72 µg/L in the past, so were not enclosed within the dashed line. Also see response to USEPA comment #1.	D	There is nothing in the text or Figure 2-1 indicating that the "possible past extent of perchlorate" was tied to the exceedance of groundwater quality criteria (at this time, the Army is applying 72 ug/L). The term "extent" can be interpreted as meaning concentrations above detection limits or background levels (if established). Regardless of these semantics, the available data appears insufficient to support this contour and the inference that the plume has shrunk. The basis for this contour and inference that the plume has shrunk should be articulated and justified in the text.	C	The February 2001 concentration (81 µg/L) in monitoring well LHSMW01 merits inclusion of that well within a "possible past extent of perchlorate" contour. The rest of the contour maintains a similar distance from the currently interpreted 72 µg/L contour with reference to the generally radial groundwater contours of **Figure 1-4**. The **Figure 2-1** data tables for monitoring wells 04WW01 and LHSMW02 show declining concentrations over time. A discussion of this will be added to **Section 2.3.1**.	A

Comments on Draft Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant
(published November 2011)
Longhorn Army Ammunition Plant, Karnack, Texas

January/February 2012

Reviewer: U.S. Environmental Protection Agency (Comments emailed by Stephen Tzhone 1-3-2012, 2-16-2012, and 5-4-2012)
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	Comments to Responses	C, D[1], E or X	Response to Comments to Responses	A or D[2]
19		Fig 2-2	CSM: It appears that the source of the cancer and non-cancer risks presented in the CSM is from the 2003 HHRA. The HI of 0.18 for groundwater does not reflect known concentrations of perchlorate. As presented, it is unclear if the human health risk presented for soil exposure reflects soil removal and confirmation sampling completed in 2009. Either update the risk estimate results presented in the CSM to reflect known (current) conditions or clearly identify their origin in the CSM and indicate specifically how they differ from current conditions.	C	A footnote will be added to Figure 2-2 providing the 2003 HHRA as a reference. Table 2-2 identifies current concentrations compared to the EPC used in the risk assessment.	D	The proposed footnote should also specifically indicate that based on data collected since the 2003 HHRA, perchlorate concentrations in groundwater presently exceed a HI of 1. Please also reference Table 2-2 in this footnote.	C	The 2003 HHRA did not calculate an HI for perchlorate, and neither does **Table 2-2**. The note added to **Figure 2-2** will read: "Human Health Risk from Final Baseline Human Health and Screening Ecological Risk Assessment for the Group 4 Sites (Jacobs, 2003). Recent perchlorate concentrations exceed the cleanup level (**Table 2-2**)."	A
20	pg 3-9	Table 3-3	What is the basis for stating "It should be noted that perchlorate contaminated soil in [sic] non hazardous" in the first row, second column? Soils containing perchlorate resulting from spills and releases can be considered solid waste. Soils having sufficiently high concentrations of perchlorate could possess the reactivity characteristic and therefore be classified as hazardous waste. Remove or clarify the statement.	C	The material removed during soil excavation was tested and disposed as non-hazardous. It will be noted in the text that the material removed during excavation was tested for ignitability and did not meet the RCRA ignitability characteristic)	D	The Army mentions that the removed soil was tested and disposed as a non-hazardous waste. The response indicates that the soil was tested for ignitability, but the soil could also meet the hazardous waste characteristic of reactivity. The Army should indicate what standard or criteria they used to determine the soil was not reactive.	C	The test performed on the perchlorate soil was RCI, including reactivity, corrosivity, and ignitability. The test results are presented in Table 2-3 of the Completion Report and the associated lab reports are contained in Appendix B of that document. It will be noted in the text that: "(The material removed during excavation was subjected to RCI (reactivity, corrosivity and ignitability) testing and was determined to be non-hazardous waste.)."	A
21	pg 4-1	Sec 4.1	The extent of contamination in shallow groundwater does not appear to EPA to have been adequately determined at this time. Therefore, the quantity of contaminated groundwater calculated in equation 4-1 has a high degree of uncertainty. Changes in this estimate may influence remedy selection and/or the remedy cost estimates. Also, it is unclear how rounding a number off to 2 significant figures is a "conservative" estimate. Which component of equation 4-1 is conservative, or does that word need to be deleted?	C	The word "conservative" will be omitted.	A				
22	pg 4-5	Sec 4.5.1.1	Text needs to be included for the 'Implementability' bullet or the 'Summary of Monitored Natural Attenuation Process Option' that makes clear to the reader that delineation of the plume(s), both vertically and horizontally, is not currently adequate and additional wells, in addition to the acknowledged significant groundwater sampling and analyses, must be installed and monitored to confirm that conditions are suitable for natural attenuation and to establish a monitoring network.	C	The following will be added after the 1st sentence in the implementability bullet: "Suitability includes plume delineation both horizontally and vertically. Thus, 3 new wells will be installed (2 shallow and 1 intermediate)."	A				
23	pg 4-6	Sec 4.5.2	Please include a summary of the LUC process option as was done for other process options considered (i.e. identifying if LUCs are retained).	C	A summary will be added.	A				
24	pg 4-8	Sec 4.5.3.2	The EPA believes that interceptor trenches (ICTs) should be retained for further consideration. ICTs have been used successfully collect and treat perchlorate contaminated groundwater at LHAAP. The subsurface heterogeneity and discontinuous sand lenses are potentially equally problematic for other retained process options such as	C	ICTs work to intercept migrating contaminants. There is no indication of significant migration at LHAAP-04. See USEPA comment #29.	D	Based on the response provided, the EPA believes these RTCs should have been coded as "D" or "E" by the Army. Although significant migration is perhaps unlikely at this site, insufficient site characterization precludes the ability to definitively determine whether or not	C	The responses to 24 and 25 point out that the treatment provided by PRBs and ICTs are associated with migrating contaminants. Without evidence of significant migration, it is difficult to justify choosing PRBs or ICTs.	A

Comments on Draft Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant
(published November 2011)
Longhorn Army Ammunition Plant, Karnack, Texas

January/February 2012

Reviewer: U.S. Environmental Protection Agency (Comments emailed by Stephen Tzhone 1-3-2012, 2-16-2012, and 5-4-2012)
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	Comments to Responses	C, D[1], E or X	Response to Comments to Responses	A or D[2]
24 (*cont.*)			extraction wells and enhanced bioremediation. In locations having radial flow, particularly smaller areas such as LHAAP-04, ICTs can completely surround the source/high concentration area.				migration is occurring and in which direction, at this time. With respect to the Army's reference to EPA comment 29, the Army seems to conclude that the EPA considers the use of ICTs or PRBs as containment actions. While these technologies may act to contain contamination, they also treat contaminants via ex-situ or in-situ methods. The EPA's original comment that containment did not require further consideration was based on the details provided in Table 4-2 under the "Groundwater Containment" heading. The EPA considered containment to consist of purely physical technologies such as sheet piling, slurry walls or other flow barriers where there is no reduction in contaminant mass. Whether or not they are likely to be selected as the preferred remedy, based upon the available information, the EPA believes that ICTs and PRBs remain appropriate technologies for detailed evaluation during the FS. See also EPA's comments on Army's RTC to EPA comment No. 5.		At the request of regulators, the U.S. Army agrees to add an alternative using ICTs instead of extraction wells. Please see the Attached **Figure 5-4** – Alternative 5: ICTs, Extraction and Treatment, LUC. The text of this alternative is attached. According to the ITRC guidance document "Remediation Technologies for Perchlorate Contamination in Water and Soil", (ITRC, 2008), PRBs are considered a containment technology. Furthermore, the guidance indicates that PRBs rely on the migration of groundwater through the reactive zone. LHAAP-04 lacks evidence of such migration, so PRBs are not appropriate for further evaluation. The USEPA indicates that LHAAP-04 is inadequately characterized. The U.S. Army also agrees to additional investigation as part of RD. Costs for this will be reflected in revised cost estimates for alternatives. See additional response to additional comment on USEPA Comment #5.	
25	pg 4-9	Sec 4.5.4.1	The EPA believes that permeable reactive barriers (PRBs) should be retained for further consideration. PRBs are being successfully used to treat perchlorate contamination at numerous facilities. The subsurface heterogeneity and discontinuous sand lenses are potentially equally problematic for other retained process options such as extraction wells and enhanced bioremediation. In locations having radial flow, particularly smaller areas such as LHAAP-04, PRBs can completely surround the source/high concentration area.	C	PRBs work to treat migrating contaminants. There is no indication of significant migration at LHAAP-04. See USEPA comment #29. No changes.	D				A
26	pg 4-8	Sec 4.5.4.1	Was the term "pelletized iron" meant to be used instead of "palletized iron" in the last sentence of the second paragraph under the Section?	C	Yes. Text will be revised as noted.	A				
27	pg 4-9	Sec 4.5.4.2	The text states "Many *organic* contaminants, including COCs at LHAAP-04…" (emphasis added). Perchlorate, the target of remedial actions at LHAAP-04, is an inorganic compound. No organic COCs are known to be present in shallow groundwater at concentrations exceeding current target risk-based criteria. Please revise.	C	The reference to "organic" will be deleted from the sentence.	A				
28	pg 4-14	Table 4-2	For the comments associated with 'B. Land Use Controls', the LUCs are not limited to verifying that MNA is occurring. LUCs, in the form of Long-Term Media Monitoring, can also be used to monitor other process options (i.e. in situ treatment, extraction, etc.) in addition to MNA. Please revise.	C	The table will be revised to separate Long-Term Media Monitoring (MNA) from LUC. Each will have a separate row in the table. The comments for the Long-Term Media Monitoring (MNA) will read, "Use to determine the effects of the applied remedy, and to evaluate effectiveness of MNA". The comments for LUC will read, "A feasible approach for preventing exposure to on-site contamination while the remedy is implemented".	A				

Comments on Draft Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant
(published November 2011)
Longhorn Army Ammunition Plant, Karnack, Texas

January/February 2012

Reviewer: U.S. Environmental Protection Agency (Comments emailed by Stephen Tzhone 1-3-2012, 2-16-2012, and 5-4-2012)
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	Comments to Responses	C, D[1], E or X	Response to Comments to Responses	A or D[2]
29	pg 4-15	Table 4-2	With respect to the comments regarding 'E. Groundwater Containment', the EPA disagrees with the statement that no high groundwater contamination remains. To the contrary, perchlorate concentrations in groundwater greatly exceed applicable cleanup criteria. The EPA also disagrees with the statement that the plume has been delineated. Additional data collection is needed to fully delineate the plume. Please revise. The EPA concurs that groundwater containment should not be retained for further evaluation.	C	Replace text in comments column with the following: "A soil source area in the unsaturated zone was identified and has been removed. Effective uses of containment include isolation of high concentration source areas and minimizing plume migration. Based on recent data, the plume does not appear to be migrating and is expected to remain or recede since the soil source material in the unsaturated zone was removed.	D	In addition to the proposed revision, please also add additional language to the effect of "Additional monitoring well installation and sampling, as proposed, is necessary to adequately evaluate plume behavior at LHAAP-04."	C	Concur. Text will be revised as follows: "Additional monitoring well installation and sampling will need to be conducted to adequately evaluate plume behavior."	A
30	pg 5-3	Sec 5.2.2	Please revise the last sentence to read "Figure 5-1 shows the *approximate* perchlorate plume *as determined from currently available data* and the potential *existing* wells to be sampled regularly for monitoring natural attenuation." (emphasis added).	C	Text will be revised as noted with exception of "existing." Revisions to Figure 5-1 will show the 3 new proposed well locations.	A				
31	pg 5-3	Sec 5.2.2.1	The EPA believes that additional monitoring wells will be necessary to fulfill the stated objective of evaluating the effectiveness of MNA.	C	See responses to USEPA comments #3 and #4.	A				
32	pg 5-6	Sec 5.2.3.2	It is premature to definitively establish a long-term monitoring frequency. If used solely for cost estimating purposes, please indicate that is the case as was done for MNA alternative. The RD is a more appropriate deliverable to specify the LTM program.	C	These frequencies are for cost estimating purposes. The second paragraph of the section will be moved up to become the first paragraph and will be revised as follows:: "The number of wells to be monitored will be determined in the remedial design. However, for cost estimating purposes, monitoring of seven wells is included for sampling as indicated in the following paragraph."	A				
33	pp 5-7 & 5-8	Sec 5.2.4.1	Prior comments regarding inadequate hydrogeologic characterization and plume delineation also apply to this alternative.	C	Noted.	A				
34	pg 5-8	Sec 5.2.4.1	Groundwater extraction bullet: What is the basis for selecting an extraction rate of 0.20 gpm? This is an extremely low pumping rate and raises concerns about the ability of the extraction/reinjection alternative to remove 4.4 pore volumes from the entire affected area.	C	The basis for this extraction rate is that it is the rate required to extract 4.4 pore volumes over approximately 15 months. Additional influencing factors included tank sizes for the treatment system, resin filter flow rates, and frequency of operators being on-site.	D	The response given is better understood with consideration of the response to TCEQ's comment #7 on the topic of groundwater extraction rate. The EPA concurs that the concept of pore volume flushing is an important and useful metric for evaluating pump and treat systems, but as applied it provides only weak support for the cost estimate provided for this alternative. The EPA emphasizes that the design of an extraction system (layout and extraction rate) is ultimately a function of the hydraulic properties of the aquifer and contaminant distribution and not simply the allocation of a certain number of pore volumes over a "reasonable" length of time. The Army seems to acknowledge this deficiency and the EPA agrees that additional aquifer characterization	C	The U.S. Army has already agreed to installation and monitoring of additional shallow and intermediate zone monitoring wells (USEPA comments #3 and #4). The U.S. Army further agrees to additional investigation as part of RD. Costs for the additional aquifer characterization/studies will be reflected in revised cost estimates for alternatives. The need for additional aquifer characterization will be evaluated as part of the RD phase.	A

Comments on Draft Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant
(published November 2011)
Longhorn Army Ammunition Plant, Karnack, Texas

January/February 2012

Reviewer: U.S. Environmental Protection Agency (Comments emailed by Stephen Tzhone 1-3-2012, 2-16-2012, and 5-4-2012)
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	Comments to Responses	C, D[1], E or X	Response to Comments to Responses	A or D[2]
							is needed.			
35	pg 5-9	Sec 5.2.4.2	It is premature to definitively establish a long-term monitoring frequency. If used solely for cost estimating purposes, please indicate that is the case as was done for the MNA alternative. The RD is a more appropriate deliverable to specify the LTM program.	C	See response to USEPA comment #32.	A				
36		Fig 5-1, 5-2 & 5-3	See previous comments regarding Figure 2-1 and plume delineation.	C	See responses to previous comments. Figures 5-1, 5-2, and 5-3 will be revised to show the 3 new proposed wells.	A				

Comments on Draft Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant
(published November 2011)
Longhorn Army Ammunition Plant, Karnack, Texas

January/February 2012

Reviewer: Texas Commission on Environmental Quality (Comments emailed by Fay Duke 1-9-12 and 2-14-02)
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	Comments to Responses	C, D[1], E or X	Response to Comments to Responses	A or D[2]
The TCEQ has completed its review of *Draft Final Feasibility Study for Groundwater LHAAP-04, Former Pilot Wastewater Treatment Plant.* We have also reviewed EPA's comments to the report and have similar concerns. Therefore, instead of providing similar comments, we provide only concerns/comments that were not addressed in EPA's comments.										
1		Sec 1.3 and Sec 2.2.1	The description of previous soil removal activities must cleanly state that due to encountered of groundwater, confirmation samples from Grids F-09 and F-11 could not be collected to document clean closure of the site. Therefore, it is probable that contaminated soils remain in the saturated zone within these areas.	C	A phrase from the approved Final Completion Report will be added at the end of Section 1.3 and Section 2.2.1: "Because of groundwater infiltration, soil confirmation samples from the floor of two grids (FL09 and FL11) could not be collected to document clean closure of the site. It is probable that contaminated material remains in the saturated zone in these grids (Shaw, 2011)."	A				
2		Table 1-1	Please revise that last bullet under Soil Excavation (Shaw, 2009) to read, *"Collected three soil samples for perchlorate beyond excavation area."* The text as written gives the impression that a clean closure was obtained.	C	The bullet will be revised as follows: "Collected three soil samples for perchlorate beyond excavation area to verify horizontal extent"	A				
3		Sec 4.5.1.1	It states that there is not yet enough information available to perform an adequate MNA evaluation for perchlorate at site LHAAP-04 but that the decrease in LHSMW01 suggests that MNA may work because perchlorate was previous above cleanup level and it is now below it. Is it possible that the decrease in concentration is the result of migration? Instead of relying on just one well with limited reduction in concentration, shouldn't the other lines of evidence be evaluated? At a minimum, the geochemical data of the aquifer can determine whether the aquifer condition supports this remedial alternative as being feasible.	C	Noted. The phrase "not yet enough information" is a product of the newness of the two new wells and lack of historical perchlorate testing in existing wells at LHAAP-04. There is no evidence of perchlorate migration from LHAAP-04. There are five wells with some evidence of reduction in perchlorate concentrations, but only one of them has shown a transition from above the cleanup level to below. Future sampling results will enable more reliable evaluation of MNA progress and potential. See response to USEPA comments 3 and 4.	D	We remain concern with the lack of MNA evaluation to indicate that MNA would be a viable remedial alternative at LHAAP-04. Therefore, it would be difficult for the TCEQ to concur to any remedy which include MNA as a component of the final remedy.	C	MNA may require a contingency but typically that is handled in the ROD, not in the FS. In the course of additional site characterization in support of RD, information to support an MNA evaluation could be collected. The U.S. Army has agreed to install and monitor three additional monitoring wells in response to USEPA comments 3 and 4. The U.S. Army also agrees to additional investigation as part of RD.	A
4		Section 4.5.3	It states under the Effectiveness Section that the discontinues sand lenses can limit the effective use of trenches and extraction wells. However, only extraction wells are retained as a groundwater removal process option. We noted that a treatability study performed for Site LHAAP-18/24 concluded that interceptor collection trenches were the most effective of the extraction techniques for the shallow groundwater at the site. Therefore, we concur with EPA that ICT should be retained unless the rationale for eliminating interceptor trenches are clearly provided.	D	The ICTs at LHAAP-18/24 were installed to intercept large perchlorate and VOC plumes that were actively migrating toward Harrison Bayou. The situation at LHAAP-04 involves only a small perchlorate plume that does not show any evident migration. See response to USEPA comments #3 and #4. Additional wells will be used to confirm no migration is occurring.	D	The TCEQ disagrees with RTC to TCEQ comment No. 4. The RTC implies that ICT would not be effective because there's no need to control migration at LHAAP-04. Our comment was directed at Section 4.5.3 which eliminated ICT as a effective technology for extracting groundwater from the shallow aquifer due to the discontinuous sand lenses. It is our opinion that ICT would be more effective than extraction well under similar conditions. Although we acknowledge that an ICT remedy may not be the preferred remedy if it is determined that the added costs does not correspond to the added benefit, this should not be a reason for not presenting an ICT remedial alternative.	C	The U.S. Army agrees to add an additional remedial alternative using ICTs instead of extraction wells. Please see the Attached **Figure 5-4** – Alternative 5: ICTs Extraction and Treatment, LUC. The text of this alternative is attached.	A
5		Sec 5.2.2, MNA	• We are concern that the proposed monitoring network (Figure 5-1) is not sufficient in documenting the progress/effectiveness of MNA. We concur with EPA that the additional groundwater monitoring well will be necessary.	C	See response to USEPA comments 3 and 4.	A				

Comments on Draft Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant
(published November 2011)
Longhorn Army Ammunition Plant, Karnack, Texas

January/February 2012

Reviewer: Texas Commission on Environmental Quality (Comments emailed by Fay Duke 1-9-12 and 2-14-02)
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	Comments to Responses	C, D[1], E or X	Response to Comments to Responses	A or D[2]
5 *(cont.)*			• It states that the cleanup time of 12 years is based on half life of 1.9 years using limited data from other LHAAP monitoring wells with similar perchlorate concentrations. Please identify which wells were used and the similar site characteristics it has to site LHAAP-04. Additionally, please clarify whether the attenuation factor considered the continuous source contribution from the potential contaminated materials within the saturated zone.	C	Nine wells were considered in arriving at 1.9 years as a reasonable half-life; 50WW02, 50WW05, 29WW06, 47WW27, C-03, 47WW11, 116, 17WW10, and 16WW16. The similarities exhibited are that they each had a maximum perchlorate concentration between 1,000 and 25,000 µg/L. They also show some evidence of decreasing perchlorate concentrations. The wells (except for C-03) are screened in the shallow zone at LHAAP. Calculated half-life values ranged from 0.51 to 7.9 years and the median of the values is 1.9 years. Associated durations would range from 3 to 50 years, with the median value of 12 years assumed for cost estimating purposes. No allowance has been made for a continuous source contribution due to the lack of any basis for choosing a source concentration, and the unlikelihood of a continuous perchlorate soil source below the groundwater table due to the solubility of perchlorate. Any continuous source contribution would affect the duration used for the cost estimate. Once remediation has begun, a site-specific half life can be calculated and the time to reach the cleanup level can be better calculated.	A				
6		Sec 5.2.3 In-situ Bioremediation:	• Based on our review of the Alternative 3, this alternative contemplates one injection of microbial cultures and nutrients and then MNA and LUC until cleanup level is achieved. We question the rationale of just one injection. While we acknowledge that natural attenuation is a large part of any ISB remedy, the remedy should not rely on just natural attenuation. In order to ensure an ISB remedy is effective, performance monitoring to ensure that the aquifer is in an optimal condition to degrade contaminates and if necessary, additional application of the ISB substrate, until cleanup level is achieved. Please revise.	C	The assumptions are for a likely scenario that are used for cost estimating purposes as stated in the second bullet in Section 5.2.3.1. The fourth bullet indicates that MNA parameters will be part of the performance monitoring. For this alternative, one injection was assumed. If ISB is selected as the remedy, subsequent applications may be needed based on the ISB effectiveness, but is not included in the cost estimate. Text to this effect will be added to the end of the injection bullet.	A				
			• It states that injection is contemplated in area around monitoring well 04WW04 because the well is impacted and was install in the area with the highest concentration of soil contamination. We recommend that investigation/injection also be considered for area that is formally grid F-09.	C	Monitoring well 04WW04 was installed approximately at area FL11. The southwest DPT injection location is located within area FL09. The first bullet under Section 5.2.3.1 calls for additional investigation. Additional DPT injections may be added in this area should the results of the additional investigation and remedial design deem it necessary.	A				
			• Please elaborate on how the cleanup time of six years is calculated.	C	The estimated cleanup time of six years was calculated by assuming the treatment will accelerate perchlorate degradation (a half-life of 0.95 years). Applied to the maximum recorded concentration at the only well above the cleanup level (5,410 µg/L at 04WW04), this results in a cleanup time of approximately 6 years. If the most recent concentration at that well is used instead, the cleanup time would be approximately 4 years. If the half-life calculated directly for well 04WW04 (0.32 years) is used instead, the cleanup time could be less than 2 years.	A				

Comments on Draft Final Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant
(published November 2011)
Longhorn Army Ammunition Plant, Karnack, Texas

January/February 2012

Reviewer: Texas Commission on Environmental Quality (Comments emailed by Fay Duke 1-9-12 and 2-14-02)
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	Comments to Responses	C, D[1], E or X	Response to Comments to Responses	A or D[2]
6 *(cont.)*			• We are concern that the proposed monitoring network (Figure 5-1) is not sufficient in documenting the progress/effectiveness of the remedy. Installation of additional wells will be necessary.	C	See response to USEPA comments 3 and 4.	A				
7		Sec 5.2.4	This remedial alternative contemplates one extraction well to extract contaminate groundwater for approximately 2 years to achieve cleanup level. What is the basis of this estimate? With the soil type, is it realistic to believe that one extraction well would be able to induce a cone of influence sufficient to capture the entire plume?	C	The basis of this estimate is the use of Equation 3 from page 12 of "Design Guidelines for Pump and Treat Systems" EPA/540/S-97/504. This equation was applied with a retardation factor of 1.03, the maximum perchlorate concentration (5,410 µg/L), and the desired end concentration (72 µg/L) at monitoring well 04WW04 to arrive at 4.4 pore volumes to be removed. This volume was spread out over a reasonable length of time to arrive at roughly 15 months at a rate of 0.20 gallons per minute (gpm). At this time, there is insufficient information available about the local hydraulic conditions to determine with certainty the cone of influence or sustainable pump rate. Pump tests at LHAAP-17 in 2010 showed sustainable extraction rates higher than 0.20 gpm. The first bullet in Section 5.2.4.1 calls for an aquifer study. With the addition of three new wells suggested by the USEPA, the aquifer study will evaluate conditions and provide specific design parameters.	A				
8		Sec 6.3.2.1	We are concern with the sentence on the top of Page 6-7 beginning with “The MNA program..." The sentence implies that the MNA objective is to control plume movement. We recommend the following revision: "The MNA program would monitor the groundwater plume and ensure that COCs in groundwater are not migrating and that perchlorate continues to degrade to the cleanup level.	C	The sentence will be revised as suggested.	A				

Final

Feasibility Study for Groundwater, LHAAP-04, Former Pilot Wastewater Treatment Plant Longhorn Army Ammunition Plant Karnack, Texas

Prepared for U.S. Army Corps of Engineers – Tulsa District
1645 South 101st, East Avenue
Tulsa, Oklahoma 74128

Prepared by Shaw Environmental, Inc.
1401 Enclave Parkway, Suite 250
Houston, Texas 77077

Contract No. W912QR-04-D-0027, Task Order No. DS02
Shaw Project No. 117591
Rev 0
August 2012

Shaw® a world of Solutions™

Table of Contents

List of Tables v
List of Figures v
List of Appendices v
Acronyms and Abbreviations vi

Executive Summary ES-1
1.0 Introduction 1-1
1.1 Purpose and Organization of Report 1-1
1.2 Longhorn Army Ammunition Plant Background 1-2
1.2.1 Site Description 1-2
1.2.2 History 1-3
1.2.3 Hydrogeology 1-4
1.3 Summary of Previous Activities 1-5
2.0 Risk and Site Assessment 2-1
2.1 Risk Assessment Summary 2-1
2.1.1 Soil 2-1
2.1.2 Groundwater 2-2
2.2 Evaluation of Data Collected Since the Risk Assessment 2-2
2.2.1 Soil 2-2
2.2.2 Groundwater 2-2
2.2.3 Ecological Risk Assessment 2-2
2.3 Media Contamination Assessment 2-3
2.3.1 Groundwater 2-3
2.4 Conceptual Site Model 2-3
3.0 Remedial Action Objective and Remediation Levels 3-1
3.1 Remedial Action Objectives 3-1
3.2 Applicable or Relevant and Appropriate Requirements 3-2
3.2.1 Definitions and Methods 3-2
3.2.2 Potential Chemical-Specific ARARs 3-3
3.2.2.1 Chemical-Specific ARARs for Soil 3-4
3.2.2.2 Chemical-Specific ARARs for Air 3-4
3.2.2.3 Chemical-Specific ARARs for Surface Water 3-4
3.2.2.4 Chemical-Specific ARARs for Groundwater 3-4
3.2.3 Potential Location-Specific ARARs 3-5
3.2.4 Potential Action-Specific ARARs 3-5
3.2.4.1 ARARS for Activities Associated with Action Alternatives 3-5
3.3 Proposed Cleanup Level 3-6
4.0 Identification and Screening of Technologies and Process Options 4-1
4.1 Contaminants and Media of Concern 4-1
4.2 General Response Actions 4-2
4.3 Identification and Screening of Potentially Applicable Technologies 4-2
4.4 Screening of Process Options 4-2
4.5 Evaluation and Selection of Representative Process Options 4-4
4.5.1 No Action 4-4
4.5.2 Land Use Controls and Long-Term Monitoring 4-4
4.5.2.1 Land Use Controls 4-4

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

Table of Contents *(continued)*

4.5.2.2 Long-Term Media Monitoring 4-5
4.5.3 Groundwater Removal 4-6
4.5.3.1 Extraction Wells 4-6
4.5.3.2 Interceptor Trenches 4-6
4.5.4 In Situ Groundwater Remediation 4-7
4.5.4.1 Permeable Reactive Barriers 4-7
4.5.4.2 Monitored Natural Attenuation 4-8
4.5.4.3 Enhanced Bioremediation 4-9
4.5.5 Ex Situ Groundwater Treatment 4-10
4.5.5.1 Burning Ground No. 3 Groundwater Treatment Plant 4-10
4.5.5.2 On-Site Mobile Treatment Plant 4-11
4.5.6 Disposal 4-12
4.5.6.1 Surface Water Discharge 4-12
4.5.6.2 Reinjection 4-12
4.5.7 Summary of Representative Process Options for Groundwater 4-13
5.0 Development and Description of Alternatives 5-1
5.1 Development of Alternatives 5-1
5.1.1 Requirements and Preferences 5-1
5.1.2 Development using Remediation Strategies and Process Options 5-2
5.2 Description of Remedial Alternatives 5-2
5.2.1 Alternative 1 – No Action Alternative 5-2
5.2.2 Alternative 2 – Monitored Natural Attenuation, LUCs 5-2
5.2.2.1 Additional Site Investigation 5-3
5.2.2.2 Monitored Natural Attenuation 5-4
5.2.2.3 Long-Term Operation 5-4
5.2.2.4 Land Use Controls 5-5
5.2.3 Alternative 3 – In Situ Bioremediation, LUCs 5-5
5.2.3.1 Additional Site Investigation 5-5
5.2.3.2 In Situ Bioremediation for Groundwater Plume 5-6
5.2.3.3 Long-Term Operation 5-7
5.2.3.4 Land Use Controls 5-8
5.2.4 Alternative 4 – Extraction and Treatment, LUCs 5-8
5.2.4.1 Additional Site Investigation 5-8
5.2.4.2 Groundwater Extraction and Ex Situ Treatment 5-9
5.2.4.3 Long-Term Operation 5-10
5.2.4.4 Land Use Controls 5-11
5.2.5 Alternative 5 – ICTs Extraction and Treatment, LUCs 5-11
5.2.5.1 Additional Site Investigation 5-11
5.2.5.2 Groundwater Extraction and Ex Situ Treatment 5-12
5.2.5.3 Long-Term Operation 5-13
5.2.5.4 Land Use Controls 5-14
6.0 Detailed Analysis of Alternatives 6-1
6.1 Introduction 6-1
6.2 Overview of the Evaluation Criteria 6-1
6.2.1 Criterion 1: Overall Protection of Human Health and the Environment 6-1
6.2.2 Criterion 2: Compliance with ARARS 6-1
6.2.3 Criterion 3: Long-Term Effectiveness and Permanence 6-2

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

Table of Contents *(continued)*

6.2.4 Criterion 4: Reduction of Toxicity, Mobility, or Volume through Treatment 6-2
6.2.5 Criterion 5: Short-Term Effectiveness 6-2
6.2.6 Criterion 6: Implementability 6-3
6.2.7 Criterion 7: Cost 6-4
6.2.8 Criterion 8: State Acceptance 6-4
6.2.9 Criterion 9: Community Acceptance 6-4
6.3 Individual Analysis of Alternatives 6-5
6.3.1 Alternative 1 – No Action 6-5
6.3.1.1 Overall Protection of Human Health and the Environment 6-5
6.3.1.2 Compliance with ARARs 6-5
6.3.1.3 Long-Term Effectiveness and Permanence 6-5
6.3.1.4 Reduction of Toxicity, Mobility, or Volume through Treatment 6-6
6.3.1.5 Short-Term Effectiveness 6-6
6.3.1.6 Implementability 6-6
6.3.1.7 Cost 6-6
6.3.2 Alternative 2 – Monitored Natural Attenuation, LUCs 6-6
6.3.2.1 Overall Protection of Human Health and the Environment 6-6
6.3.2.2 Compliance with ARARs 6-7
6.3.2.3 Long-Term Effectiveness and Permanence 6-7
6.3.2.4 Reduction of Toxicity, Mobility, or Volume through Treatment 6-8
6.3.2.5 Short-Term Effectiveness 6-8
6.3.2.6 Implementability 6-9
6.3.2.7 Cost 6-10
6.3.3 Alternative 3 – In Situ Bioremediation, LUCs 6-10
6.3.3.1 Overall Protection of Human Health and the Environment 6-10
6.3.3.2 Compliance with ARARs 6-11
6.3.3.3 Long-Term Effectiveness and Permanence 6-11
6.3.3.4 Reduction of Toxicity, Mobility, or Volume through Treatment 6-11
6.3.3.5 Short-Term Effectiveness 6-12
6.3.3.6 Implementability 6-13
6.3.3.7 Cost 6-13
6.3.4 Alternative 4, Extraction and Treatment, LUCs 6-14
6.3.4.1 Overall Protection of Human Health and the Environment 6-14
6.3.4.2 Compliance with ARARs 6-14
6.3.4.3 Long-Term Effectiveness and Permanence 6-15
6.3.4.4 Reduction of Toxicity, Mobility, or Volume through Treatment 6-15
6.3.4.5 Short-Term Effectiveness 6-15
6.3.4.6 Implementability 6-16
6.3.4.7 Cost 6-17
6.3.5 Alternative 5, ICTs, Extraction and Treatment, LUCs 6-17
6.3.5.1 Overall Protection of Human Health and the Environment 6-18
6.3.5.2 Compliance with ARARs 6-18
6.3.5.3 Long-Term Effectiveness and Permanence 6-18
6.3.5.4 Reduction of Toxicity, Mobility, or Volume through Treatment 6-19
6.3.5.5 Short-Term Effectiveness 6-19
6.3.5.6 Implementability 6-20
6.3.5.7 Cost 6-21
6.4 Comparative Analysis of Alternatives 6-21

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

Table of Contents *(continued)*

6.4.1 Introduction 6-21
6.4.2 Threshold Criteria 6-22
6.4.2.1 Overall Protection of Human Health and the Environment 6-22
6.4.2.2 Compliance with ARARs 6-23
6.4.3 Primary Balancing Criteria 6-23
6.4.3.1 Long-Term Effectiveness and Permanence 6-23
6.4.3.2 Reduction of Toxicity, Mobility, or Volume through Treatment 6-23
6.4.3.3 Implementability 6-24
6.4.3.4 Cost 6-25
7.0 References 7-1

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

List of Tables

Table ES-1 Comparative Analysis of Alternatives ES-4
Table 1-1 Summary of Previous Activities at LHAAP-04 1-7
Table 2-1 Chemicals Contributing to Carcinogenic Risk in Groundwater 2-5
Table 2-2 Chemicals Contributing to Hazard Index in Groundwater 2-6
Table 2-3 Recent Perchlorate Results for Creek Sampling 2-7
Table 3-1 Potential Chemical-Specific ARARs 3-7
Table 3-2 Chemical-Specific ARARs (Proposed Cleanup Level) 3-8
Table 3-3 Potential Action-Specific ARARs 3-9
Table 4-1 General Response Actions at LHAAP-04 4-14
Table 4-2 Identification and Screening of Groundwater Remedial Action Technologies LHAAP-04 4-15

List of Figures

Figure 1-1 LHAAP Location Map
Figure 1-2 Site Vicinity Map
Figure 1-3 Groundwater Elevations 2007
Figure 1-4 Groundwater Elevations 2010
Figure 1-5 Geological Cross Section A-A'
Figure 1-6 Soil Excavation Area
Figure 2-1 Perchlorate Concentrations in Groundwater
Figure 2-2 Conceptual Site Model
Figure 5-1 Alternative 2: Monitored Natural Attenuation, LUCs
Figure 5-2 Alternative 3: In Situ Bioremediation, LUCs
Figure 5-3 Alternative 4: Extraction and Treatment, LUCs
Figure 5-4 Alternative 5: ICTs, Extraction and Treatment, LUCs

List of Appendices

Appendix A Analytical Reports, Field Data, Boring Logs, and Well Construction
Appendix B Basis of Estimate for LHAAP-04 Groundwater Remediation

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

Acronyms and Abbreviations

µg/kg	micrograms per kilogram
µg/L	micrograms per liter
2,3,7,8-TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
ACE	Anderson Columbia Environmental
AOC	area of contamination
ARARs	applicable or relevant and appropriate requirements
Army	U.S. Department of the Army
AST	aboveground storage tank
BERA	Baseline Ecological Risk Assessment
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
cm/sec	centimeters per second
COCs	chemicals of concern
CWA	Clean Water Act of 1972
ECP	environmental condition of property
EE/CA	Engineering Evaluation/Cost Analysis
FBR	fluidized bed reactor
FFA	Federal Facility Agreement
FR	Federal Register
FS	Feasibility Study
GAC	granulated activated carbon
GRAs	general response actions
GW-Ind	groundwater MSC for industrial use
GWP-Ind	soil MSC for industrial use based on groundwater protection
GW-Res	groundwater MSC for residential use
GWTP	groundwater treatment plant
HI	hazard index
HQ	hazard quotient
Jacobs	Jacobs Engineering Group, Inc.
LHAAP	Longhorn Army Ammunition Plant
LHAAP-04	Former Pilot Wastewater Treatment Plant
LTM	long-term monitoring
LUC	land use control
MARC	Multiple Award Remediation Contract
MCL	maximum contaminant level
mg/kg	milligrams per kilogram

Acronyms and Abbreviations *(continued)*

MNA	monitored natural attenuation
MSC	medium-specific concentration
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	operation and maintenance
OSHA	Occupational Safety and Health Administration
pH	potential hydrogen ion concentration
Plexus	Plexus Scientific Corporation
PP	Proposed Plan
PPE	personal protective equipment
RAOs	remedial action objectives
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
RRS	Risk Reduction Standard
SAI-Ind	soil MSC for industrial use based on inhalation, ingestion, and dermal contact
SDWA	Safe Drinking Water Act
Shaw	Shaw Environmental, Inc.
STEP	Solutions to Environmental Problems
Sverdrup	Sverdrup Environmental, Inc.
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TMV	toxicity, mobility, or volume
TNRCC	Texas Natural Resources Conservation Commission
TNT	trinitrotoluene
TOC	total organic carbon
TWQS	Texas Water Quality Standards
USACE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
ZVM	zero-valence metals

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

EXECUTIVE SUMMARY

This Feasibility Study (FS) was prepared by Shaw Environmental, Inc. (Shaw), for the U.S. Army Corps of Engineers (USACE), Tulsa District, under the Louisville District's Multiple Award Remediation Contract (MARC), Contract No. W912QR-04-D-0027, for remediation activities at the Longhorn Army Ammunition Plant (LHAAP) in Karnack, Texas. This FS presents the analysis of remediation alternatives for contaminated groundwater at the former Pilot Wastewater Treatment Plant designated as LHAAP-04 in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and provides for the remedy selection consistent with the intended use of LHAAP as a wildlife refuge.

LHAAP was placed on the National Priorities List (NPL) on August 9, 1990. A Federal Facility Agreement (FFA) became effective December 30, 1991 among U.S. Environmental Protection Agency (USEPA), the U.S. Department of the Army (U.S. Army), and the Texas Natural Resources Conservation Commission (TNRCC), now the Texas Commission on Environmental Quality (TCEQ). LHAAP-04 was not one of the originally listed NPL sites; however, it is being managed in the same manner because of the presence of contaminated groundwater under the site. The site has been added to the list of NPL sites at LHAAP with concurrence from the U.S. Army and USEPA Headquarters.

LHAAP is an inactive, government-owned, formerly contractor-operated and maintained Department of Defense facility located in central-east Texas. LHAAP-04 is approximately 0.5 acres and is located in the central portion of LHAAP at the northwest corner of 6th and 60th Streets near the former fire station. LHAAP-04 is surrounded by light duty roads. Wastewater treatment operations began at LHAAP-04 in 1984. The demolition of the Former Pilot Wastewater Treatment Facility structures, tanks, and piping, and the disposal of the associated wastes were completed in the summer of 1997 as part of the Resource Conservation and Recovery Act (RCRA) closure of the plant.

The entire installation was under the control of the U.S. Army until May 5, 2004, when approximately two-thirds of the property was transferred to the U.S. Department of Interior's Fish and Wildlife Service (USFWS). The property transfer process is continuing as response is completed at smaller parcels of land. The U.S. Army Environmental Command provides funding for the environmental remedial activities at LHAAP. The Base Realignment and Closure Office are responsible for all aspects of LHAAP including the environmental program operations and land transfer.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

Goose Prairie Creek is the nearest significant surface water body to LHAAP-04 approximately 700 feet to the south. Runoff from LHAAP-04 drains into Goose Prairie Creek, which eventually flows into Caddo Lake (a drinking water source for multiple communities).

Various sampling events were conducted at LHAAP-04 since 1993 to assess contamination from the operations at LHAAP-04 (testing for perchlorate began in 2000). The sampling included installation and sampling of groundwater monitoring wells and sampling of the soil at various depths and locations. The baseline human health risk assessment for the Group 4 sites, which was based on data from the remedial investigations and additional investigations through 2001, concluded that potential cancer risk and noncancer hazards estimated for potential exposure of a future maintenance worker to on-site soil and groundwater were within the acceptable limits (Jacobs, 2003). The Installation-Wide Baseline Ecological Risk Assessment (Shaw, 2007c) did not identify any potential risk to ecological receptors. Additional investigations after the risk assessment found unacceptable levels of mercury in soil, and perchlorate, an emerging contaminant, in soil at levels that could potentially migrate into the groundwater. A soil removal action was recommended in the Engineering Evaluation/Cost Analysis for LHAAP-04 (Shaw, 2009) to address two contaminants in the soil. This soil removal was performed, and is documented in the Final Completion Report, Non-Time Critical Removal Action at LHAAP-04 (Shaw, 2011).

As part of the removal action, a well (04WW04) was installed to sample the groundwater beneath the backfilled excavation area. The results indicated that perchlorate was present in the groundwater at a concentration that exceeded the TCEQ GW-Ind value for perchlorate (72 micrograms per liter [µg/L]). The GW-Ind is a promulgated value and will be used as the proposed cleanup level. A second well, 04WW05, was installed downgradient of 04WW04. As a result, this FS has been prepared to address the perchlorate contamination in the groundwater at LHAAP-04.

The remedial action objectives (RAOs) established within this FS address potential human health risks associated with LHAAP-04 groundwater. The RAOs recognize USEPA's policy to return all groundwater to beneficial uses, based upon the non-binding programmatic expectation in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and is consistent with the NCP regulations requiring the lead agency, the U.S. Army in this case, to establish RAOs specifying contaminants and media of concern, potential exposure pathways, and remediation goals. The RAOs for LHAAP-04, which take into account the future use of the site as a wildlife refuge, are:

- Protect human health for the hypothetical future maintenance worker by preventing exposure to groundwater contaminated with perchlorate

- Return groundwater to its potential beneficial use, wherever practicable, within a reasonable time period given the particular site circumstances.
- Protect human health and the environment by preventing groundwater contaminated with perchlorate from migrating into nearby surface water.

The FS identifies and screens remedial technologies and associated process options that may be appropriate for satisfying the RAOs for LHAAP-04 with respect to effectiveness, implementability, and cost. Select remedial technologies and process options were carried forward after the initial screening and were combined to develop the following remedial alternatives for LHAAP-04:

- **Alternative 1 – No Action.** Leaves the contaminated groundwater in place with no remedial action or additional measures to prevent exposure to perchlorate, and serves as a baseline for comparison with the other alternatives. A No Action alternative is required under CERCLA.
- **Alternative 2 – Monitored Natural Attenuation, Land Use Controls.** Implements a monitored natural attenuation program (MNA) for natural degradation of COCs in the groundwater to the cleanup level. Implements land use controls (LUCs) until the cleanup level is met.
- **Alternative 3 – In Situ Bioremediation, Land Use Controls.** In situ bioremediation is used to reduce the timeframe to attain the groundwater cleanup level. Implements LUCs until the cleanup level is met.
- **Alternative 4 – Extraction and Treatment, Land Use Controls.** Extraction and treatment is used to reduce perchlorate concentrations and the timeframe to attain the groundwater cleanup level. Implements LUCs until the cleanup level is met.

Each alternative was evaluated against CERCLA criteria to provide a basis for selecting a preferred alternative in the follow-on Proposed Plan (PP) and Record of Decision (ROD) documents.

Table ES-1 summarizes the comparative analysis of the alternatives presented in this study. Two additional criteria, State acceptance and community acceptance, will be evaluated during the PP stage.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

Table ES-1
Comparative Analysis of Alternatives

Comparative Analysis of Alternatives Criteria	Alternative 1 No Action	Alternative 2 Monitored Natural Attenuation, Land Use Controls	Alternative 3 In Situ Bioremediation, Land Use Controls	Alternative 4 Extraction and Treatment, Land Use Controls	Alternative 5 ICTs, Extraction and Treatment, Land Use Controls
Overall protection of human health and the environment	No protection. Does not achieve RAOs.	Achieves RAOs. Protection of human health and environment provided by maintenance of land use controls. MNA activities would demonstrate that degradation of plume is occurring. Land use controls in place until cleanup level is met.	Achieves RAOs. Protection of human health and environment provided by remediation of perchlorate in groundwater in a target area. Land use controls in place until cleanup level is met.	Achieves RAOs. Protection of human health and environment provided by extraction and treatment of perchlorate in groundwater in a target area. Land use controls in place until cleanup level is met.	Achieves RAOs. Protection of human health and environment provided by extraction and treatment of perchlorate in groundwater in a target area. Land use controls in place until cleanup level is met.
Compliance with ARARs	Does not comply with chemical-specific ARARs guidance for perchlorate.	Complies with ARARs.	Complies with ARARs.	Complies with ARARs.	Complies with ARARs.
Long-term effectiveness and permanence	Not effective.	Contaminants may be degrading naturally. To be confirmed by MNA sampling following remedy selection. Land use controls would be effective and reliable so long as they are maintained.	Should be effective and permanent; however, uncertainty exists concerning the degree to which the alternative will be effective in enhancing the natural biological processing occurring at the site. Pilot testing may be required prior to implementation. May require a second treatment. Land use controls would be effective and reliable so long as they are maintained.	Should be effective and permanent; use of resin filters for perchlorate treatment has been successful at other military sites, which indicates treatment is practical and effective for perchlorate at LHAAP. Land use controls would be effective and reliable so long as they are maintained.	Should be effective and permanent; use of resin filters for perchlorate treatment has been successful at other military sites, which indicates treatment is practical and effective for perchlorate at LHAAP. Land use controls would be effective and reliable so long as they are maintained.
Reduction of TMV through treatment	No reduction.	No active remediation would be performed for groundwater. However, a reduction in TMV would be provided through natural biodegradation processes that are occurring in the aquifer.	Provides permanent reduction in TMV in the target area provided conditions are favorable.	Provides permanent reduction in TMV in the target area through removal and ex situ treatment. Treated groundwater is expected to be reinjected to LHAAP-04.	Provides permanent reduction in TMV in the target area through removal and ex situ treatment. Treated groundwater is expected to be reinjected to LHAAP-04.

Table ES-1 *(continued)*
Comparative Analysis of Alternatives

Comparative Analysis of Alternatives Criteria	Alternative 1 No Action	Alternative 2 Monitored Natural Attenuation, Land Use Controls	Alternative 3 In Situ Bioremediation, Land Use Controls	Alternative 4 Extraction and Treatment, Land Use Controls	Alternative 5 ICTs, Extraction and Treatment, Land Use Controls
Short-term effectiveness	No short-term impacts.	Minimal impacts to the community, workers, or the environment from short-term activities. Provides almost immediate protection.	Minimal impacts to the community, workers, or the environment from short-term activities. Provides almost immediate protection.	Minimal impacts to the community, workers, or the environment from short-term activities. Provides almost immediate protection.	Minimal impacts to the community, workers, or the environment from short-term activities. Provides almost immediate protection.
Implementability	Inherently implementable.	Readily implemented.	Readily implemented. Specialized knowledge required for implementation.	Readily implemented. Specialized knowledge required for implementation of treatment system.	Readily implemented. Specialized knowledge required for installation of ICTs and implementation of treatment system.
Duration	None	12 years to cleanup level 30 years LUC	2 years to cleanup level 30 years LUC	15 months to cleanup level 30 years LUC	6 months to cleanup level 30 years LUC
• Capital	$0	$121,000	$233,000	$312,000	$389,000
• O&M	$0	$444,000	$405,000	$418,000	$394,000
• Present worth	$0	$565,000	$638,000	$730,000	$783,000

Notes and Acronyms:

Costs rounded to nearest thousand dollars

ARARs	applicable or relevant and appropriate requirements
FBR	fluidized bed reactor
GWTP	groundwater treatment plant
MNA	monitored natural attenuation
O&M	operations and maintenance
RAOs	remedial action objectives
TMV	toxicity, mobility, or volume

1.0 INTRODUCTION

This Feasibility Study (FS) was prepared by Shaw Environmental, Inc. (Shaw), for the U.S. Army Corps of Engineers (USACE), Tulsa District, under the Louisville District's Multiple Award Remediation Contract (MARC) Contract No. W912QR-04-D-0027, for remediation activities on the Longhorn Army Ammunition Plant (LHAAP) in Karnack, Texas. This FS presents the analysis of remediation alternatives for groundwater at the former Pilot Wastewater Treatment Plant designated as LHAAP-04 in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and provides the basis for remedy selection consistent with the intended future use of LHAAP as a wildlife refuge.

The U.S. Army Environmental Command provides funding for the environmental remedial activities. The Base Realignment and Closure Division are responsible for all aspects of LHAAP including the environmental program, operations, and land transfer.

1.1 Purpose and Organization of Report

Environmental cleanup decision-making under CERCLA follows a prescribed sequence: Remedial Investigation (RI), FS, Proposed Plan (PP), and Record of Decision (ROD). The RI serves as the mechanism for collecting data to characterize site conditions, determine the nature and extent of the contamination, and assess risks to human health and the environment from this contamination. LHAAP-04 was designated as a Group 4 site in previous investigations. Investigations for the Group 4 sites have been completed and documented in the RI Report Addendum (Jacobs Engineering Group, Inc. [Jacobs], 2002), and the Baseline Human Health Risk Assessment (Jacobs, 2003). Additional investigations and operations that addressed LHAAP-04 include the Perchlorate Report (STEP, 2005), Environmental Site Assessment (Plexus, 2005), the Data Gaps Investigation (Shaw, 2007a), and the Modeling Report (Shaw, 2007b). No unacceptable human health risk or hazard to a hypothetical future maintenance worker was identified for LHAAP-04 during the risk assessment, but later activities identified perchlorate in soil at concentrations that could potentially leach into groundwater and cause unacceptable concentrations of perchlorate in groundwater. The Engineering Evaluation/Cost Analysis (Shaw, 2009) recommended that this contaminated soil be removed. This removal was completed in 2009 and two new wells were installed to evaluate the groundwater. One well was installed near the area of the highest contamination in soil, and one was installed downgradient of this area. The sample results detected concentrations of perchlorate in groundwater that exceeded the groundwater medium-specific concentration for industrial use (GW-Ind). **Appendix A** contains analytical results and field data from 2010. The ecological risk was evaluated in the Installation-Wide

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

Baseline Ecological Risk Assessment (BERA) (Shaw, 2007c). No potential risk to ecological receptors from the LHAAP-04 media was identified.

This FS takes the next step of identifying and evaluating remedial solutions for perchlorate in groundwater. The environmental problem identified for LHAAP-04 is perchlorate contamination in the shallow groundwater. Even though perchlorate is not a Resource Conservation and Recovery Act (RCRA) or CERCLA waste, it is an emerging contaminant and is addressed in this FS. The formulation of viable alternatives involves defining remedial action objectives (RAOs), general response actions (GRAs), volumes or area of media to be addressed, and potentially applicable technologies and process options. After a reasonable number of appropriate alternatives have been formulated, the alternatives undergo a detailed analysis using nine established evaluation criteria. The detailed analysis profiles individual alternatives against the criteria and compares them with each other to gauge their relative performance. Each alternative that makes it to this stage of the analysis, with the exception of the required "No Action" alternative, is expected to be protective of human health and compliant with applicable or relevant and appropriate requirements (ARARs) (unless a waiver is justified), both threshold requirements under CERCLA. The alternatives developed in this FS address the contaminated groundwater and chemicals of concern (COCs) at LHAAP-04 through combinations of source control and groundwater actions.

The preferred alternative for LHAAP-04 groundwater will be presented in the PP. The PP will briefly summarize the alternatives studied in this FS, highlighting the key factors that led to identifying the preferred alternative. The U.S. Department of the Army (Army) will submit the PP to the regulatory agencies, Texas Commission on Environmental Quality (TCEQ) and the U.S. Environmental Protection Agency (USEPA), and then the public for review. After this review, the U.S. Army will release a ROD that documents the selected remedy, certifies that the remedy selection process was carried out in accordance with CERCLA, and addresses public comments on the PP. Relevant documentation, including the RI, FS, and subsequent documents, are or will be available to the public in the Administrative Record for this project. The Administrative Record is housed at LHAAP and at the Marshall Public Library in Marshall, Texas.

1.2 Longhorn Army Ammunition Plant Background

1.2.1 Site Description

The LHAAP is an inactive, government-owned, formerly contractor-operated and -maintained industrial facility located in central-east Texas in the northeastern corner of Harrison County. The former installation occupied nearly 8,416 acres between State Highway 43 at Karnack, Texas, and the western shore of Caddo Lake as shown in **Figure 1-1**. The nearest cities are Marshall, Texas, approximately 14 miles to the southwest,

and Shreveport, Louisiana, approximately 40 miles to the east. Caddo Lake, a large freshwater lake situated on the Texas-Louisiana border, bounds LHAAP to the north and east. The industries in the surrounding area consist of agriculture, timber, oil and natural gas production, and recreation.

LHAAP-04 is approximately 0.5 acres and is located in the central portion of LHAAP at the northwest corner of 6th and 60th Streets near the former fire station (see **Figure 1-2**). LHAAP-04 is surrounded by light duty roads. Wastewater treatment operations began at LHAAP-04 in 1984. The demolition of the Former Pilot Wastewater Treatment Facility structures, tanks, and piping, and the disposal of the associated wastes were completed in the summer of 1997 as part of the RCRA closure of the plant. Soil excavation at LHAAP-04 was completed in 2009 along the southern edge of the remaining slab, which formerly housed storage tanks for the Former Pilot Wastewater Treatment Facility.

1.2.2 History

LHAAP was established in December 1941, near the beginning of World War II, when the U.S. Army issued a contract to build a six-line production facility for manufacturing trinitrotoluene (TNT). Various media have been contaminated by past industrial operations and waste management practices at LHAAP. Industrial operations involved the use of secondary explosives, rocket motor propellants, and various pyrotechnics, such as illuminating and signal flares and ammunition. Explosives included TNT and black powder. Typical composite propellants were composed of a rubber binder, an oxidizer such as ammonium perchlorate, and a powdered metal fuel such as aluminum. Pyrotechnics were generally composed of an inorganic oxidizer, such as sodium nitrate, a metal powder such as magnesium, and a binder. Other materials used in the industrial operations included acids, lubricants, and solvents, particularly trichloroethene and methylene chloride. Waste management included sanitary wastewater treatment, industrial wastewater treatment, holding/evaporation ponds, storm water drainage, sanitary and contaminated waste landfills, and demolition/burning grounds. Discharges and releases to surface water, groundwater, and other secondary media have occurred from the historical operations and practices.

LHAAP was placed on the National Priorities List (NPL) August 9, 1990. A Federal Facility Agreement (FFA) among the USEPA, the U.S. Army, and the Texas Natural Resources Conservation Commission, now the TCEQ, became effective December 30, 1991. LHAAP became inactive in July 1997, and a year later the U.S. Army issued a contract to remove salvageable property. On May 5, 2004, the U.S. Army transferred approximately 5,032 acres to the U.S. Fish and Wildlife Service (USFWS) for management as the Caddo Lake National Wildlife Refuge. Almost 2,000 acres have been transferred to the USFWS since the initial transfer and the process will continue as response is completed at individual sites. The remaining land is under the U.S. Army's control and includes the Group 2 and 4 sites

currently undergoing RI/FS studies. The U.S. Army intends to transfer this land to the USFWS after the environmental response is completed.

In 1984, the Former Pilot Wastewater Treatment Plant began operation. Wastewater from sumps throughout LHAAP was trucked to the plant for treatment. After the wastewater settled, it was transferred to one of two storage tanks, and then pumped through a heat exchanger to an evaporation tower. Solids were shipped off site for disposal. Sludge from the settling tanks was blown down and drummed weekly, then burned at Burning Ground No. 3 (LHAAP-18/24) (Plexus Scientific Corporation [Plexus], 2005).

The demolition and disposal of the Former Pilot Wastewater Treatment Facility and its associated hazardous waste was completed in the summer of 1997 as part of the RCRA closure of the plant. Three aboveground storage tanks (ASTs) were emptied, cleaned, and removed as part of the site closure in September 1997 (ACE, 1997). The concrete slab on the north side of LHAAP-04 was left in place. According to the LHAAP installation plan, the Former Pilot Wastewater Treatment Plant was removed and closed in 1998 under a conditional approval letter from Texas Natural Resource Conservation Commission (TNRCC). The TCEQ was formerly known as TNRCC. The conditional approval letter limits the closure to the plant and deferred contaminated soil to the CERCLA program. This contamination was addressed in the EE/CA (Shaw, 2009), and the soil removal action is documented in the Completion Report (Shaw, 2011). A monitoring well (04WW04) installed after the soil removal was sampled and detected perchlorate concentrations in groundwater exceeding the GW-Ind, 72 micrograms per liter (µg/L). Another monitoring well (04WW05) was installed downgradient of 04WW04 and perchlorate was not detected above its GW-Ind.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

1.2.3 Hydrogeology

Seven monitoring wells have been installed near LHAAP-04 in the shallow zone, at a depth of approximately 20 feet below ground surface (bgs). The monitoring well locations at LHAAP-04 are shown on **Figure 1-3** and **Figure 1-4**. There are no monitoring wells completed in the intermediate or deep saturated zones. However, a water well located south-southeast of the firehouse (firehouse well, see **Figure 1-2**) was installed with a screen from 58 to 128 feet bgs, intersecting sandy zones at 60 to 83 feet bgs (intermediate) and at 121 to 128 feet bgs (deep). A pump test at the firehouse well lasting nearly 7 hours with flow rates ranging from 11 to 18 gallons per minute did not determine a sustainable pumping rate for the firehouse well. A groundwater sample collected from this well in October 2002 showed no detectable perchlorate.

Based on the 2007 potentiometric surface map for LHAAP production area, the groundwater flow direction in the shallow saturated zone below LHAAP-04 is radially away from

04WW02 as shown on **Figure 1-3** within an overall movement to the east-northeast as shown on **Figure 1-2**. Based on the 2010 potentiometric surface map as shown on **Figure 1-4**, the groundwater flow direction in the shallow saturated zone below LHAAP-04 is radially away from 04WW02 and 04WW04 within an overall movement to the northeast as shown on **Figure 1-2**. There are several potential explanations for the mounding, with no strong evidence to choose one over another explanation. The piping that was removed during excavation may have leaked water into the area, surface water runoff from the surrounding paved areas and former buildings may have been directed to this area, dust suppression during demolition of the former buildings, or periodic water releases from the nearby firehouse. Rising head slug tests were performed on one well near LHAAP-04 to calculate hydraulic conductivity values using the Bouwer-Rice method. The hydraulic conductivity value for the shallow saturated zone was 3.5×10^{-5} centimeters per second (cm/sec) at well LHSMW01 (Jacobs, 2002).

General soil and geologic maps indicate that the site is situated on the outcrop of the Wilcox Group. The Wilcox Group materials at the site generally consist of a few feet of residually derived soils overlying interbedded silts and clays. A cross-section of the site is shown in **Figure 1-5**. The shallow zone water bearing sand at monitoring well 04WW04 appears to be only 1 or 2 feet thick, and surrounding monitoring wells mostly show clay or silt layers at the same depth. The perchlorate plume at 04WW04 appears to be isolated. It has not been confirmed through borings if the intermediate zone water bearing sand (60 to 83 feet bgs) and the deep zone water bearing sand (121 to 128 feet bgs) in the firehouse well exist beneath LHAAP-04, however, the intermediate and deep zone wells across LHAAP have reliably encountered sands at similar depths, so they likely exist under LHAAP-04. The firehouse well shows 60 feet of clay and gray shale from the surface down to the intermediate zone, so it is expected that the clay aquitard between the shallow and intermediate zones at LHAAP-04 will be relatively thick.

1.3 Summary of Previous Activities

The risk assessment (Jacobs, 2003) was prepared before additional data collected as part of the plant-wide perchlorate investigation by STEP and the data gap investigations were available. These additional investigations confirmed elevated concentrations of perchlorate in on-site surface soil (Shaw 2007a; STEP, 2005). The maximum concentration of perchlorate in soil used in the risk assessment 144,000 micrograms per kilogram (µg/kg), is only slightly less than the maximum detected in subsequent sampling (163,000 µg/kg), which is above the soil MSC for industrial use based on groundwater protection (GWP-Ind) of 7,200 µg/kg for perchlorate (TCEQ, 2006). This comparison indicates that the soil containing perchlorate has the potential to impact groundwater. However, it should be noted that perchlorate levels in soil do not pose a human health or ecological risk.

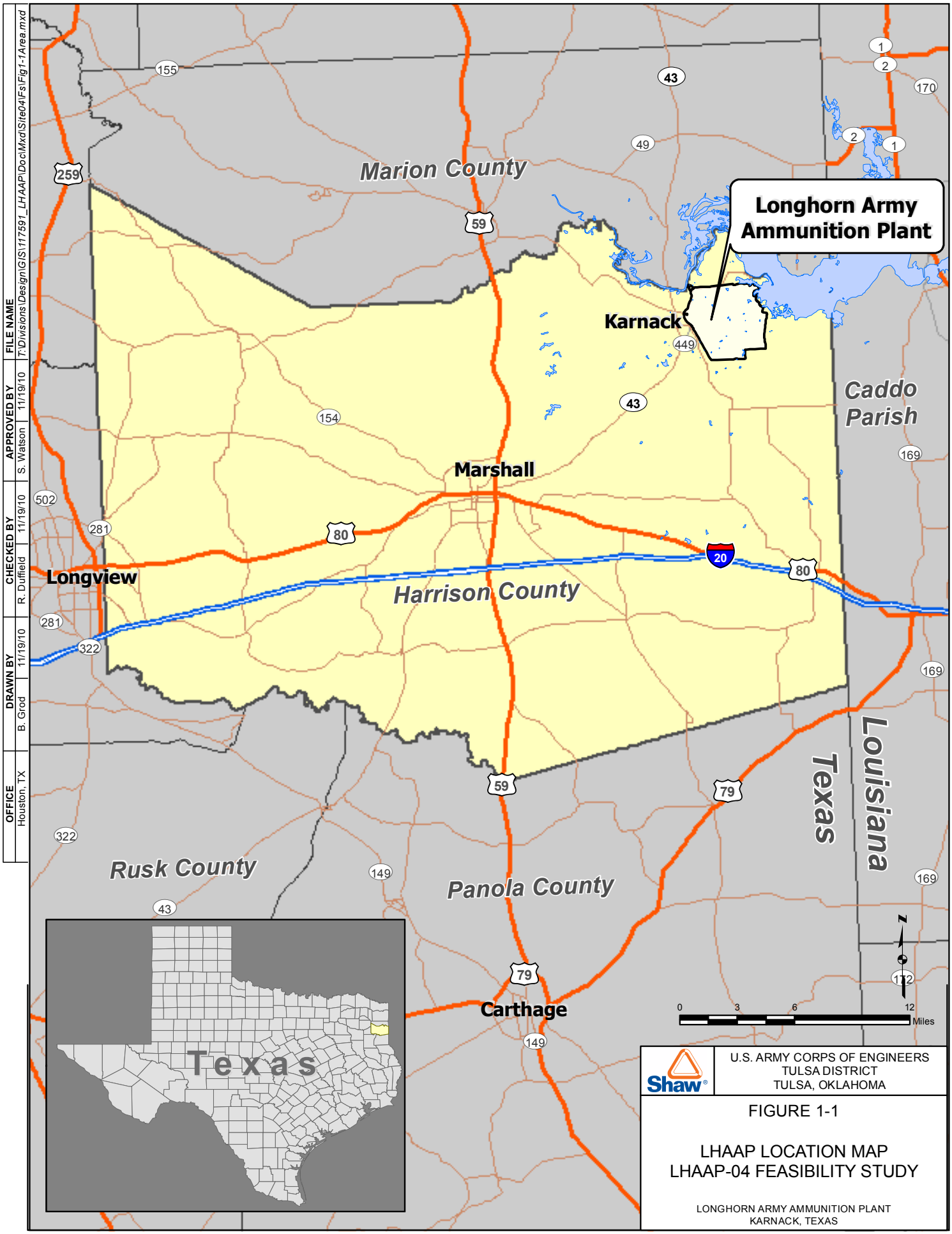
The risk assessment was prepared from investigation data and did not consider the closure report data (ACE, 1997). The comparison of the closure report data to the soil MSC for industrial use based on inhalation, ingestion, and dermal contact (SAI-Ind) indicated mercury contamination in surface soil.

These high perchlorate and mercury concentrations in soil were removed and sent to an off-site landfill in 2009. The Completion Report documents the excavation, transport and disposal of contaminated soil, along with additional activities conducted during the soil removal (Shaw, 2011). **Figure 1-6** shows the areas and depths of soil excavated. Because of groundwater infiltration, soil confirmation samples from the floor of two grids (FL09 and FL11) could not be collected to document clean closure of the site. It is probable that contaminated material remains in the saturated zone in these grids (Shaw, 2011).

Table 1-1
Summary of Previous Activities at LHAAP-04

Phase I (USACE, 1993)
• Completed two borings at one sump location and collected five soil samples
RCRA Closure of Former Pilot Wastewater Treatment Plant (ACE, 1997)
• Collected soil samples for RCRA closure
Phase III (Jacobs, 1998)
• Completed one boring at one sump location and collected two soil samples
Perchlorate Investigation (Jacobs, 2000)
• Completed two borings and collected four soil samples
Phase III Additional Work (Jacobs, 2000)
• Collected 12 soil samples from four locations • Installed three monitoring wells and collected groundwater samples from each well
Plant-wide Perchlorate Investigation (STEP, 2000, 2001)
• Collected 48 soil samples from 21 locations • Collected 6 groundwater samples from 3 monitoring wells • Collected 4 groundwater samples from 4 DPT points
Final Data Gaps Investigation (Shaw, 2004)
• Collected 4 groundwater samples from 4 monitoring wells
Soil Excavation (Shaw, 2009)
• Removed 3,590 cubic yards of soil with perchlorate (and mercury in a limited area). • Collected confirmation soil samples from side walls and bottom of excavation. • Collected sediment samples and water samples from drain line crossing excavation area. • Collected three soil samples for perchlorate beyond excavation area to verify horizontal extent
Groundwater Investigation for Perchlorate (Shaw, 2011)
• Installed 2 monitoring wells and collected groundwater samples from 7 wells

00116110



OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		FILE NAME
Houston, TX	B. Grod	11/19/10	R. Duffield	11/19/10	S. Watson	11/19/10	T:\Divisions\Design\GIS\117591_LHAAP\Docs\Mxd\Site04\Fs\Fig1-1Area.mxd

Shaw®

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-1

LHAAP LOCATION MAP
LHAAP-04 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00116111

FILE PATH	APPROVED BY	CHECKED BY	DRAWN BY	OFFICE
T:\Divisions\Design\GIS\117591_LHAAP\DocMxd\Site04\FsFig1-2Vicinity.mxd	S. Watson 11/19/10	R. Duffield 11/19/10	B. Grod 11/19/10	Houston, TX

N

32nd

Avenue P

6th

11th

60th

GPW-3

GPW-1

HBW-7

HBW-1

HBW-10

Caddo Lake

LHAAP-04
Former Pilot Wastewater Treatment Plant

Former Fire Station and Fire House Well

LONGHORN ARMY AMMUNITION PLANT

Karnack

Marshall

134

43

59

LEGEND

- Fire House Well
- Surface Water Sample Location
- Shallow Groundwater Contour (ca. 2007)
- Stream
- Road
- LHAAP Boundary
- Site
- Lake

N

0 1,250 2,500 5,000 Feet

Shaw

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

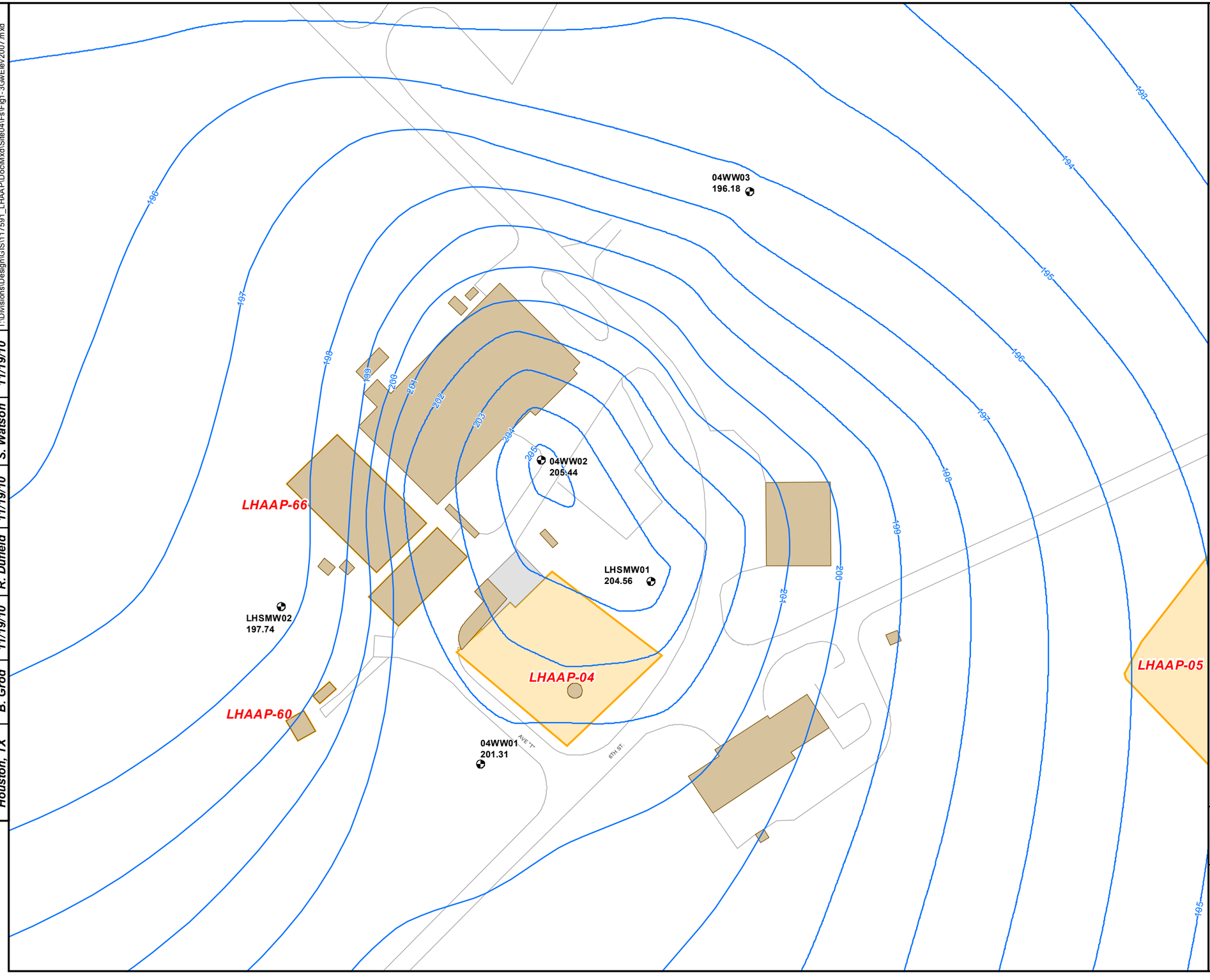
FIGURE 1-2

SITE VICINITY MAP
LHAAP-04 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00116112

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
Houston, TX	B. Grod 11/19/10	R. Duffield 11/19/10	S. Watson 11/19/10	T:\Divisions\Design\GIS\117591_LHAAP\Doc\Mxd\Site04\FsFig1-3GwElev2007.mxd



LEGEND

- Shallow Monitoring Well
- 200 Groundwater Elevation Contour
- Road
- Concrete Removed During Excavation
- Concrete
- Site

NOTES:

1. Groundwater contour elevations reported in feet.

2. Groundwater contour elevations are based on data collected from shallow monitoring wells at LHAAP-04 and LHAAP-35A in December 2007.

0 25 50 100 150 Feet

N

Shaw®

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

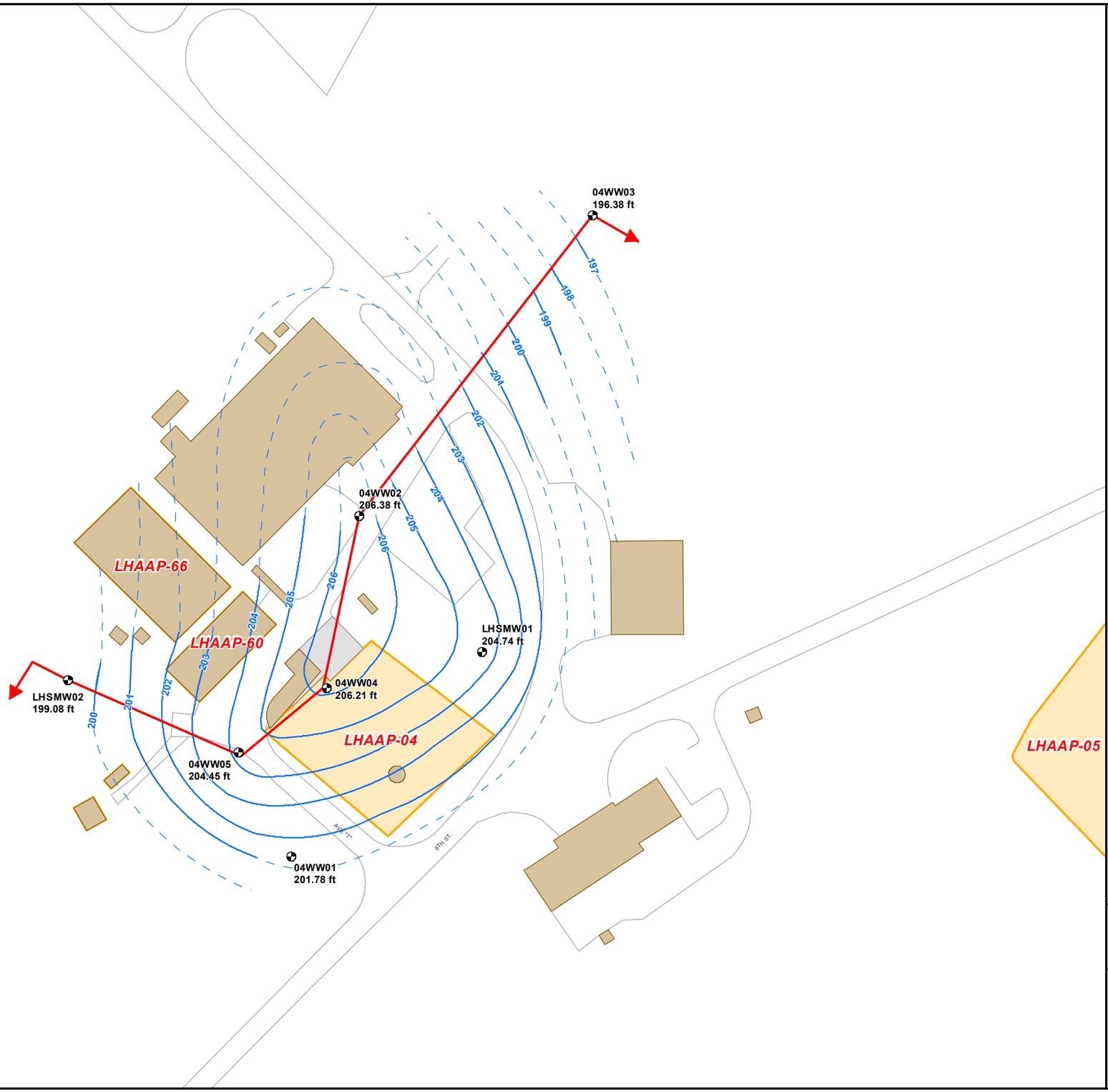
FIGURE 1-3

GROUNDWATER ELEVATIONS 2007
LHAAP-04 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

OFFICE	DRAWN BY	CHECKED BY
Houston, TX	B. Grod 01/17/11	R. Duffield 01/17/11

	APPROVED BY	FILE PATH
	K. Everett 02/03/11	T:\Divisions\Design\GIS\117591_LHAAP\DocMxd\Site04\FsFig1-4GwElev2010.mxd



LEGEND

- Shallow Monitoring Well
- 200 Groundwater Contour Interval 2010
- 200 Inferred Groundwater Contour Interval 2010
- Cross Section
- Road
- Concrete Removed During Excavation
- Concrete
- Site

NOTES:

1. Groundwater contour elevations reported in feet.

2. Groundwater contour elevations are based on data collected from shallow monitoring wells at LHAAP-04 and LHAAP-35A in October 2010.

N

0 25 50 100 150
Feet

Shaw®

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-4

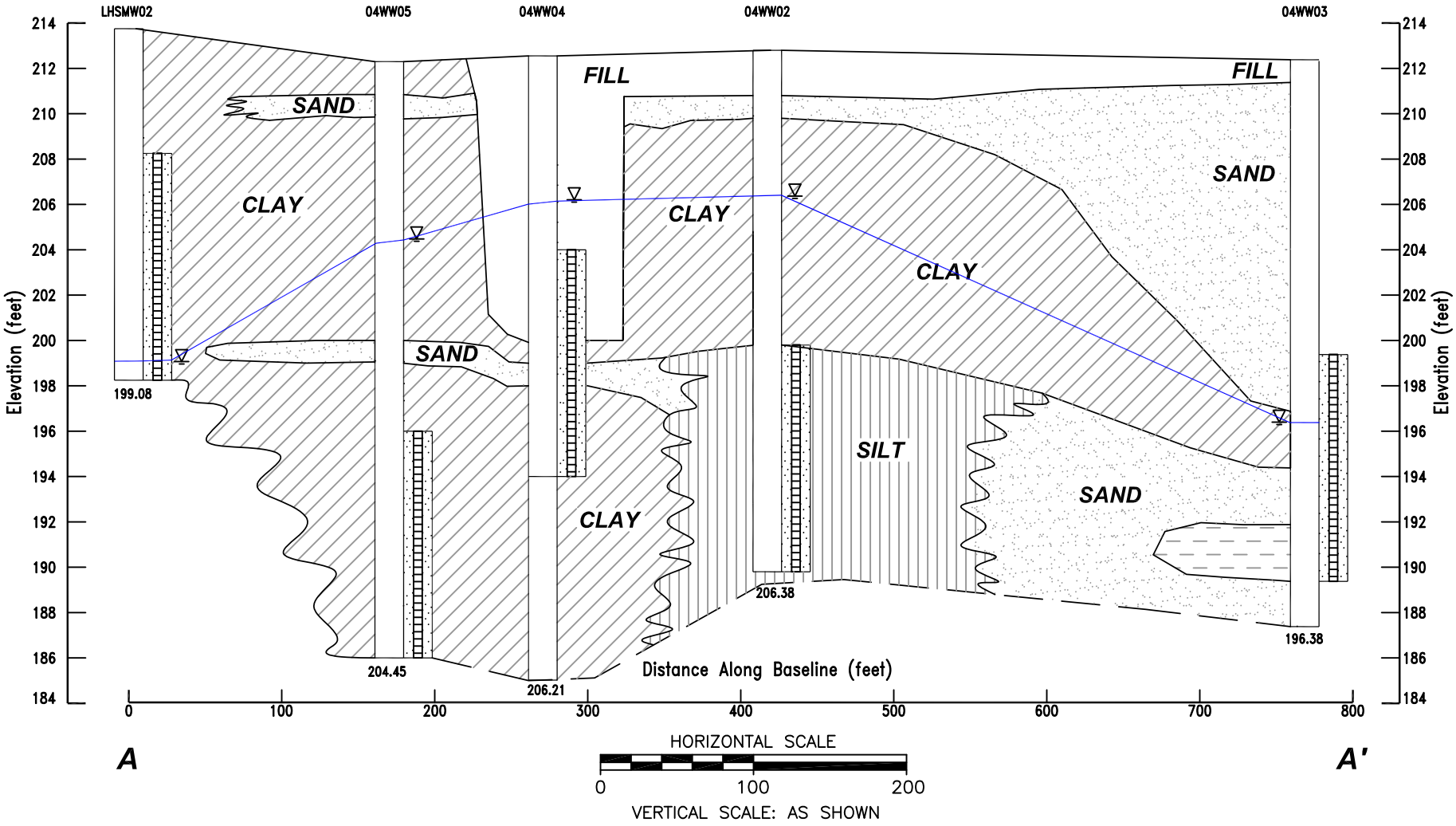
GROUNDWATER ELEVATIONS 2010
LHAAP-04 FEASIBILITY STUDY

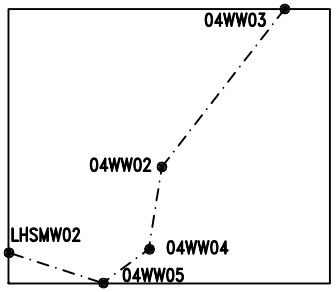
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00116114

PLOT DATE: 11/23/10
FORMAT REVISION

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	---	HOUSTON, TX	S. MCCAWLEY	11/23/10	R. DUFFIELD	11/23/10	K. EVERETT	1/19/11	117591-A75





LEGEND:

- INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY
- CLAYEY SANDS, SILTY SANDS
- INORGANIC SILTS
- PEAT AND OTHER HIGHLY ORGANIC SOILS
- FILL
- OCT 2010 STATIC GROUNDWATER
- SCREEN AND FILTER PACK
- 206.38 STATIC GROUNDWATER ELEVATION

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

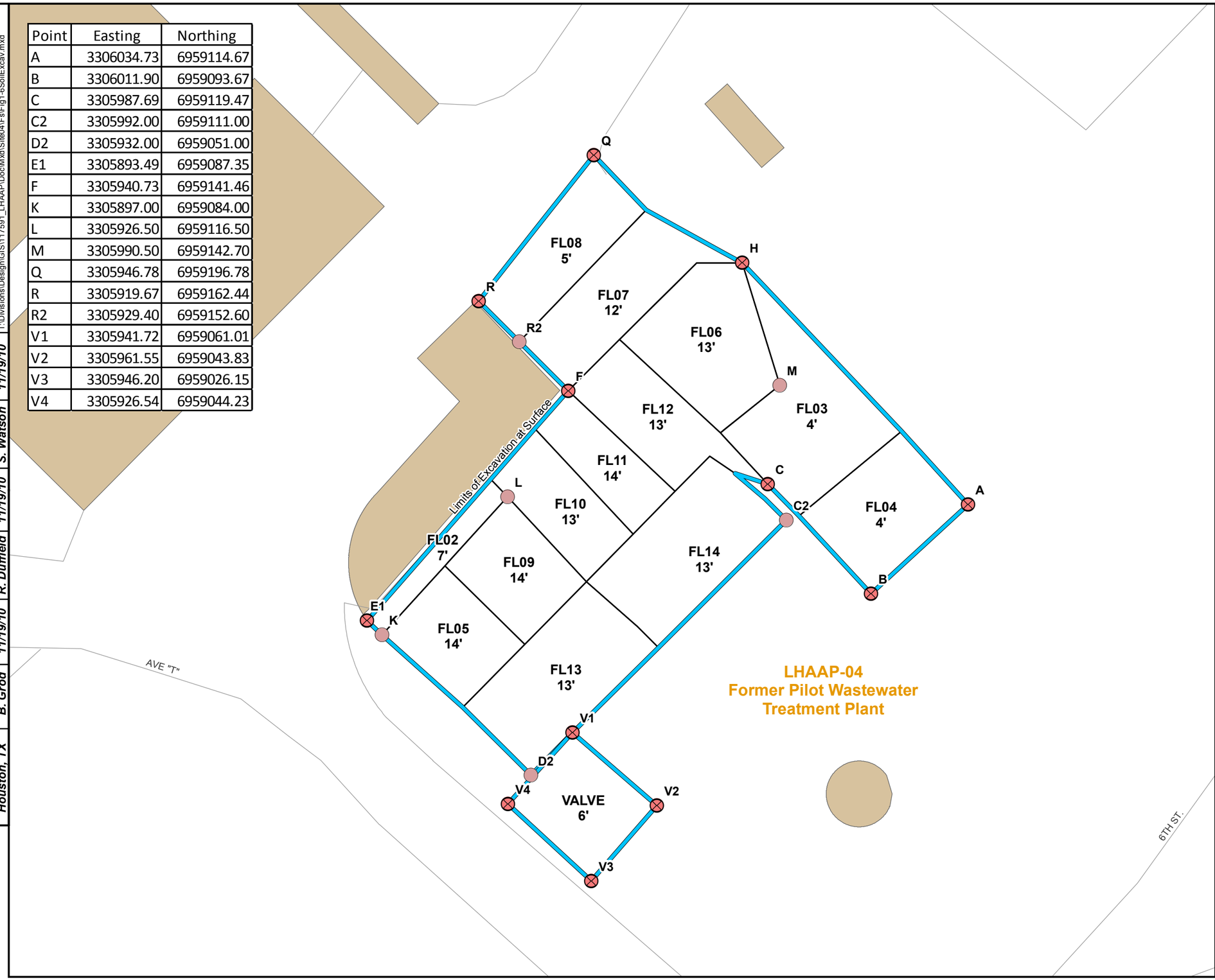
FIGURE 1-5

GEOLOGICAL CROSS SECTION A-A'
LHAAP-04 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00116115

Point	Easting	Northing
A	3306034.73	6959114.67
B	3306011.90	6959093.67
C	3305987.69	6959119.47
C2	3305992.00	6959111.00
D2	3305932.00	6959051.00
E1	3305893.49	6959087.35
F	3305940.73	6959141.46
K	3305897.00	6959084.00
L	3305926.50	6959116.50
M	3305990.50	6959142.70
Q	3305946.78	6959196.78
R	3305919.67	6959162.44
R2	3305929.40	6959152.60
V1	3305941.72	6959061.01
V2	3305961.55	6959043.83
V3	3305946.20	6959026.15
V4	3305926.54	6959044.23



LEGEND

- Extrapolated Point
- Surveyed Point
- FL04 4' — Sampled Floor Areas with excavation Depth in feet below ground surface
- Limits of Excavation at Surface
- Road
- Concrete Slab

NOTES:

Details of excavation are presented in the completion report.

0 10 20 40 Feet

N

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-6

SOIL EXCAVATION AREA
LHAAP-04 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
Houston, TX	B. Grod 11/19/10	R. Duffield 11/19/10	S. Watson 11/19/10	T:\Divisions\Design\GIS\117591_LHAAP\Doc\Mxd\Site04\FsiFig1-8SoilExcav.mxd

2.0 RISK AND SITE ASSESSMENT

This section summarizes the risk assessment approach, risk conclusions, and the conceptual site model for LHAAP-04. Information in this section is based on data obtained from the following references:

- Group 4 RI Report Addendum (Jacobs, 2002)
- Group 4 Sites Baseline Human Health Risk Assessment Report (Jacobs, 2003)
- Groups 2 and 4 Groundwater Data Gaps Investigation (Shaw, 2007a)
- Installation-Wide Baseline Ecological Risk Assessment (Shaw, 2007c)
- Plant-Wide Perchlorate Investigation (STEP, 2005)
- Environmental Site Assessment (Plexus, 2005)
- Final Completion Report Non-Time-Critical Removal Action at LHAAP-04 (Shaw, 2011)

The human health risk assessment, which was based on the reasonably anticipated future use as a national wildlife refuge, does not address unrestricted use. Although not part of the remedy, in accordance with 30 TAC 335.566, a notification will be recorded in the Harrison County records stating that the site is suitable for nonresidential use. Inspections and information reviews will be conducted on five-year intervals to verify that the property is not used for any residential purposes.

2.1 Risk Assessment Summary

This summary is based on the conclusions presented in the *Final Baseline Human Health and Screening Ecological Risk Assessment for the Group 4 Sites* (Jacobs, 2003). The Jacobs risk assessment presented the human health risks and hazards to a hypothetical future maintenance worker under an industrial scenario for soil and groundwater and a screening level ecological risk assessment. A Baseline Ecological Risk Assessment (Shaw, 2007c) was also conducted and concluded there is no impact to ecological receptors. For the human health risk assessment, soil and groundwater data were used to calculate the aggregate risk values, which were then compared to the USEPA target risk range of 1×10^{-4} to 1×10^{-6} for the excess lifetime cancer risk and a hazard index (HI) of 1.

2.1.1 Soil

For the hypothetical future maintenance worker exposure to soil at LHAAP-04, the carcinogenic risk and non-carcinogenic hazard are acceptable. The carcinogenic risk was 1.2×10^{-6}, within the acceptable range. The non-carcinogenic HI was below 1 (0.28).

2.1.2 Groundwater

For the hypothetical future maintenance worker exposure to the groundwater at LHAAP-04, the carcinogenic risk and non-carcinogenic hazard are acceptable. The total carcinogenic risk to groundwater for a hypothetical future maintenance worker is 4.5×10^{-5}. The total HI is 0.19. All chemicals with carcinogenic risk greater than 1×10^{-6} and a hazard quotient (HQ) greater than 0.1 are listed in **Tables 2-1** and **2-2**, respectively.

2.2 Evaluation of Data Collected Since the Risk Assessment

The risk assessment was completed using data from the samples through February 2001 for groundwater and through December 2000 for soil samples. Since that time, additional groundwater and soil samples have been collected and analyzed.

2.2.1 Soil

As identified in the EE/CA, soil samples not considered in the risk assessment contained perchlorate and mercury concentrations that posed unacceptable risk or hazards to human health. These high perchlorate and mercury concentrations were removed and sent to an off-site landfill in 2009. Soil remaining after this removal poses no unacceptable risk or hazard. The Completion Report documents the excavation, transport and disposal of contaminated soil, along with additional activities conducted during the soil removal (Shaw, 2011). Because of groundwater infiltration, soil confirmation samples from the floor of two grids (FL09 and FL11) could not be collected to document clean closure of the site. It is probable that contaminated material remains in the saturated zone in these grids (Shaw, 2011).

2.2.2 Groundwater

Additional groundwater samples have been collected since the risk assessment and analyzed for perchlorate. Recent data from 04WW04 indicated that perchlorate concentrations exceed the GW-Ind (72 µg/L). Thus, the results obtained from these post risk assessment groundwater samples alter the conclusions of the risk assessment that groundwater poses no unacceptable risk or hazard. The perchlorate concentrations in the groundwater exceed the GW-Ind value, so are presumed to pose an unacceptable hazard to human health.

2.2.3 Ecological Risk Assessment

The ecological risk for LHAAP-04 was addressed in the installation-wide Baseline Ecological Risk Assessment (BERA) (Shaw, 2007b). For the BERA, the entire Installation was divided into three large sub-areas (i.e., the Industrial Sub-Area, Waste Sub-Area, and Low Impact Sub-Area) for the terrestrial evaluation. The individual sites at LHAAP were grouped into one of these sub-areas, which were delineated based on commonalities of historical use, habitat type, and spatial proximity to each other. The conclusions regarding the potential for chemicals detected at individual sites to adversely affect the environment

must be made in the context of the overall conclusions of the sub-area in which the site falls. LHAAP-04 lies within the Industrial Sub-Area. The BERA concluded that no unacceptable risk was present in the Industrial Sub-Area (Shaw, 2007b) and therefore, no further action is needed at LHAAP-04 for the protection of ecological receptors.

2.3 Media Contamination Assessment

Perchlorate in the groundwater at LHAAP-04 is above the GW-Ind. Chemicals in the soil do not pose an unacceptable risk or hazard to human health since they were removed (Shaw, 2011).

2.3.1 Groundwater

Groundwater at LHAAP-04 exceeds the perchlorate GW-Ind (72 µg/L). Groundwater contaminants with an HQ greater than 0.1 are listed in **Table 2-2**. The potential COCs listed in **Table 2-2** for the LHAAP-04 groundwater are perchlorate and manganese due to the contribution to HI or exceedance of their respective GW-Ind values. The metal manganese has an HQ of 0.1, but was eliminated as a COC since the concentration was below the LHAAP background concentration for manganese, the HQ is less than or equal to 0.1, and it does not contribute significantly to the HI.

Perchlorate was retained as a COC because it exceeded the GW-Ind. The most recent perchlorate concentrations in groundwater are shown in **Figure 2-1**. The figure shows the current extent of perchlorate as a solid line, and an estimated possible past extent of perchlorate as a dashed line. The February 2001 concentration (81 µg/L) in monitoring well LHSMW01 merits inclusion of that well within the dashed line. The rest of the dashed contour maintains a similar distance from the currently interpreted 72 µg/L contour with reference to the generally radial groundwater contours of **Figure 1-4**. The **Figure 2-1** data tables for monitoring wells 04WW01, 04WW04, 04WW05, LHSMW01 and LHSMW02 also show declining concentrations over time, lending support to the idea that the current extent of perchlorate in groundwater is smaller than the possible past extent.

To address perchlorate, the TCEQ GW-Ind will be used as the proposed cleanup level. The area where perchlorate in the groundwater exceeds the cleanup level is shown in **Figure 2-1**. Three additional monitoring wells, two in the shallow zone and one in the intermediate zone, are expected to be needed for plume definition and future monitoring. These proposed well locations are indicated on **Figure 2-1**.

2.4 Conceptual Site Model

Figure 2-2 illustrates the overall conceptual site model for LHAAP-04. The model presents those pathways that are being considered for remediation. Those pathways that are likely to

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

be incomplete or have negligible impact are not being considered for remediation as discussed below.

The former Pilot Wastewater Treatment Plant was the most likely source of contaminants being released into the environment (**Figure 1-3**). Since the Plant has been removed, there is no longer a potential release mechanism for leaks or spills. Perchlorate was probably released via overflows, spills, and discharges to the soil. Sufficient perchlorate levels remained in the soil to act as an ongoing source of groundwater contamination or to be potentially released into surface waters during storm events. The area of perchlorate contamination in the soil was removed in 2009 (Shaw, 2011).

Goose Prairie Creek runs approximately 700 feet to the south of LHAAP-04. It is not expected that LHAAP-04 will contribute to surface water contamination since the perchlorate contaminated soil has been removed (Shaw, 2011). Soil pathways have been eliminated from consideration.

Groundwater modeling concluded that there was no impact to surface water from groundwater (Shaw, 2007b). The modeling report considered a perchlorate concentration in groundwater (78,200 µg/L) more than ten times the highest measured groundwater concentration at LHAAP-04 (5,410 µg/L). Recent surface water samples collected were below Texas Water Quality Standards. **Table 2-3** lists the results of recent surface water sampling. Thus, the only pathway considered for remediation is future industrial groundwater use and the GW-Ind is the proposed cleanup level.

Table 2-1
Chemicals Contributing to Carcinogenic Risk in Groundwater

Chemical	Cancer Risk Groundwater [a]	Exposure Point Concentration [b] (µg/L)	Well	Date	MCL (µg/L)	Retained as Chemical of Concern?
2,3,7,8-TCDD	4.5×10^{-5}	9.3×10^{-6}	04WW02	12-19-00	3×10^{-5}	No, 1

Notes and Abbreviations:

1. Excluded since Exposure Point Concentration is below the Safe Drinking Water Act MCL.

[a] All chemicals with cancer risks exceeding 1.0×10^{-6} are listed from Baseline Risk Assessment Table 3-73 (Jacobs, 2003).

[b] From Baseline Risk Assessment Table 3-49 (Jacobs, 2003).

µg/L micrograms per liter
MCL maximum contaminant level

Table 2-2
Chemicals Contributing to Hazard Index in Groundwater

Chemical	Hazard Quotient [a]	Exposure Point Concentration [b] (µg/L)	Well	Recent Concentration (µg/L)	Well	Date	GW-Ind [c] (µg/L)	Retained as Chemical of Concern?
Perchlorate	—	ND	04WW01	5410	04WW04	11-10-10	72	Yes, 1
Manganese	0.10	493	04WW01	—	04WW01	12-19-00	14,000	No, 2

Notes and Abbreviations:

All chemicals with hazard indexes exceeding 0.1 or concentrations exceeding the GW-Ind are listed.

1. Identified as chemical of concern (COC) since recent concentration is above value indicated in GW-Ind column.
2. Excluded as COC since Exposure Point Concentration is less than LHAAP perimeter well background of 7,820 µg/L and HQ is less than or equal to 0.1.

[a] From Baseline Risk Assessment Table C-8 (Jacobs, 2003).

[b] From Baseline Risk Assessment Table 3-49 (Jacobs, 2003).

[c] Value shown is the Texas Commission on Environmental Quality Industrial Use Groundwater Medium-Specific Concentration (GW-Ind).

µg/L micrograms per liter

Table 2-3
Recent Perchlorate Results for Creek Sampling

Creek Sample ID	GW-Res	Sep 2010	Dec 2010	Mar 2011	Jun 2011	Sep 2011	Dec 2011
GPW-1	26	dry	0.1 U	8.7	dry	dry	1.76
GPW-3	26	dry	0.199 J	0.673	dry	dry	1.31
HBW-1	26	dry	0.1 U	0.2 U	dry	dry	0.1 U
HBW-7	26	dry	0.1 U	0.2 U	dry	dry	0.171 J
HBW-10	26	dry	0.1 U	0.2 U	dry	dry	0.1 U

Notes and Abbreviations:

All units in micrograms/liter (µg/L)

* *One sample taken during GWTP shutdown*

Dry *no surface water was available to sample*
J *approximate value present below normal reporting limit*
U *undetected*

GPW *Goose Prairie Creek Surface Water*
GW-Res *groundwater medium-specific concentration for residential use*
HBW *Harrison Bayou Surface Water*

Creek Conditions for last six sampling events:

September 2010 conditions: All creek sampling locations were dry in September.

December 2010 conditions: GPW locations some water but no visible flow; HBW locations plenty of water volume but very little flow.

March 2011 conditions: GPW locations slow flow; HBW locations fairly good flow.

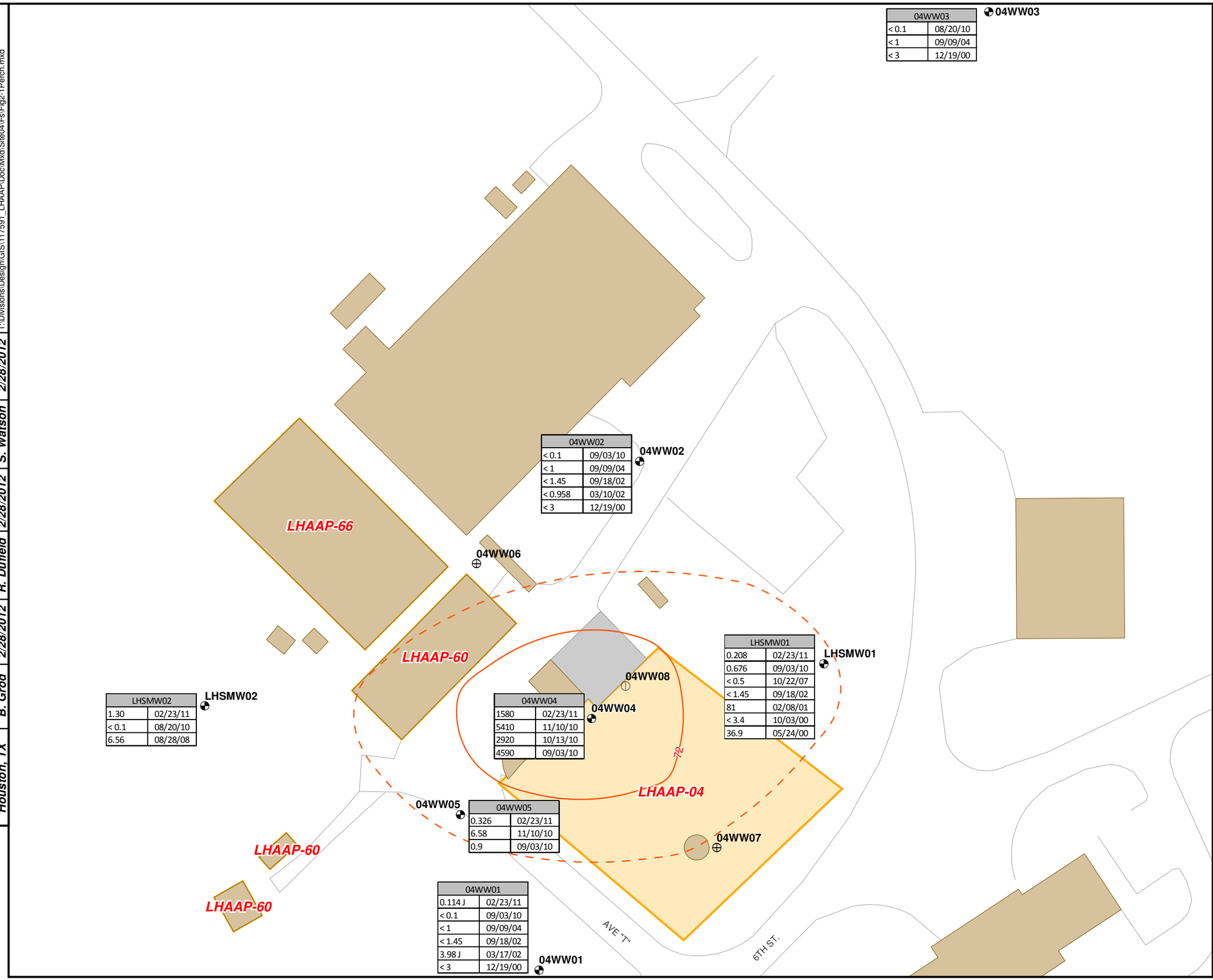
June 2011 conditions: All creek sampling locations were dry in June.

September 2011 conditions: All creek sampling locations were dry in September.

December 2011 conditions: Small amount of flow at HBW locations and no visible flow at GPW locations.

00116123

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
Houston, TX	B. Grod 2/28/2012	R. Duffield 2/28/2012	S. Watson 2/28/2012	T:\Divisions\Design\GIS\117591_LHAAP\Doc\Mxd\Site04\Fs\Fig2-1Perch.mxd



LEGEND

- Proposed Shallow Monitoring Well
- Proposed Intermediate Monitoring Well
- Shallow Monitoring Well
- Perchlorate Plume (72 µg/L)
- Possible Past Extent of Percholorate
- Road
- Concrete Removed During Excavation
- Concrete
- Site

NOTES:

1. Perchlorate concentrations reported in micrograms per liter (µg/L).

2. Plume boundaries based on most recent results available at each well (2011).

N

0 30 60 120 Feet

Shaw®

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

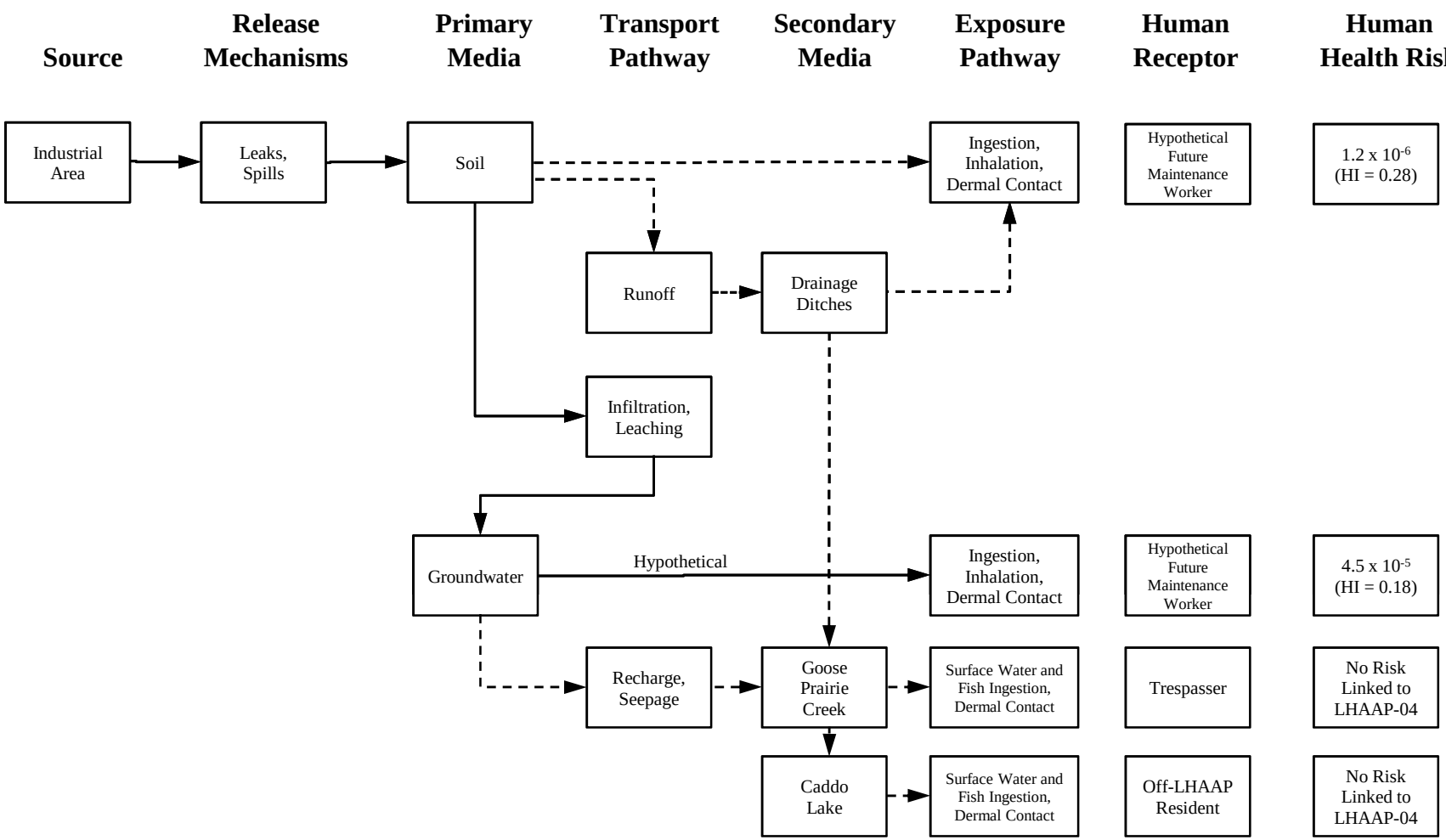
FIGURE 2-1

PERCHLORATE CONCENTRATIONS
IN GROUNDWATER
LHAAP-04 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

PLOT DATE: 11/16/2010
FORMAT REVISION: 02/17/2012

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		Drawing Number	
- - -	- - -	*HOUSTON, TX*	*L. Jones*	*5/6/08*	*R. DUFFIELD*	*11/15/10*	*S. WATSON*	*11/30/10*		117591-A31



Pathway considered for remedial measure

Pathway *not* considered for remedial measure

Note:

Human Health Risk from Final Baseline Human Health and Screening Ecological Risk Assessment for the Group 4 Sites (Jacobs, 2003). Recent perchlorate concentrations exceed the cleanup level (**Table 2-2**).

Shaw

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-2
CONCEPTUAL SITE MODEL
LHAAP-04 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

3.0 REMEDIAL ACTION OBJECTIVE AND REMEDIATION LEVELS

This section identifies the RAOs **(Section 3.1)**, potential chemical-, location- and action-specific ARARs **(Section 3.2)**, and preliminary cleanup levels **(Section 3.3)** for LHAAP-04. The RAOs identify the general goals or end points that the remediation will accomplish, while the preliminary cleanup levels identify specific cleanup standards for each medium of concern based on risk or ARARs. The cleanup levels may be applied to individual contaminants.

3.1 Remedial Action Objectives

RAOs are established to protect human health and the environment while also meeting ARARs. The identification of RAOs must consider the environmental issues at the site and the receptors that are affected. As identified in the conceptual site model (**Section 2.3**), the primary environmental issue at LHAAP-04 is:

- Groundwater that exceeds the MSC for industrial use for perchlorate and has the potential to adversely impact human health

The above RAO recognizes USEPA's policy to return all groundwater to beneficial uses, based upon the non-binding programmatic expectation in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and is consistent with the NCP regulations requiring the lead agency, the U.S. Army in this case, to establish RAOs specifying contaminants and media of concern, potential exposure pathways, and remediation goals. The future use of the entire LHAAP facility is as a wildlife refuge. A hypothetical future maintenance worker has been proposed as a conservative human receptor scenario for this land use. As documented in the Baseline Ecological Risk Assessment (Shaw, 2007c), ecological risk is not a concern at LHAAP-04. Based on these considerations, the RAOs for LHAAP-04 are as follows:

- Protect human health for the hypothetical future maintenance worker by preventing exposure to groundwater contaminated with perchlorate.
- Return groundwater to its potential beneficial use, wherever practicable, within a reasonable time period given the particular site circumstances.
- Protect human health and the environment by preventing groundwater contaminated with perchlorate from migrating into nearby surface water.

3.2 Applicable or Relevant and Appropriate Requirements

The NCP, 40 Code of Federal Regulations (CFR) 300.430(f)(1)(ii)(B) states that on-site remedial actions conducted under CERCLA must attain, or have waived, legally applicable ARARs under federal or more stringent state environmental or facility citing laws identified at the time of the ROD signature. This section provides a preliminary identification and evaluation of potential federal and State of Texas chemical-, location-, and action-specific ARARs for the remediation of LHAAP-04 under CERCLA.

3.2.1 Definitions and Methods

Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site (40 CFR 300.5). A requirement is applicable if all the jurisdictional and site-specific prerequisites of the requirement are met; that is, a requirement is applicable if it directly and fully addresses the situation at the site.

Relevant and appropriate requirements are those substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable, address problems or situations sufficiently similar to those encountered at the CERCLA site so that their use is well suited to the particular site (40 CFR 300.5). The criteria for determining relevance and appropriateness are listed at 40 CFR 300.400(g)(2). A relevant and appropriate requirement must be complied with to the same extent as an applicable requirement.

To qualify as a state ARAR mandating cleanup standards under 40 CFR 300.400(g)(4) of the NCP, a state requirement must be (1) promulgated (of general applicability and legally enforceable), (2) an environmental or facility citing law or regulation, (3) substantive (not procedural or administrative), (4) more stringent than a comparable federal requirement, (5) identified by the state in a timely manner, and (6) consistently applied throughout the state. Pursuant to USEPA guidance (USEPA, 1989), where USEPA has delegated to a state the authority to implement a federal program, the state regulations replace the equivalent federal requirements as the potential ARARs.

ARARs are generally divided into chemical-, location-, and action-specific requirements. Chemical-specific ARARs are usually promulgated health- or risk-based numerical values or methods used to determine acceptable concentrations of chemicals that may be found in, or discharged to, the environment. Location-specific ARARs restrict actions or contaminant concentrations in certain environmentally sensitive areas. Action-specific ARARs are

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

usually technology- or activity-based requirements, or limitations on actions taken with respect to hazardous wastes.

An on-site action need not comply with administrative parts of requirements identified as ARARs. According to USEPA guidance (USEPA, 1988a), administrative requirements are mechanisms that facilitate the implementation of the related substantive requirements of a statute or regulation (e.g., approval of or consultation with administrative bodies, documentation, permit issuance, reporting, record keeping, and enforcement).

The NCP at 40 CFR 300.400(e)(1) exempts on-site actions from having to obtain federal, state, or local permits and defines "on-site" as meaning "the aerial extent of contamination and all suitable areas in very close proximity to the contamination necessary for the implementation of the response action." However, on-site actions must still be in compliance with any substantive permit requirements. Off-site actions must not only comply with requirements that are legally applicable, but they must comply with both the substantive and the administrative parts of those requirements. Permits, if required, must be obtained for all remedial activities conducted off site (40 CFR 300.400[e][2]). Statutory waivers of ARARs (40 CFR 300.430[f][1][ii][C]) may not be used for off-site actions.

The USEPA has noted in its CERCLA guidance that if attainment of a numerical value that is a potential chemical-specific ARAR is impossible because the background level of the chemical subject to CERCLA authority is higher than that of the potential ARAR, the numeric criterion would not be considered an ARAR (USEPA, 1991).

ARARs include only federal or more stringent state environmental laws and regulations and do not include occupational safety regulations. The USEPA requires compliance with the Occupational Safety and Health Administration (OSHA) standards and other worker protection requirements under Section 300.150 of the NCP, not through the ARARs process. Therefore, none of the promulgated OSHA regulations (e.g., 29 CFR 1926, 29 CFR 1910) are addressed here as ARARs.

Chemical-specific requirements are discussed in **Section 3.2.2**; **Table 3-1** includes a narrative listing of chemical-specific ARARs for LHAAP-04. **Table 3-2** includes a numerical listing of chemical-specific ARARs for groundwater. Location-specific ARARs for the sensitive resources potentially identified at LHAAP are discussed in **Section 3.2.3**. Action-specific ARARs are listed in **Table 3-3** and are grouped by component action.

3.2.2 Potential Chemical-Specific ARARs

This section identifies the potential chemical-specific ARARs that apply to groundwater at LHAAP-04. These ARARs are summarized in **Table 3-1**.

3.2.2.1 Chemical-Specific ARARs for Soil

Soil is not a media of concern at LHAAP-04.

3.2.2.2 Chemical-Specific ARARs for Air

It is unlikely the proposed actions in this FS would cause emissions that would impact the air.

3.2.2.3 Chemical-Specific ARARs for Surface Water

Section 121(d)(2) of CERCLA states that every remedial action shall require a level of control which at least attains surface water quality criteria established under Sections 304 or 303 of the Clean Water Act of 1972 (CWA). Therefore, surface water quality criteria are ARARs if there is a remedial action that affects surface water, and measures will be implemented during construction to prevent off-site migration of contaminants to surface waters. In the event of remedy failure resulting in a release to surface water, 40 CFR 122, 125, 129, 130, and 131 and 30 TAC 307.1, 307.2, 307.3, 307.4, 307.5(a) and (b), 307.6, 307.7, 307.8 and 307.9 are considered potential future ARARs.

3.2.2.4 Chemical-Specific ARARs for Groundwater

Where the beneficial use of groundwater is as a current or potential source of drinking water, USEPA states a preference for Safe Drinking Water Act (SDWA) of 1974 non-zero MCL goals and MCLs where they are relevant and appropriate [CERCLA 121(d)(2)(A), as amended, and 40 CFR 300.403(e)(2)(i)(B) and (C)]. Data from the Phase III RI field activities indicate that contaminants at LHAAP-04 have impacted groundwater and that remediation of the groundwater to achieve chemical-specific ARARs may be necessary as a component of this response action (Jacobs, 2002).

LHAAP is being addressed using the Risk Reduction Standards (RRS) (30 Texas Administrative Code [TAC] 335.551 through 335.569). The RRS were provided to ensure adequate protection of human health and the environment from potential exposure to contaminants associated with releases from solid waste management facilities or other areas. There are three sets of RRS that provide cleanup level ranging from closure/remediation to site background (RRS 1) to closure/remediation with controls (RRS 3). For the purposes of this FS, under the hypothetical future maintenance worker scenario, a Baseline Risk Assessment under RRS 3 was completed for LHAAP-04 which identified COCs in groundwater that potentially pose unacceptable non-carcinogenic hazard to the hypothetical future maintenance worker. The only identified COC is perchlorate, which has no MCL. Thus, the cleanup level for groundwater will be the GW-Ind, a medium-specific concentration provided under Texas Risk Reduction Rules (30 TAC 335.551 through 335.569).

3.2.3 Potential Location-Specific ARARs

There are no potential location-specific ARARs associated with this site.

3.2.4 Potential Action-Specific ARARs

Action-specific ARARs include operation, performance and design requirements or limitations based on the waste types, media, and remedial activities. This section provides a preliminary identification and evaluation of potential federal and state of Texas action-specific ARARs for the proposed remediation of LHAAP-04.

Pursuant to USEPA guidance, there are no action-specific ARARs for the required no action alternative (USEPA, 1991). The action-specific ARARs for the activities common to the remedial action to be conducted at LHAAP-04 are discussed in **Section 3.2.4.1** below. All action-specific ARARs are listed in **Table 3-3** and are grouped by component action.

3.2.4.1 ARARS for Activities Associated with Action Alternatives

Some of the proposed remedial action alternatives at LHAAP-04 will involve one or more of the following activities: waste generation, characterization, management, storage, and disposal activities; land use control (LUC), and long-term monitoring (LTM). Action-specific ARARs are discussed here for the activities common to the remedial activities to be proposed for LHAAP-04.

3.2.4.1.1 Waste and Disposal Activities

The processes of monitoring, intercepting, or treating contaminated groundwater may generate a variety of primary and secondary waste streams (e.g., soil, personal protective equipment, and dewatering and decontamination fluids). These waste streams are expected to be non-hazardous waste. All solid waste (defined as any solid, liquid, semisolid, or contained gaseous material intended for discard [40 CFR 261.2]) generated during remedial activities must be appropriately characterized to determine whether it contains RCRA hazardous waste (40 CFR 262.11; 30 TAC 335.62; 30 TAC 335.503[a][4]; 30 TAC 335.504). All wastes must be managed, stored, treated (if necessary), and disposed in accordance with the ARARs for waste management listed in **Table 3-3** for the particular type of waste stream or contaminants in the waste.

3.2.4.1.2 Well Construction

The remedial action may involve the placement, use, or eventual plugging and abandonment of some type of groundwater monitoring, injection, and/or extraction wells, either for in situ treatment or extraction of the contaminated groundwater or for LTM of the groundwater. Available standards for well construction and plugging/abandonment would provide ARARs for such actions and include 30 TAC 331, Subchapters A, C, and H.

Texas has promulgated technical requirements in Chapter 76 of Title 16 of the TAC applicable to construction, operation, and plugging/abandonment of water wells. In particular, 16 TAC 76.1000 (*Locations and Standards of Completion for Wells*), 16 TAC 76.1002 (*Standards for Wells Producing Undesirable Water or Constituents*) (LHAAP-04 contaminated groundwater could be considered "undesirable water" defined pursuant to Section 76.10[36] as "water that is injurious to human health and the environment or water that can cause pollution to land or other waters"), 16 TAC 76.1004 (*Standards for Capping and Plugging of Wells and Plugging Wells that Penetrate Undesirable Water or Constituent Zones*), and 16 TAC 76.1008 (*Pump Installation*) may provide ARARs for the placement, construction, and eventual plugging/abandonment of groundwater injection or extraction wells or the placement and long-term operation of groundwater monitoring wells for proposed groundwater remedial strategies.

3.2.4.1.3 Water Treatment

Contaminated groundwater and wastewaters collected during well drilling or decontamination activities could be transported to the groundwater treatment plant at LHAAP-18/24 for processing, and would subsequently be discharged in compliance with the effluent limits for that plant. Such waters would be characterized, as required, before transport and managed accordingly in compliance with requirements for the type of waste contaminating the water. To assure compliance with the groundwater treatment plant's discharge limits, the incoming water must meet the waste acceptance criteria for the facility. On-site wastewater treatment units (as defined in 40 CFR 260.10) that are part of a wastewater treatment facility that is subject to regulation under Section 402 or Section 307(b) of the CWA are not subject to RCRA Subtitle C hazardous waste management standards (40 CFR 270.1[c][2][v]; 40 CFR 264.1[g][6]; 30 TAC 335.42[d][1]). The USEPA has clarified that this exemption applies to all tanks, conveyance systems, and ancillary equipment, including piping and transfer trucks, associated with the wastewater treatment unit (Federal Register [FR] Title 53, 34079, September 2, 1988).

3.3 Proposed Cleanup Level

Table 3-2 presents the single COC in groundwater, perchlorate, and the proposed cleanup level. The cleanup level is based on the TCEQ's GW-Ind since no MCL exists, as discussed in **Section 3.2.2.4**.

Table 3-1
Potential Chemical-Specific ARARs

Citation	Activity or Prerequisite/Status	Requirement
Groundwater		
State of Texas Risk Reduction Standards 30 TAC 335.558 and 335.559(d)(2) as updated in the Texas Commission on Environmental Quality memorandum July 23, 1998	Applicable to industrial groundwater—relevant and appropriate for potential hypothetical future maintenance worker exposure to groundwater	If no maximum contaminant level has been promulgated, groundwater must not exceed the industrial medium-specific concentration. See Table 3-2 for specific numeric criteria.

Abbreviations:

ARAR	applicable or relevant and appropriate requirement
TAC	Texas Administrative Code

Table 3-2
Chemical-Specific ARARs (Proposed Cleanup Level)

COC	ARAR
Groundwater	GW-Ind (µg/L)
Perchlorate	72

Abbreviations:

µg/L	micrograms per liter
ARAR	applicable or relevant and appropriate requirement
COCs	chemicals of concern
GW-Ind	groundwater medium-specific concentration for industrial use

Table 3-3
Potential Action-Specific ARARs

Citation	Activity or Prerequisite/Status	Requirement
Waste Generation, Management, and Storage		
Characterization of Solid Waste 40 CFR 262.11 30 TAC 335.62 30 TAC 335.504 30 TAC 335.503(a)(4)	Generation of solid waste, as defined in 30 TAC 335.1—applicable. (The material removed during excavation was tested for reactivity, corrosivity, and ignitability and did not display those RCRA hazard characteristics).	Must determine whether the generated solid waste is RCRA hazardous waste by using prescribed testing methods or applying generator knowledge based on information regarding material or process used. If the waste is determined to be hazardous, it must be managed in accordance with 40 CFR 262–268. After making the hazardous waste determination as required, if the waste is determined to be nonhazardous, the generator shall then classify the waste as Class 1, Class 2, or Class 3 (as defined in Section 335.505 through Section 335.507) using one or more of the methods listed in Section 335.503(a)(4) and Section 335.508 and manage the waste in accordance with the requirements of Chapter 335 of the TAC for industrial solid waste.
Characterization of Hazardous Waste 40 CFR 264.13(a)(1); 40 CFR 268.7 30 TAC 335.504(3) 30 TAC 335.509 30 TAC 335.511	Generation of a RCRA hazardous waste for treatment, storage, or disposal—applicable if hazardous waste is generated (e.g., PPE).	Must obtain a detailed chemical and physical analysis of a representative sample of the waste(s) that at a minimum contains all the information that must be known to treat, store, or dispose of the waste in accordance with 40 CFR 264 and 268. Must also determine whether the waste is restricted from land disposal under 40 CFR 268 et seq. by testing in accordance with prescribed methods or use of generator knowledge of waste.
Requirements for Temporary Storage of Hazardous Waste in Accumulation Areas 40 CFR 262.34(a) and (c)(1) 30 TAC 335.69(a) and (d)	On-site accumulation of 55 gallons or less of RCRA hazardous waste for 90 days or less at or near the point of generation—applicable if hazardous waste is generated (e.g., PPE) and stored in an accumulation area.	A generator may accumulate hazardous waste at the facility provided that • Waste is placed in containers that comply with 40 CFR 264.171 to 264.173 (Subpart I); and • Container is marked with the words "hazardous waste"; or • Container may be marked with other words that identify the contents.
Wells		
Well Construction Standards—Monitoring or Injection Wells 16 TAC 76.1000	Construction of water wells—applicable to construction of new monitoring or injection wells, if needed.	Wells shall be completed in accordance with the technical requirements of Section 76.1000, as appropriate.
Class V Injection Wells 30 TAC 331, Subchapter A, C and H	Installation, operation, and closure of injection wells for in situ bioremediation fall in the category of Class V Injection Wells—relevant and appropriate	Injection wells shall be constructed to the required specifications for isolation casing, surface completion, prevention of commingling, and confinement of undesirable groundwater to its zone of origin. Closure shall be accomplished by removing all of the removable casing and the entire well shall be pressure filled via a tremie pipe with cement from bottom to the land surface, or closure shall be performed by the alternative method for Class V Wells completed in zones of undesirable groundwater. Groundwater concentrations at time of well closure will determine the appropriate method of abandonment.

Table 3-3 *(continued)*
Potential Action-Specific ARARs

Citation	Activity or Prerequisite/Status	Requirement
Well Construction Standards—Extraction Wells 16 TAC 76.1000(a) and (c) through (h) 16 TAC 76.1002(a) through (c) 16 TAC 76.1008(a) through (c)	Construction of water wells—applicable to construction of extraction (recovery) wells.	Wells shall be completed in accordance with the technical requirements of Section 76.1000, as appropriate. Water wells completed to produce undesirable water shall be cased to prevent the mixing of water or constituent zones. The annular space between the casing and the wall of the borehole shall be pressure grouted with cement or bentonite grout to the land surface. Bentonite grout may not be used if a water zone contains chloride water above 1500 ppm or if hydrocarbons are present. Wells producing undesirable water or constituents shall be completed in such a manner that will not allow undesirable fluids to flow onto the land surface. During installation of a water well pump, installer shall make a reasonable effort to maintain integrity of groundwater and to prevent contamination by elevating the pump column and fittings, or by other means suitable under the circumstances. Pump shall be constructed so that no unprotected openings into the interior of the pump or well casing exist.
Treatment/Disposal		
Disposal of Wastewater (e.g., contaminated groundwater, dewatering fluids, decontamination liquids) 40 CFR 268.1(c)(4)(i) 30 TAC 335.431(c)	RCRA-restricted characteristically hazardous waste intended for disposal—applicable if extracted groundwater is determined to be RCRA characteristically hazardous .	Disposal is not prohibited if such wastes are managed in a treatment system subject to regulation under Section 402 of the CWA that subsequently discharges to waters of the United States.
Closure		
Standards for Plugging Wells that Penetrate Undesirable Water or Constituent Zones 16 TAC 76.1004(a) through (c)	Plugging and abandonment of wells—applicable to plugging and closure of monitoring and/or extraction wells.	If a well is abandoned, all removable casing shall be removed and the entire well pressure filled via a tremie pipe with cement from bottom up to the land surface. In lieu of this procedure, the well shall be pressure-filled via a tremie tube with bentonite grout of a minimum 9.1 lb/gal weight followed by a cement plug extending from land surface to a depth of not less than 2 feet. Undesirable water or constituents or the freshwater zone(s) shall be isolated with cement plugs.

Abbreviations:

ARAR	applicable or relevant and appropriate requirement	PPE	personal protective equipment
CFR	Code of Federal Regulations	ppm	part per million
CWA	Clean Water Act of 1972	RCRA	Resource Conservation and Recovery Act of 1976
FR	Federal Register	TAC	Texas Administrative Code
lb/gal	pound per gallon	USEPA	U.S. Environmental Protection Agency

4.0 IDENTIFICATION AND SCREENING OF TECHNOLOGIES AND PROCESS OPTIONS

The primary objective of identifying, screening, and evaluating potentially applicable technology types and process options for the LHAAP-04 FS is to identify an appropriate range of remedial technologies and process options to be developed into remediation alternatives. This screening process consists of a series of analytical steps that include the following:

- Identify volumes or areas of media of concern, and COCs **(Section 4.1)**
- Identify general response actions (GRAs) **(Section 4.2)**
- Identify and screen remedial technologies and process options **(Section 4.3)**
- Evaluate and select representative process options **(Section 4.4)**

These steps are outlined in the USEPA RI/FS guidance (USEPA, 1988b) and the NCP.

4.1 Contaminants and Media of Concern

Section 1.0 presents the site conditions at LHAAP-04. Based on available sampling data, groundwater at LHAAP-04 has been identified as the medium of concern due to the presence of perchlorate concentrations exceeding GW-Ind in groundwater. The most recent concentrations are shown on **Figure 2-1**. One well, screened within the shallow groundwater zone, had detections of perchlorate above the cleanup level.

The area where perchlorate is detected was selected as a conservative basis for determining the vertical and horizontal extent of groundwater requiring remedial action at LHAAP-04. At 04WW04, a 1-foot-thick sand was observed in the silty clay, and the approximate vertical extent of the perchlorate is assumed to be 1 foot based on monitoring well boring logs. The perchlorate plume, as shown on **Figure 2-1**, is approximately 12,000 square feet.

Equation 4-1 estimates the total volume of contaminated groundwater in gallons by using the vertical and horizontal extents.

Horizontal extent of groundwater contamination (12,000 square feet) × vertical extent of groundwater contamination (1 foot) × total porosity (0.3) × 7.48 gallons per cubic foot = 26,928 gallons **Equation 4-1**

Therefore, an estimate of the volume of groundwater requiring remedial action equals approximately 27,000 gallons.

4.2 General Response Actions

GRAs are general actions that can be taken to achieve the RAO for the media of concern, which are groundwater at LHAAP-04. The potential applicability of GRAs and associated technologies was evaluated based on key factors that include the type and form of wastes, geologic characteristics, and location-specific constraints. **Table 4-1** summarizes the applicable GRAs for groundwater at LHAAP-04. A no action GRA must also be considered for a baseline of comparison.

4.3 Identification and Screening of Potentially Applicable Technologies

Presented below are general descriptions of potentially applicable technologies and process options for the GRAs. The term "process option" refers to specific processes within each technology type. For example, the in-situ treatment technology category could include process options such as permeable reactive barriers, enhanced bioremediation, or chemical oxidation. Several broad technology types may be identified for each general response action, and numerous process options may exist for each technology. Even within process options there are additional levels of choice, such as different agents for enhanced bioremediation.

The identification and screening process is performed in accordance with the CERCLA FS guidance document (USEPA, 1988b), as specified by the NCP (40 CFR Part 300, Subpart F). Initial identification as potentially applicable is based primarily on technical feasibility, using the following criteria:

- Compatibility with constituent characteristics
- Compatibility with site characteristics
- Ability to achieve RAO – either alone or as a component of a treatment train
- Development status – a technology must be developed to the point of field-scale demonstration so that information is available on performance, reliability, and cost.

Based on these criteria, some remedial action technologies and the associated process options were eliminated from further consideration. Those technology types considered most likely to meet the groundwater RAO are presented in **Table 4-2**.

4.4 Screening of Process Options

Each process option for a given technology provides a basis for developing remedial alternatives and evaluating their costs and attributes. However, the specific process used to

implement the remedial action may not be selected until the remedial design phase of the project (USEPA, 1988b). Furthermore, pilot or treatability studies conducted prior to or during the final design may indicate that the representative technology is not feasible. If this occurs, the next best demonstrated available technology is selected.

For GRAs with more than one process option, each option is evaluated according to the following criteria:

- **Effectiveness**—which includes evaluation of the following:
  - Potential effectiveness in handling the estimated areas or volumes of media
  - Potential in meeting the RAOs.
  - Potential impacts to human health and the environment during the construction and implementation phase.
  - Demonstrated reliability of the process with respect to contaminants and conditions at the site (USEPA, 1988b).

- **Implementability**—which includes both the technical and institutional feasibility of implementing a process option:
  - Technologies passing the initial screen of applicability are screened on the basis of technical feasibility. This criterion means feasibility under site-specific conditions. This evaluation may indicate that although a technology may be generally applicable for the COCs, the specific technology may be unworkable or limited due to site-specific conditions.
  - Institutional feasibility emphasizes the institutional aspects of implementability, such as the ability to obtain permits for off-site actions; the availability of treatment, storage, and disposal services (including capacity); and the availability of equipment and skilled workers to implement the technology (USEPA, 1988b).

- **Cost**—which plays a limited role in the screening of process options. Cost is considered a deciding factor only when two alternatives are found to be equally protective. Ranges or approximations of relative capital and operation and maintenance (O&M) costs are used rather than detailed estimates. The cost analysis is made on the basis of prior experience with technologies, readily available information, and engineering judgment. Each process is evaluated relative to other process options of the same technology type, based on a cost range.

Following selection of the most appropriate process options for each technology type, the process options are combined to form remedial alternatives. The remedial alternatives are discussed in **Section 6.0**.

4.5 Evaluation and Selection of Representative Process Options

In this section, the process options within each technology type are evaluated using three criteria: effectiveness, implementability, and cost. The most applicable process options are included in the development of remedial alternatives in the FS. The GRA of containment was not considered at LHAAP-04 due to the small extent of the perchlorate plume, removal of the perchlorate source, and surrounding wells with low or undetectable perchlorate concentrations.

4.5.1 No Action

The no action option does not provide for any groundwater remedial activities. No monitoring of the groundwater conditions occurs under this option. This option is retained as a baseline with which other remediation alternatives are prepared.

- **Effectiveness—**A lack of access controls or remediation of the groundwater from LHAAP-04 could result in a future unacceptable risk to human health if the groundwater is ingested.
- **Implementability—**No implementation is required.
- **Cost—**None.

4.5.2 Land Use Controls and Long-Term Monitoring

4.5.2.1 Land Use Controls

The land use controls (LUCs) would be implemented to support the RAOs. The U.S. Army would be responsible for long-term implementation, maintenance, inspection, reporting on, and enforcement of the LUCs. The U.S. Army will provide details of the LUCs long-term implementation and long-term maintenance actions in the RD for the site. The LUC for groundwater would prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing. The groundwater use prohibition LUC (except for environmental monitoring and testing) would be maintained until the concentrations of contaminants in groundwater had been reduced to levels below their respective cleanup levels. The LUC restricting land use to nonresidential would be implemented until the hazardous substances remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure. In addition, the Texas Department of Licensing and Regulation will be requested to notify well drillers of groundwater use prohibitions based on a LUC boundary. The recordation of the

LUCs with the Harrison County Courthouse would be completed and would include a map showing the areas of groundwater and nonresidential use restrictions at the site, in accordance with 30 TAC 335.565.

To transfer this property (LHAAP-04) to USFW to become part of the Caddo Lake National Wildlife Refuge, an Environmental Condition of Property (ECP) document would be prepared and the Environmental Protection Provisions from the ECP would be attached to the letter of transfer. The ECP would include the LUCs as part of the Environmental Protection Provisions. The property would be transferred subject to the LUCs identified in the ECP. These restrictions would prohibit or restrict property uses that might result in exposure to the contaminated groundwater (e.g., drilling restrictions). The U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of a LUCs objective at these sites after they have been transferred. The U.S. Army shall consult with TCEQ and obtain USEPA concurrence prior to termination or significant modification of LUCs, or in the highly unlikely event of a land use change inconsistent with the industrial/recreational use assumptions of the remedy. In the event that TCEQ and/or USEPA and the U.S. Army agree with respect to any significant modification of the selected remedy, including the LUCs component of the selected remedy, the remedy will be changed consistent with the FFA and 40 CFR 300.435(c)(2).

- **Effectiveness—**LUCs are effective, if enforced, in controlling human activities such as potable well construction. The five-year review will ensure that the LUCs are enforced and remain effective.
- **Implementability—**These options can be readily implemented.
- **Cost—**Low.

Summary of Land Use Controls Process Option

LUCs are carried forward as a representative process option. This process option could be combined with other process options to meet the RAOs.

4.5.2.2 Long-Term Media Monitoring

Environmental media (e.g., groundwater) can be monitored after the implementation of the remedial action to determine the effect the remedy has had on the level of contamination. Long-term media monitoring can detect a potential failure of the action to meet the RAO. Monitoring can also be used to detect changes in expected site conditions or changes in the expected effectiveness of the remedy, and indicate whether additional actions should be implemented.

- **Effectiveness**—Long-term media monitoring would be successful in evaluating the effectiveness of a remedial alternative. The effectiveness of the monitoring system depends on the design of the monitoring plan.
- **Implementability**—Equipment and personnel are readily available. The site is readily accessible, and most monitoring techniques have already been implemented at LHAAP. Multiple groundwater-monitoring wells are already in place, and there is a reasonable baseline of groundwater conditions.
- **Cost**—Moderate due to labor and analytical costs.

Summary of Long-Term Media Monitoring

Long-term media monitoring is carried forward as a process option to be combined with other process options to meet the RAOs.

4.5.3 Groundwater Removal

4.5.3.1 Extraction Wells

Vertically installed wells are designed to collect and extract clean or contaminated groundwater to contain a plume or to reduce contaminant mass in the plume. Extraction wells have been used with mixed results at LHAAP.

- **Effectiveness**—Extraction wells are considered the most effective groundwater removal technology applicable over a wide range of site conditions. However, proper locations need to be selected to provide for effective extraction and long-term operation is required. LHAAP-04 contains discontinuous sand lenses that can limit the effectiveness of extraction.
- **Implementability**—This process is the single most commonly used method to remove groundwater in a very wide range of conditions. Some site predesign characterization may be needed to site new wells. Extraction wells are easy to install at depths required to intercept all depths of groundwater.
- **Cost**—Low to moderate.

Summary of Extraction Well Process

Extraction wells are retained as a representative groundwater removal process option, but the discontinuous sand lenses may limit the effectiveness.

4.5.3.2 Interceptor Trenches

An interceptor trench is a high permeability subsurface trench that collects contaminated groundwater. It is constructed and operates very much like a vertical French drain with the exception that the collected groundwater is actively pumped from the trench for ex situ treatment. The trench can be installed across the entire width of a shallow plume to more effectively capture contaminated groundwater.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

- **Effectiveness**—Interceptor trenches are generally very effective at collecting groundwater. The trench functions like a continuous line of extraction wells. However, the discontinuous nature of the permeable lenses which control shallow groundwater will limit the effective use of trenches.
- **Implementability**—Interceptor trenches are relatively easy to install with conventional construction equipment in the shallow groundwater zone. The process requires long-term maintenance to ensure that the permeable media and collection piping do not become clogged.
- **Cost**—Moderate to high.

Summary of Interceptor Trench Process Option

Interceptor trenches are retained as a representative groundwater removal process option since the discontinuous sand lenses may limit the effectiveness of groundwater extraction wells. Interceptor trenches have greater extraction capacity than wells.

4.5.4 In Situ Groundwater Remediation

Some conventional techniques used for in situ groundwater remediation are not applicable for perchlorate due to its chemical properties (air sparging, soil vapor extraction and oxidation) or depth of contamination at LHAAP-04 (phytoremediation). Perchlorate is not a volatile compound, so air sparging and soil vapor extraction would be ineffective. Oxidation is not an effective treatment for perchlorate because perchlorate is itself an oxidizer. Groundwater infiltration during the excavation at LHAAP-04 became significant at a depth of 14 feet bgs, too deep for effective phytoremediation.

4.5.4.1 Permeable Reactive Barriers

Permeable reactive barriers can be a physical/chemical or biological treatment option. A reactive barrier or gate is a permeable wall containing reactive media that is constructed across the path of a contaminant plume. As contaminated water passes through the wall, the contaminants are removed or degraded, allowing uncontaminated water to emerge on the downgradient side. Reactive barriers are usually installed through adaptation of conventional construction methods for impermeable barriers such as open trenches, polymer slurry trenches, and overlapping caissons. Reactive barriers may be constructed from a variety of materials including zero-valence metals (ZVM), granulated activated carbon (GAC), biological material, and other sorbents. These materials treat contaminants through a combination of mechanisms, including adsorption, chemical reduction, and biodegradation. Application of biological material (biotreatment) can be implemented as either a passive barrier wall or a network of injection points.

ZVM works by chemically reducing contaminants, thus either causing their degradation or limiting their mobility. A variety of metals can be used as reducing agents such as silver,

gold, palladium, copper, zinc, aluminum, manganese, and iron. In situ reactive gates require high volumes of ZVM, making the application of precious metals such as silver, gold, and palladium impractical. The most practical metal for this technology is iron, because of its relative abundance, low cost, and low toxicity. However, more expensive yet more effective forms of iron (pelletized iron) may be necessary, depending on the contaminant.

GAC is the most widely used adsorbent and filter medium because of its effectiveness on a variety of contaminants. GAC is chemically stable and will not produce secondary contaminants. The surface area of the carbon and the pH of the solution flowing through the medium determine the rate and effectiveness of GAC in adsorbing contaminants. In addition, different contaminants are adsorbed according to different ionic natures and kinetics.

- **Effectiveness—**The effectiveness of this process depends greatly on the contaminants, the reactive media, site hydrology, and site geochemistry. Reactive media clogging and exhaustion causes the need for periodic replacement. The gates are generally limited to shallower applications because of the difficulties in installing and monitoring the media at depth. There are concerns over the longevity of the reactive media given uncertain and changing chemical and physical conditions.
- **Implementability—**Permeable reactive barriers require adequate site and contaminant characterization and monitoring to determine effectiveness. This process requires treatability testing before full-scale implementation to determine potential physical and chemical interactions with surrounding materials, location within the aquifer, and criteria for replacement. Long-term maintenance requirements may be significant.
- **Cost—**Low to moderate.

Summary of Permeable Reactive Barrier Process Option

Permeable reactive barriers are not retained as a process option due to the heterogeneity of the site soils and the discontinuous soil lenses which would limit the effective installation of the barrier and the treatment effectiveness. The lack of a single clear direction of groundwater flow also limits the applicability.

4.5.4.2 Monitored Natural Attenuation

Monitored Natural Attenuation (MNA) is a passive remedial process option that will achieve the cleanup level over time. Natural processes such as dilution, volatilization, biodegradation, adsorption, and chemical reactions with subsurface materials are monitored to confirm their progress in reducing contaminant concentrations to acceptable levels over time. The perchlorate found at LHAAP-04 is amenable to this technology.

- **Effectiveness**—MNA is considered under CERCLA on a case-by-case basis. USEPA guidance has been developed to aid in the selection of this process option for VOCs. MNA has been selected for a number of CERCLA sites. It is effective when short-term releases have been mitigated and a determination is made that natural attenuation is occurring and that further off-site releases are not occurring at unacceptable levels. Regular monitoring must be conducted throughout the process to confirm that attenuation is occurring in accordance with cleanup objectives. There is not yet enough information available to perform an adequate MNA evaluation for perchlorate at LHAAP-04. The site circumstances, source of contamination removed, no exposure pathways complete, single well above the cleanup level, multiple surrounding wells for monitoring, and a nearby well (LHSMW01) that previously showed perchlorate above the cleanup level but is now below it, suggest that MNA may work at LHAAP-04.

- **Implementability**—Significant groundwater sampling and analyses must be performed to confirm that conditions are suitable for natural attenuation and to establish a monitoring network. Suitability includes plume delineation both horizontally and vertically. Thus, 3 new wells will be installed (2 shallow and 1 intermediate). It must also be confirmed that additional source releases and unacceptable off-site releases are not occurring.

- **Cost**—Low to moderate.

Summary of Monitored Natural Attenuation Process Option

MNA is carried forward as a representative process option. This process option could be combined with other process options to meet the RAOs.

4.5.4.3 Enhanced Bioremediation

This general process option covers a wide range of individual biological process options that rely on microbial transformation of contaminants under aerobic or anaerobic conditions into benign forms to obtain energy or carbon. Enhanced biodegradation is applicable to the groundwater at LHAAP-04. Excessively high concentrations of contaminants could be toxic to microbes. Many contaminants, including the COCs at LHAAP-04, can be biodegraded under anaerobic (without oxygen) conditions. The activity of microorganisms is greatly affected by pH, redox potential, temperature, oxygen content, and most importantly, nutrient availability. These conditions can be manipulated to achieve optimal conditions for microbial activity, accelerating the biodegradation of the target contaminants. The conditions are manipulated through the addition of nutrients or electron acceptors or donors.

- **Effectiveness**—In situ biodegradation is effective in either low oxygen conditions or high oxygen and methane conditions in a permeable media that enhances the continuing delivery of nutrients to the bacteria. The primary challenge for in situ biological treatment is to effectively introduce the bacteria

and nutrients to the affected areas and ensure adequate mixing and contact. The rate of destruction is typically slower than other competing processes, but fewer and less toxic byproducts result. Pilot-scale testing at other sites has demonstrated that some enhancements will allow indigenous bacteria to degrade perchlorate.

- **Implementability**—Enhancing the biological activity may be difficult in some of the low permeability soil at LHAAP-04 because of complications associated with the delivery of nutrients and oxygen. Equipment and expertise are readily available, but significant treatability testing would be required.
- **Cost**—Moderate.

Summary of Enhanced Bioremediation Process Option

Enhanced bioremediation has been retained as a process option that could be implemented in a target area to treat areas of highest concentrations.

4.5.5 Ex Situ Groundwater Treatment

4.5.5.1 Burning Ground No. 3 Groundwater Treatment Plant

Process wastewater and decontamination water are sent to the LHAAP groundwater treatment plant. This facility, which is currently processing contaminated groundwater from other LHAAP sites, includes unit operations such as neutralization, precipitation, biological digestion, and air stripping. The effluent from the plant is discharged to Harrison Bayou, or reinjected to LHAAP-18/24.

- **Effectiveness**—The existing facility is currently treating groundwater. The hydraulic capacity of the plant has not been met yet, so additional flow could be effectively handled. The discharge requirements are routinely met, indicating an effective operation.
- **Implementability**—The treatment plant is already operational. It is operating below current design capacity. Depending on the composition of the site water sent to the plant, it is possible that no revisions to the treatment components of the plant would be necessary.
- **Cost**—Low.

Summary of Ex Situ Treatment Process Options (Existing Treatment Plant)

Ex situ treatment at the existing groundwater treatment plant (GWTP) is not retained since this technology would require transport of water across bridges that would require reconstruction, or a land detour along another route. The spare capacity of the GWTP to handle additional water is also uncertain.

4.5.5.2 On-Site Mobile Treatment Plant

A small, skid-mounted or mobile treatment plant could be built near the point of groundwater extraction. The treatment system would be designed for removal of the perchlorate from the extracted groundwater. The December 2010 Fact Sheet for the Emerging Contaminant – Perchlorate (EPA-505-F-10-002) lists four technologies capable of removing perchlorate from extracted groundwater:

- Ion Exchange using perchlorate-selective or nitrate specific resins
- Bioremediation using packed bed or fluidized bed bioreactors
- Liquid Phase Carbon Adsorption using GAC to remove low levels of perchlorate; pretreatment may be necessary to prepare GAC for perchlorate removal
- Membrane Technologies such as electrodialysis and reverse osmosis

The ion exchange resins would be the simplest of the technologies to implement. The resins would be placed between influent and effluent tanks, and groundwater could be processed as needed. Bioremediation would be the most complicated, requiring nutrient addition and maintenance of the biota. The GAC was indicated for low levels of perchlorate which might require dilution of the extracted groundwater, at least in the beginning. Membrane technologies would create a concentrated perchlorate solution as a byproduct. The new treatment plant may require a pretreatment system (e.g., precipitation) if iron and other interfering metals are present in the groundwater.

- **Effectiveness**—The new system could be very effective. All of the considered technologies are proven effective and bioremediation is even used at an existing treatment plant at LHAAP. Smaller units have less operational flexibility and may expect deviations more often. However, this option would be effective.
- **Implementability**—The implementation of this option is more difficult than that of the existing treatment plant. A few studies would be needed to design the plant to meet the site conditions. This option is still reasonably easy to implement.
- **Cost**—Moderate. The capital costs of this option are considerably greater than that of the existing plant. However, there is potential that the operational costs could be minimized.

Summary of Ex Situ Treatment Process Options (New Treatment Plant)

Ex situ treatment with an on-site mobile treatment plant is retained since this technology would be effective in conjunction with groundwater extraction as a process option. The

simplest of the four noted technologies, ion exchange, is retained for specific evaluation in the alternative.

4.5.6 Disposal

4.5.6.1 Surface Water Discharge

This process option discharges treated wastewater into a surface water body, stream, or river. This would require piping and pumps or a gravity drain system to transport the treated water to the surface water discharge point. The treated wastewater would likely be discharged into a local surface water body. Currently, the existing treatment plant discharges into Harrison Bayou.

- **Effectiveness—**This process option is an effective method for disposal of water if the requisite National Pollutant Discharge Elimination System (NPDES) discharge limits can be met. The current treatment system discharges to Harrison Bayou through an NPDES-monitored point.
- **Implementability—**Discharge limits have already been selected for the current discharge point. The existing water treatment plant is currently discharging through this point; therefore, this process option would be easily implemented.
- **Cost—**Low.

4.5.6.2 Reinjection

Reinjection disposes of treated wastewater by reinjecting water into the subsurface. Currently, the existing treatment plant is permitted to reinject treated wastewater at selected interception trenches. A much smaller implementation of reinjection could be implemented at LHAAP-04.

- **Effectiveness—**This process option is an effective method for disposal of water from an ex situ treatment plant. The reinjected groundwater has the potential to flush out additional contaminants between the injection and extraction sites.
- **Implementability—**The existing water treatment plant is currently injecting treated groundwater at several interception trenches; therefore, this process option could be readily implemented at a smaller scale at LHAAP-04.
- **Cost—**Low.

Summary of Disposal Process Options

Surface water discharge is not retained since it would be evaluated in combination with the existing treatment plant which has been eliminated as a process option. Reinjection is retained since it is currently part of the operation of the existing groundwater treatment plant, and the small amount of water processed at LHAAP-04 could be reinjected locally.

4.5.7 Summary of Representative Process Options for Groundwater

The following technologies/process options remain after screening:

- No Action
- Land Use Controls
- Long-Term Monitoring
- Monitored Natural Attenuation
- Groundwater Removal by Vertical Wells or ICTs
- In Situ Bioremediation
- Ex Situ Treatment (On-Site Mobile Treatment Plant with Ion Exchange)
- Reinjection

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

Table 4-1
General Response Actions at LHAAP-04

GRA	Description
No Action	No remedial measures. Does not satisfy RAOs, but must be evaluated as the baseline for comparison of other response actions and alternatives.
Land Use Controls	Application of administrative actions such as land use restrictions and deed recordations or monitoring to protect public health and the environment through management of potential risk.
Groundwater Removal	Extraction of contaminated groundwater for on-site treatment or off-site treatment/disposal
Groundwater Treatment	Treatment of contaminated groundwater in-situ or ex situ.
Groundwater Containment	Isolation of contaminated groundwater using subsurface barriers or an engineered cap. Typically requires combination of other GRAs such as removal/treatment.
Groundwater Disposal	Treatment/disposal of contaminated groundwater. Typically coupled with removal/treatment general response action.

Abbreviation:
RAO remedial action objective

Table 4-2
Identification and Screening of Groundwater Remedial Action Technologies LHAAP-04

General Response Action Technology Type	Description and Process Options	Comments	Retain for Further Evaluation?
A. No Action	No remedial measures to be taken.	The "No Action" alternative must be fully evaluated according to 40 CFR 300.68.	Yes
B. Land Use Controls	Restrict future land use to nonresidential and prohibit use of and access to the contaminated groundwater to prevent unauthorized exposure to contaminated media. Includes: • Land Use Controls	A feasible approach for preventing exposure to on-site contamination while the remedy is implemented	Yes
	Monitor degradation and groundwater plume stability. Includes: • Long-Term Media Monitoring	Use to determine the effects of the applied remedy, and to evaluate effectiveness of MNA	Yes
C. Groundwater Removal • Groundwater extraction	Remove groundwater from the subsurface to relocate it or prepare it for treatment. Includes: • Extraction wells	A routine procedure using traditional methods such as vertical wells.	Yes
	• Interceptor trenches	Some methods are more complex such as trenches. Combined with on- or off-site treatment technologies.	Yes
D. Groundwater Treatment • In situ treatment	• Air sparging/soil vapor extraction • Oxidation • Permeable reactive barriers Phytoremediation	Other technologies are not retained due to site-specific or chemical-specific considerations.	No
	Treat groundwater in place to reduce the contaminant mobility or toxicity. Includes: • Monitored Natural Attenuation • Bioremediation	Generally proven technologies. Subsurface soil and groundwater characteristics will impact performance.	Yes
• Ex situ treatment	Treat extracted groundwater or vapor after removal from the subsurface • Burning Ground No. 3 Groundwater Treatment Plant.	Burning Ground No. 3 Groundwater Treatment Plant is operational but may not have the capacity for groundwater treatment.	No

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

Table 4-2 *(continued)*
Identification and Screening of Groundwater Remedial Action Technologies LHAAP-04

General Response Action Technology Type	Description and Process Options	Comments	Retain for Further Evaluation?
	• On-site mobile treatment Ion Exchange Bioremediation Liquid Phase Carbon Membrane Technology	On-site mobile treatment is retained for evaluation with ion exchange.	Yes
E. Groundwater Containment	Isolate groundwater plume in place. Includes: • Slurry walls • Engineered caps	A soil source area in the unsaturated zone was identified and has been removed. Effective uses of containment include isolation of high concentration source areas and minimizing plume migration. Based on recent data, the plume does not appear to be migrating and is expected to remain or recede since the soil source material in the unsaturated zone was removed. Additional monitoring well installation and sampling will need to be conducted to adequately evaluate plume behavior.	No
F. Groundwater Disposal	Discharge of treated groundwater: • To surface water • By irrigation	Straightforward technology assuming treatment techniques have met permit requirements. Two options not retained since disposal would be used in conjunction with existing GWTP, which was eliminated.	No
	• By reinjection	Retained for use with mobile treatment plant.	Yes

Abbreviation:
CFR Code of Federal Regulations

5.0 DEVELOPMENT AND DESCRIPTION OF ALTERNATIVES

Section 5.1 presents the development of a range of alternatives based on the key assumptions regarding site and contaminant conditions **(Section 2.0)**, the RAOs **(Section 3.0)**, and the representative process options **(Section 4.0)**. **Section 5.2** presents the detailed description of the alternatives.

5.1 Development of Alternatives

5.1.1 Requirements and Preferences

The CERCLA process, as defined in the NCP, develops a remedy that protects human health and the environment, complies with ARARs (unless a statutory waiver is justified and granted), is cost-effective, and uses permanent solutions and alternative treatment or resource recovery technologies to the maximum extent practicable. A statutory preference for remedies that would result in permanent and significant decreases in toxicity, mobility, or volume through treatment and provide long-term protection is stated in Section 121 of CERCLA, as amended.

The NCP defines the following preferences in developing remedial action alternatives:

- Use of treatment to address the "principal threats" posed by a site, wherever practical.
- Use of engineering controls, such as containment, for waste that poses a relatively low, long-term threat and for which treatment is not practical.
- Implementation of a combination of actions, as appropriate, to achieve protection of human health and the environment. For example, in appropriate site situations, treatment of principal threats would be combined with engineering controls, such as containment, and LUC for treatment residuals and untreated waste.
- Use of LUC, such as drinking water supply controls and covenants, to supplement engineering controls for short- and long-term management to prevent or limit exposures to hazardous substances.
- Selection of an innovative technology when the technology offers the following: the potential for comparable or better treatment performance or implementability, fewer or lesser magnitude adverse impacts than other technologies, or lower costs than demonstrated technologies for similar levels of performance.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

These statutory requirements and preferences were given due consideration in the development of alternatives for LHAAP-04.

5.1.2 Development using Remediation Strategies and Process Options

The media at LHAAP-04 presenting an unacceptable risk or hazard is groundwater. The purpose of the remedial alternatives discussion is to present the decision maker with technical and economic options to select the most appropriate option for remediation of groundwater at LHAAP-04. Although all of the action alternatives have been designed to achieve the RAOs and the statutory requirements under CERCLA, each alternative must also be sufficiently unique in its strategy and approach that the range of alternatives represents a reasonable spectrum of final site conditions in the view of the decision makers.

The process options that remain after screening are grouped and combined into alternatives to address the RAOs.

5.2 Description of Remedial Alternatives

The following sections describe the remedial alternatives. The level of detail presented here supports the detailed evaluation and cost estimate in **Section 6.0** and **Appendix B**, respectively. Designs and process options other than those considered here may be substituted once the decision on remedial approach is made.

5.2.1 Alternative 1 – No Action Alternative

As required by the NCP, the no action alternative provides a comparative baseline against which the action alternatives can be evaluated. Under this alternative groundwater would be left "as is," without implementing any additional containment, removal, treatment, or other mitigating actions. No other actions would be implemented to reduce existing or potential future exposure to human and ecological receptors.

5.2.2 Alternative 2 – Monitored Natural Attenuation, LUCs

Alternative 2 has been developed to provide actions that may be taken to limit public exposure immediately through LUCs and to demonstrate that the groundwater contamination is reducing by natural processes.

For this alternative, it is assumed that a monitoring program will be designed and implemented in accordance with USEPA protocol for evaluating natural attenuation of inorganic compounds including perchlorate in groundwater (USEPA, 2007) and performance monitoring of perchlorate in groundwater. Groundwater remediates naturally through intrinsic bioremediation and other physical loss mechanisms which are monitored to ensure that groundwater contamination remains localized and that contaminant migration, if any, is minimal. The toxicity, mobility or volume of groundwater contaminants is not reduced by

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

any engineering process. Instead, concentrations of COCs in groundwater are reduced through natural processes including biodegradation, dispersion, adsorption, volatilization, and dilution over time and with distance from the source. To document that natural attenuation is occurring, a groundwater monitoring program will be implemented at the site. The USEPA provides guidance for monitored natural attenuation as a remedial action in use of *Monitored Natural Attenuation at Superfund, RCRA, and Underground Storage Tank Sites (USEPA, 1999).* USEPA guidance specifies recommended lines of evidence to document natural attenuation at a site. This section presents a description of the alternative that may be used to implement MNA at LHAAP-04. **Figure 5-1** shows the approximate perchlorate plume as determined from currently available data and the potential wells to be sampled regularly for monitored natural attenuation.

5.2.2.1 Additional Site Investigation

Due to concerns about the scarcity of shallow zone monitoring wells in two directions, and the entire lack of any intermediate zone monitoring well, two additional shallow zone monitoring wells (04WW06 and 04WW07) and one intermediate monitoring well (04WW08) will be installed at the approximate locations noted on **Figure 2-1**. A set of groundwater samples will be collected from these newly installed wells and the existing wells to serve as a baseline for comparison, and to better define the perchlorate plume.

- **Defining the perchlorate plume.** Currently shallow monitoring well 04WW04 is impacted and was installed in the area where the highest concentrations in soil were observed. Shallow groundwater is present in a thin (1-foot thick) discontinuous sand lenses which occur in a formation consisting primarily of clay to silty clay. At 04WW04, fine-grained sand was observed in the silty clay over the 10-foot interval that was screened. To define the limits of the perchlorate plume for monitoring, additional characterization will be performed. The purpose of this additional characterization is: 1) to better define the shallow zone (sand lenses or fine-grained sands [seams] impacted), 2) determine the concentration of perchlorate and obtain geochemistry information, and 3) identify the hydraulic properties of the shallow zone. This information is necessary to obtain hydraulic and geochemistry information. Some of the parameters that are important to consider include the hydraulic properties of the plume; soil type and properties; pH; salinity, competing electron acceptors (e.g., sulfates, nitrates) and the presence or absence of inhibitory substances. For cost estimating purposes, it includes three sample locations.

These additional site investigation activities will be performed prior to completion of the remedial design.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

5.2.2.2 Monitored Natural Attenuation

With the installation of the new wells and discovery of the plume, minimal data is available and will not support an MNA evaluation at this time. Thus, Alternative 2 will require collection of data to determine whether natural attenuation is occurring.

For this alternative, it is assumed that a monitoring program will be implemented to evaluate the effectiveness of the natural attenuation at the site. Monitoring well 04WW04 currently provides groundwater data to represent the groundwater contamination. The other proposed wells are downgradient and will be used to monitor any plume migration.

Monitored Natural Attenuation Performance Monitoring

MNA performance monitoring will be performed quarterly for the first two years. After eight quarterly sampling events, MNA will be evaluated. The analytical program will consist of perchlorate and chloride speciation. Initially, the following geochemical parameters will also be included in the analytical program, dissolved oxygen (field), redox potential (field), sulfate, nitrate, nitrites, alkalinity, TOC, and ferrous iron (field). The specific number of wells to be monitored will be determined in the remedial design. However, for cost estimating purposes, monitoring of eight wells is included.

Annual reports will be prepared as needed to document the program. Sampling frequency or analytical suite may be modified based on the results of the sampling program.

5.2.2.3 Long-Term Operation

The number of wells to be monitored will be determined in the remedial design. However, for cost estimating purposes, monitoring of eight wells is included for sampling as indicated in the following paragraph.

Long-term operations will begin after the eight quarters of MNA performance monitoring. The sampling frequency will then be changed to semiannually. Sampling and analysis of groundwater would be performed at LHAAP-04 for perchlorate and general chemistry parameters. Monitoring would be required to demonstrate that natural attenuation is occurring, as well as compliance with ARARs and the RAOs. Data obtained during the monitoring program will be used in support of the five-year reviews required by CERCLA Section 121(c). The sampling frequency may be reduced if the data suggest that less frequent sampling is appropriate.

For cost estimating purposes, the long-term monitoring schedule is assumed to be semiannual for years 3 through 5, annually for years 6 through 10, and every 5 years thereafter. Future sampling frequency will be evaluated and determined during the five-year reviews. The location and number of monitoring wells included in the LTM program will be

reviewed on an annual basis. Any well that is proposed for the LTM program that becomes damaged, or is required to be removed due to construction or other activities, may be replaced or repaired, as needed. The need for continuing LTM at the location will be evaluated based on existing and expected future groundwater conditions. All water quality results, and the results of the review, will be provided in annual monitoring reports or as needed. The estimated cleanup time of 12 years is based on half life of 1.9 years using limited data from other LHAAP monitoring wells with similar perchlorate concentrations, and actual cleanup time could be higher or lower than this estimate. The cost estimate assumes sampling will cease after year 15, and uses a 30-year evaluation period.

5.2.2.4 Land Use Controls

The alternative includes a LUC for groundwater to prevent human exposure to contaminated groundwater by prohibiting the use of groundwater except for environmental monitoring and testing only. When the cleanup level is achieved, the LUC will be terminated. The alternative also includes a LUC restricting land use to nonresidential until hazardous substances remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure.

5.2.3 Alternative 3 – In Situ Bioremediation, LUCs

The goals of this alternative are to achieve ARARs for the COCs in the plume area where contaminant concentrations in groundwater are above the cleanup level and to prevent human exposure to groundwater contamination until the ARARs are achieved. In situ bioremediation will be implemented to reduce groundwater contaminant concentrations to the cleanup level, and maintain LUCs. Achievement of the cleanup level in groundwater will be expedited by remediating groundwater in a hot spot area around monitoring well 04WW04. **Figure 5-2** shows a potential array of injection points for in situ bioremediation.

5.2.3.1 Additional Site Investigation

Due to concerns about the scarcity of shallow zone monitoring wells in two directions, and the entire lack of any intermediate zone monitoring well, two additional shallow zone monitoring wells (04WW06 and 04WW07) and one intermediate monitoring well (04WW08) will be installed at the approximate locations noted on **Figure 2-1**. A set of groundwater samples will be collected from these newly installed wells and the existing wells to serve as a baseline for comparison, and to better define the injection area.

- **Defining the injection area.** Currently shallow monitoring well 04WW04 is impacted and was installed in the area where the highest concentrations in soil were observed. Even though the soils have been removed that acted as a source, it would be expected to find the highest concentrations in groundwater beneath the areas where the concentrations were highest in the soil. Thus, the

groundwater near the previous area of highest soil contamination is targeted for treatment. Shallow groundwater is present in a thin (1-foot thick) discontinuous sand lens which occurs in a formation consisting primarily of clay to silty clay. At 04WW04, fine-grained sand was observed in the silty clay over the 10-foot interval that was screened. In situ bioremediation is proposed around 04WW04. To define the area for treatment, and to determine the best amendments, a treatability study may be performed. The purpose of this investigation is: 1) to better delineate the target area (sand lenses or fine-grained sands [seams] impacted), 2) determine the concentration of perchlorate and obtain geochemistry information prior to treatment, 3) identify the treatment zone laterally and vertically, and 4) verify perchlorate degradation at a bench-scale level. This study is necessary to identify the types and amounts of substances required to stimulate optimum contaminant degradation and specify geologic and geochemistry information for project design. Some of the parameters that are important to consider include the mix of contaminants in the plume; soil type and properties; pH; salinity; competing electron acceptors (e.g., sulfates, nitrates) and the presence or absence of inhibitory substances. For cost estimating purposes, it includes three sample locations.

These additional site investigation activities will be performed prior to completion of the remedial design.

5.2.3.2 In Situ Bioremediation for Groundwater Plume

In situ bioremediation is a technology that encourages growth and reproduction of indigenous microorganisms to enhance biodegradation of contaminants in the saturated zone. The microbiological processes are used to degrade or transform contaminants to ultimately less toxic or nontoxic forms. Groundwater at LHAAP-04 is impacted by perchlorate that exceeds the cleanup level in groundwater. Treatment under anaerobic conditions is often applied to perchlorate, and microorganisms capable of degrading perchlorate are common in the environment.

In general, the components of the in situ bioremediation action include:

- **Injecting microbial cultures and nutrients into the subsurface at a predetermined location.** Bacteria present in the groundwater can use perchlorate as an electron acceptor. Electron donors may include a wide variety of nutrients: sugars (molasses), alcohols (methanol, ethanol), volatile acids (acetate, lactate), and/or wastes (food processing, manure). The perchlorate at LHAAP-04 can degrade under anaerobic conditions, but microorganisms, mechanisms, and redox requirements differ. Based on results of an initial study, appropriate nutrients and other materials would be

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

injected into the subsurface. For this FS, it is assumed that a bioaugmentation will be used at the site. This form of bioremediation combines the injection of microbial cultures capable of degrading the contaminants with a carbon source to provide adequate conditions for the proliferation of the perchlorate degrading organisms. For costing purposes in this FS, it is assumed that application would be at 4 injection points approximately 20 feet away from monitoring well 04WW04. Injection points would be installed using direct-push technology. It is anticipated that lactate would be injected in the first year, and that the injection would occur in the shallow zone, at no deeper than 25 feet bgs. For this alternative, one injection was assumed. Subsequent applications may be needed based on the in situ bioremediation effectiveness, but are not included in the cost estimate.

- **Monitoring wells.** Current well locations are shown on **Figure 5-2**. For cost estimating purposes it is assumed the effectiveness of the treatment will be monitored using the monitoring well 04WW04, which is located inside the treated area.

- **Sampling wells to monitor effectiveness.** Monitoring for contaminants would be performed to assess the effectiveness of the treatment. Anticipated remediation times may be short in the target area with appropriate contact. Assuming first order anaerobic degradation rates and reasonable half-lives, the perchlorate could be reduced to the cleanup level in approximately 6 years in the injection area, based on the hot spot treatment cutting the remediation time in half compared to MNA. For cost estimating purposes, it is assumed sampling will be performed quarterly for the first 2 years. The analytical program will consist of perchlorate and MNA parameters. The following geochemical parameters will also be included in the analytical program, dissolved oxygen (field), redox potential (field), sulfate, nitrate, nitrites, alkalinity, TOC, and ferrous iron (field).

- **Reporting.** Annual reports will be prepared to document the effectiveness of the treatment. The first year annual report will include a review of the four quarters of data and provide an evaluation of the effectiveness of the bioremediation alternative.

5.2.3.3 Long-Term Operation

The number of wells to be monitored will be determined in the remedial design. However, for cost estimating purposes, monitoring of eight wells is included for sampling as indicated in the following paragraph.

Long term operation would include monitoring of groundwater at LHAAP-04 for a fixed period of time (assumed to be 8 years in the estimate). Sampling and analysis of groundwater from LHAAP-04 would be performed for perchlorate. LTM groundwater sampling would begin in Year 3 after treatment and would be conducted semiannually for 3 years (through Year 5), then annually for years 6 through 8. Monitoring would be required

to demonstrate reduction in concentrations is occurring, as well as compliance with ARARs and the RAOs. Data obtained during the monitoring program will be used in support of the five-year reviews required by CERCLA Section 121(c).

The location and number of monitoring wells will be reviewed on an annual basis. Any well that is proposed for long-term monitoring that becomes damaged, or is required to be removed due to construction or other activities, may be replaced or repaired, as needed. The need for continuing the long-term monitoring at the location will be evaluated based on existing and expected future groundwater conditions. All water quality results, and the results of the review, will be provided in an annual monitoring report. The cost estimate assumes sampling will cease after year 8, and uses a 30-year evaluation period.

5.2.3.4 Land Use Controls

The alternative includes a LUC for groundwater to prevent human exposure to contaminated groundwater by prohibiting the use of groundwater except for environmental monitoring and testing only. When the cleanup level is achieved, the LUC will be terminated. The alternative also includes a LUC restricting land use to nonresidential until hazardous substances remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure.

5.2.4 Alternative 4 – Extraction and Treatment, LUCs

The goals of this alternative are to achieve ARARs for the COCs in the plume area where contaminant concentrations in groundwater are above the cleanup level and to prevent human exposure to groundwater contamination until the ARARs are achieved. Extraction, treatment, and reinjection will be implemented to reduce groundwater perchlorate concentrations to the cleanup level. **Figure 5-3** shows one potential layout of a groundwater extraction and treatment system.

5.2.4.1 Additional Site Investigation

Due to concerns about the scarcity of shallow zone monitoring wells in two directions, and the entire lack of any intermediate zone monitoring well, two additional shallow zone monitoring wells (04WW06 and 04WW07) and one intermediate monitoring well (04WW08) will be installed at the approximate locations noted on **Figure 2-1**. A set of groundwater samples will be collected from these newly installed wells and the existing wells to serve as a baseline for comparison, and to better define the extraction area.

- **Defining the extraction area.** Currently shallow monitoring well 04WW04 is impacted. Shallow groundwater is present in a thin (1-foot thick) discontinuous sand lens which occurs in a formation consisting primarily of clay to silty clay. At 04WW04, fine-grained sand was observed in the silty clay over the 10-foot

interval that was screened. Extraction is proposed around 04WW04. To define the extraction area for treatment, an aquifer study will be performed. The purpose of this investigation is: 1) to better delineate the target area (sand lenses or fine-grained sands [seams] impacted), 2) determine the concentration of perchlorate and obtain geochemistry information prior to treatment, and 3) identify the hydraulic properties of the extraction zone. This study is necessary to specify hydraulic and geochemistry information for project design. Some of the parameters that are important to consider include the hydraulic properties of the plume; soil type and properties; pH; salinity. For cost estimating purposes, it includes three sample locations.

These additional site investigation activities will be performed prior to completion of the remedial design.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

5.2.4.2 Groundwater Extraction and Ex Situ Treatment

Groundwater extraction is a technology that removes contaminated groundwater from the subsurface. Ex situ treatment is a technology that removes the contaminant from the groundwater by destroying it or physically transferring it to another matrix. Treated water is expected to be reinjected to the groundwater zone where it was removed. Groundwater at LHAAP-04 is impacted by perchlorate that exceeds the cleanup level. Ex situ treatment using a filter resin or biological treatment under anaerobic conditions has been successfully applied to perchlorate contaminated groundwater. In general, the components of the extraction and treatment action include:

- **Groundwater Extraction.** An extraction well near 04WW04 will be used to extract groundwater contaminated with perchlorate. The relatively small size of the perchlorate plume suggests that a single well will suffice to capture the entire plume or an estimated 27,000 gallons in the pore volume. Assuming an extraction well pumping rate of 0.20 gallons per minute, groundwater extraction is expected to last approximately 15 months to remove approximately 4.4 plume pore volumes to attain the cleanup level.

- **Ex Situ Treatment.** A trailer mounted treatment system will be used to remove perchlorate from the extracted groundwater. For cost estimating purposes, a simple ion exchange resin system is assumed to be the treatment technology. Ex situ treatment will operate in conjunction with groundwater extraction for an expected 15 months. Sampling to monitor treatment effectiveness will be performed throughout this operational period.

- **Installing temporary wells for reinjection.** The treatment trailer will generate a stream of treated groundwater. Four temporary wells would be used to reinject the treated groundwater back into the shallow zone it originated from. This will have the additional advantage of providing additional water to

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

flush perchlorate through the shallow zone toward the extraction well in the center. Reinjection of treated groundwater will operate in conjunction with ex situ treatment for an expected 15 months.

- **Monitoring wells.** Current well locations are shown on **Figure 1-3**. For cost estimating purposes it is assumed the effectiveness of the treatment will be monitored using the monitoring well 04WW04, which is located in the center of the perchlorate plume. Existing monitoring wells surrounding 04WW04 have not indicated concentrations of perchlorate above the cleanup level in recent samples.

- **Sampling wells to monitor effectiveness.** Monitoring for contaminants would be performed to assess the effectiveness of the treatment. Anticipated remediation times may be short with an efficient extraction well. For cost estimating purposes, it is assumed sampling will be performed quarterly for the first two years, and then would be reduced in long-term operations. The estimated time for the cleanup level to be achieved is approximately 2 years. The analytical program will consist of perchlorate. The following geochemical parameters will also be included in the analytical program, dissolved oxygen (field), redox potential (field), sulfate, nitrate, nitrites, alkalinity, TOC, and ferrous iron (field), during the active treatment period.

- **Reporting.** Annual reports will be prepared to document the effectiveness of the treatment. The first year annual report will include a review of the first four quarters of data and provide an evaluation of the effectiveness of the extraction and treatment alternative.

5.2.4.3 Long-Term Operation

The number of wells to be monitored will be determined in the remedial design. However, for cost estimating purposes, monitoring of eight wells is included for sampling as indicated in the following paragraph.

Long term operation would include monitoring of groundwater at LHAAP-04 for a fixed period of time (assumed to be 5 years in the estimate). Sampling and analysis of groundwater at LHAAP-04 would be performed for perchlorate. After the first two years of quarterly sampling, groundwater sampling would occur semiannually for years 3 through 5. Monitoring would be required to demonstrate reduction in concentrations that occurred in operating the ex situ treatment system and in the groundwater plume are maintained, as well as compliance with ARARs and the RAOs. Data obtained during the monitoring program will be used in support of the five-year reviews required by CERCLA Section 121(c).

The location and number of monitoring wells will be reviewed on an annual basis. Any well that is proposed for long-term monitoring that becomes damaged, or is required to be removed due to construction or other activities, may be replaced or repaired, as needed. The

need for continuing the long-term monitoring at the location will be evaluated based on existing and expected future groundwater conditions. All water quality results, and the results of the review, will be provided in an annual monitoring report. The cost estimate assumes sampling will cease after year 5, and uses a 30-year evaluation period.

5.2.4.4 Land Use Controls

The alternative includes a LUC for groundwater to prevent human exposure to contaminated groundwater by prohibiting the use of groundwater except for environmental monitoring and testing only. When the cleanup level is achieved, the LUC will be terminated. The alternative also includes a LUC restricting land use to nonresidential until hazardous substances remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure.

5.2.5 Alternative 5 – ICTs Extraction and Treatment, LUCs

The goals of this alternative are to achieve ARARs for the COCs in the plume area where contaminant concentrations in groundwater are above the cleanup level and to prevent human exposure to groundwater contamination until the ARARs are achieved. Extraction, treatment, and reinjection will be implemented to reduce groundwater perchlorate concentrations to the cleanup level. **Figure 5-4** shows one potential layout of a groundwater extraction and treatment system using ICTs that will be used as the basis of this cost estimate. The use of ICTs instead of an extraction well is the primary difference between Alternative 5 and Alternative 4. An ICT can be expected to allow a higher rate of groundwater extraction from the subsurface. At LHAAP-04 with the apparently discontinuous sand layers, this may be necessary to entirely capture the contaminated plume.

5.2.5.1 Additional Site Investigation

Due to concerns about the scarcity of shallow zone monitoring wells in two directions, and the entire lack of any intermediate zone monitoring well, two additional shallow zone monitoring wells (04WW06 and 04WW07) and one intermediate monitoring well (04WW08) will be installed at the approximate locations noted on **Figure 2-1**. A set of groundwater samples will be collected from these newly installed wells and the existing wells to serve as a baseline for comparison, and to better define the extraction area.

- **Defining the extraction area.** Currently shallow monitoring well 04WW04 is impacted. Shallow groundwater is present in a thin (1-foot thick) discontinuous sand lens which occurs in a formation consisting primarily of clay to silty clay. At 04WW04, fine-grained sand was observed in the silty clay over the 10-foot interval that was screened. Extraction is proposed around 04WW04. To define the extraction area for treatment, an aquifer study will be performed. The purpose of this investigation is: 1) to better delineate the target area (sand lenses or fine-

grained sands [seams] impacted), 2) determine the concentration of perchlorate and obtain geochemistry information prior to treatment, and 3) identify the hydraulic properties of the extraction zone. This study is necessary to specify hydraulic and geochemistry information for project design. Some of the parameters that are important to consider include the hydraulic properties of the plume; soil type and properties; pH; salinity. For cost estimating purposes, it includes three sample locations.

These additional site investigation activities will be performed prior to completion of the remedial design.

5.2.5.2 Groundwater Extraction and Ex Situ Treatment

Groundwater extraction is a technology that removes contaminated groundwater from the subsurface. Ex situ treatment is a technology that removes the contaminant from the groundwater by destroying it or physically transferring it to another matrix. Treated water is expected to be reinjected to the groundwater zone where it was removed. Groundwater at LHAAP-04 is impacted by perchlorate that exceeds the cleanup level. Ex situ treatment using a filter resin or biological treatment under anaerobic conditions has been successfully applied to perchlorate contaminated groundwater. In general, the components of the extraction and treatment action include:

- **Groundwater Extraction.** Two ICTs surrounding 04WW04 will be used to extract groundwater contaminated with perchlorate. The relatively small size of the perchlorate plume suggests that two ICTs will suffice to capture the entire plume or an estimated 27,000 gallons in the pore volume. Assuming a combined groundwater extraction rate of 1.0 gpm, and intermittent operation (50 percent), groundwater extraction is expected to last approximately 6 months to remove approximately 4.4 plume pore volumes to attain the cleanup level.

- **Ex Situ Treatment.** A trailer mounted treatment system will be used to remove perchlorate from the extracted groundwater. For cost estimating purposes, a simple ion exchange resin system is assumed to be the treatment technology. Ex situ treatment will operate in conjunction with groundwater extraction for an expected 6 months. Sampling to monitor treatment effectiveness will be performed throughout this operational period.

- **Installing temporary wells for reinjection.** The treatment trailer will generate a stream of treated groundwater. Two temporary wells would be used to reinject the treated groundwater back into the shallow zone within the capture zone of the ICTs. This will have the additional advantage of providing additional water to flush perchlorate through the shallow zone toward the ICTs around the perimeter. Reinjection of treated groundwater will operate in conjunction with ex situ treatment for an expected 6 months.

- **Monitoring wells.** Current and proposed well locations are shown on **Figure 2-1**. For cost estimating purposes it is assumed the effectiveness of the treatment will be monitored using the monitoring well 04WW04, which is located in the center of the perchlorate plume, and nearby downgradient wells. Existing monitoring wells surrounding 04WW04 have not indicated concentrations of perchlorate above the cleanup level in recent samples. **Figure 5-4** indicates the wells that will be monitored with green highlighting.

- **Sampling wells to monitor effectiveness.** Monitoring for contaminants would be performed to assess the effectiveness of the treatment. Anticipated remediation times may be short with an efficient extraction well. For cost estimating purposes, it is assumed sampling will be performed quarterly for the first two years, and then would be reduced in long-term operations. The estimated time for the cleanup level to be achieved is approximately 1 year. The analytical program will consist of perchlorate. The following geochemical parameters will also be included in the analytical program, dissolved oxygen (field), redox potential (field), sulfate, nitrate, nitrites, alkalinity, TOC, and ferrous iron (field), during the active treatment period.

- **Reporting.** Annual reports will be prepared to document the effectiveness of the treatment. The first year annual report will include a review of the first four quarters of data and provide an evaluation of the effectiveness of the ICT extraction and treatment alternative.

5.2.5.3 Long-Term Operation

The number of wells to be monitored will be determined in the remedial design. However, for cost estimating purposes, monitoring of eight wells is included for sampling as indicated in the following paragraph.

Long term operation would include monitoring of groundwater at LHAAP-04 for a fixed period of time (assumed to be 5 years in the estimate). Sampling and analysis of groundwater at LHAAP-04 would be performed for perchlorate. After the first two years of quarterly sampling, groundwater sampling would occur semiannually for years 3 through 5. Monitoring would be required to demonstrate reduction in concentrations that occurred in operating the ex situ treatment system and in the groundwater plume are maintained, as well as compliance with ARARs and the RAOs. Data obtained during the monitoring program will be used in support of the five-year reviews required by CERCLA Section 121(c).

The location and number of monitoring wells will be reviewed on an annual basis. Any well that is proposed for long-term monitoring that becomes damaged, or is required to be removed due to construction or other activities, may be replaced or repaired, as needed. The need for continuing the long-term monitoring at the location will be evaluated based on existing and expected future groundwater conditions. All water quality results, and the

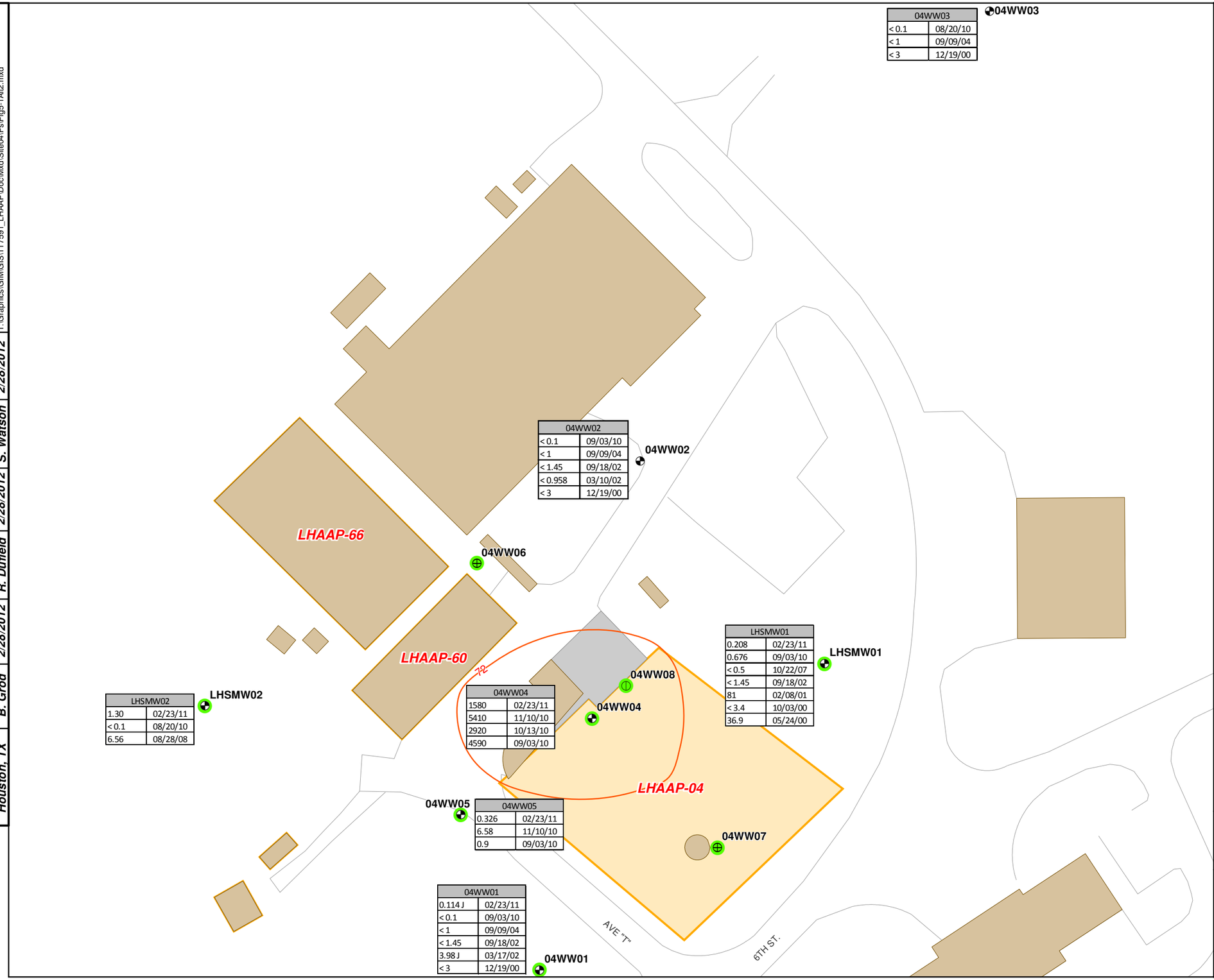
results of the review, will be provided in an annual monitoring report. The cost estimate assumes sampling will cease after Year 5, and uses a 30-year evaluation period.

5.2.5.4 Land Use Controls

The alternative includes a LUC for groundwater to prevent human exposure to contaminated groundwater by prohibiting the use of groundwater except for environmental monitoring and testing only. When the cleanup level is achieved, the LUC will be terminated. The alternative also includes a LUC restricting land use to nonresidential until hazardous substances remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure.

00116165

OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		FILE PATH
Houston, TX	B. Grod	2/28/2012	R. Duffield	2/28/2012	S. Watson	2/28/2012	T:\Graphics\GIM\GIS\117591_LHAAP\Doc\Mxd\Site04\Fs\Fig5-1Alt2.mxd



LEGEND

- Proposed Shallow Monitoring Well
- Proposed Intermediate Monitoring Well
- Shallow Monitoring Well
- Well to be Monitored
- Perchlorate Plume (72 µg/L)
- Road
- Concrete Removed During Excavation
- Concrete
- Site and Area of LUC

NOTES:

1. Perchlorate concentrations reported in micrograms per liter (µg/L).

2. Plume boundaries based on most recent results available at each well (2011).

3. Green highlight indicates well proposed for monitoring.

0 30 60 120 Feet

Shaw®

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 5-1

ALTERNATIVE 2
MONITORED NATURAL ATTENUATION, LUC
LHAAP-04 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00116166

FILE PATH	
T:\Graphics\GIM\GIS\117591_LHAAP\Doc\Mxd\Site04\Fs\Fig5-2Alt3.mxd	

	APPROVED BY	
2012	S. Watson	2/28/2012

	CHECKED BY	
2/28/2012	R. Dufield	2/28/2012

	DRAWN BY	
2/28/2012	B. Grod	2/28/2012

OFFICE
Houston, TX

04WW03	
< 0.1	08/20/10
< 1	09/09/04
< 3	12/19/00

04WW03

04WW02	
< 0.1	09/03/10
< 1	09/09/04
< 1.45	09/18/02
< 0.958	03/10/02
< 3	12/19/00

04WW02

LHAAP-66

04WW06

LHAAP-60

72

LHSMW02	
1.30	02/23/11
< 0.1	08/20/10
6.56	08/28/08

LHSMW02

04WW04	
1580	02/23/11
5410	11/10/10
2920	10/13/10
4590	09/03/10

04WW04

04WW08

LHSMW01	
0.208	02/23/11
0.676	09/03/10
< 0.5	10/22/07
< 1.45	09/18/02
81	02/08/01
< 3.4	10/03/00
36.9	05/24/00

LHSMW01

LHAAP-04

04WW05	
0.326	02/23/11
6.58	11/10/10
0.9	09/03/10

04WW05

04WW07

04WW01	
0.114 J	02/23/11
< 0.1	09/03/10
< 1	09/09/04
< 1.45	09/18/02
3.98 J	03/17/02
< 3	12/19/00

04WW01

AVE "T"

6TH ST.

LEGEND

- Proposed Shallow Monitoring Well
- Proposed Intermediate Monitoring Well
- Shallow Monitoring Well
- Proposed Injection Well
- Well to be Monitored
- Perchlorate Plume (72 µg/L)
- Road
- Concrete Removed During Excavation
- Concrete
- Site and Area of LUC

NOTES:

1. Perchlorate concentrations reported in micrograms per liter (µg/L).

2. Plume boundaries based on most recent results available at each well (2011).

3. Green highlight indicates well proposed for monitoring.

0 30 60 120 Feet

Shaw®

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 5-2

ALTERNATIVE 3
IN SITU BIOREMEDIATION, LUC
LHAAP-04 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00116167

FILE PATH	
T:\Graphics\GIM\GIS\117591_LHAAP\Doc\Mxd\Site04\Fs\Fig5-3AIM.mxd	

	APPROVED BY	
2012	S. Watson	2/28/2012

	CHECKED BY	
2012	R. Duffield	2/28/2012

	DRAWN BY	
2012	B. Grod	2/28/2012

OFFICE
Houston, TX

04WW03	
< 0.1	08/20/10
< 1	09/09/04
< 3	12/19/00

04WW03

04WW02	
< 0.1	09/03/10
< 1	09/09/04
< 1.45	09/18/02
< 0.958	03/10/02
< 3	12/19/00

04WW02

LHAAP-66

04WW06

LHAAP-60

72

LHSMW02	
1.30	02/23/11
< 0.1	08/20/10
6.56	08/28/08

LHSMW02

LHSMW01	
0.208	02/23/11
0.676	09/03/10
< 0.5	10/22/07
< 1.45	09/18/02
81	02/08/01
< 3.4	10/03/00
36.9	05/24/00

LHSMW01

04WW08

04WW04	
1580	02/23/11
5410	11/10/10
2920	10/13/10
4590	09/03/10

04WW04

LHAAP-04

04WW05	
0.326	02/23/11
6.58	11/10/10
0.9	09/03/10

04WW05

04WW07

04WW01	
0.114 J	02/23/11
< 0.1	09/03/10
< 1	09/09/04
< 1.45	09/18/02
3.98 J	03/17/02
< 3	12/19/00

04WW01

AVE "T"

6TH ST.

LEGEND

- Proposed Shallow Monitoring Well
- Proposed Intermediate Monitoring Well
- Shallow Monitoring Well
- Proposed Injection Well
- Proposed Extraction Well
- Well to be Monitored
- Security Fencing
- Perchlorate Plume (72 µg/L)
- Road
- Concrete Removed During Excavation
- Concrete
- Site and Area of LUC

NOTES:

1. Perchlorate concentrations reported in micrograms per liter (µg/L).

2. Plume boundaries based on most recent results available at each well (2011).

3. Green highlight indicates well proposed for monitoring.

0 30 60 120 Feet

Shaw®

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 5-3

ALTERNATIVE 4
EXTRACTION AND TREATMENT, LUC
LHAAP-04 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00116168

FILE PATH	
T:\Graphics\GIMGIS\117591_LHAAP\Doc\Mxd\Site04\Fs\Fig5-4Alt5.mxd	

	APPROVED BY	
2012	S. Watson	2/28/2012

	CHECKED BY	
2/28/2012	R. Dufield	2/28/2012

	DRAWN BY	
2/28/2012	B. Grod	2/28/2012

OFFICE
Houston, TX

04WW03	
< 0.1	08/20/10
< 1	09/09/04
< 3	12/19/00

04WW03

04WW02	
< 0.1	09/03/10
< 1	09/09/04
< 1.45	09/18/02
< 0.958	03/10/02
< 3	12/19/00

04WW02

LHAAP-66

04WW06

LHAAP-60

72

LHSMW02	
1.30	02/23/11
< 0.1	08/20/10
6.56	08/28/08

LHSMW02

04WW04	
1580	02/23/11
5410	11/10/10
2920	10/13/10
4590	09/03/10

04WW04

04WW08

LHSMW01	
0.208	02/23/11
0.676	09/03/10
< 0.5	10/22/07
< 1.45	09/18/02
81	02/08/01
< 3.4	10/03/00
36.9	05/24/00

LHSMW01

LHAAP-04

04WW05

04WW05	
0.326	02/23/11
6.58	11/10/10
0.9	09/03/10

04WW07

04WW01	
0.114 J	02/23/11
< 0.1	09/03/10
< 1	09/09/04
< 1.45	09/18/02
3.98 J	03/17/02
< 3	12/19/00

04WW01

AVE "T"

6TH ST.

LEGEND

- Proposed Shallow Monitoring Well
- Proposed Intermediate Monitoring Well
- Shallow Monitoring Well
- Proposed Injection Well
- Proposed Extraction Well
- Well to be Monitored
- Security Fencing
- Perchlorate Plume (72 µg/L)
- Road
- Interceptor Trenches
- Concrete Removed During Excavation
- Concrete
- Site and Area of LUC

NOTES:

1. Perchlorate concentrations reported in micrograms per liter (µg/L).

2. Plume boundaries based on most recent results available at each well (2011).

3. Green highlight indicates well proposed for monitoring.

0 30 60 120 Feet

Shaw®

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 5-4

ALTERNATIVE 5
EXTRACTION AND TREATMENT, LUC
LHAAP-04 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

6.0 DETAILED ANALYSIS OF ALTERNATIVES

6.1 Introduction

The detailed analysis of alternatives presents and assesses relevant information that provides the basis for selecting an alternative and preparing a ROD. **Section 6.2** provides an overview of the evaluation criteria. The detailed analysis begins with an individual analysis in **Section 6.3** in which each alternative is individually evaluated according to the evaluation criteria identified in the NCP (40 CFR 300.430). Following the individual analysis, the alternatives are compared in relation to the two threshold criteria and then the alternatives are assessed regarding the five balancing criteria, highlighting the key advantages, disadvantages, and trade-offs that are considered as part of the evaluation process.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

6.2 Overview of the Evaluation Criteria

CERCLA, Section 121, as amended, specifies statutory requirements for remedial actions. These requirements include protection of human health and the environment, compliance with ARARs, a preference for permanent solutions that incorporate treatment as a principal element to the maximum extent practicable, and cost-effectiveness. To assess whether alternatives meet the requirements, the USEPA has identified nine criteria in the NCP (40 CFR 300.430) that must be evaluated for each alternative considered for selection (Section 300.430[e][9][iii]). Provided here are summaries of the factors that comprise the nine criteria and an overview of the approach taken by this FS to address these criteria.

6.2.1 Criterion 1: Overall Protection of Human Health and the Environment

This evaluation criterion assesses whether the alternative achieves and maintains adequate protection of human health and the environment in accordance with the RAO established in **Section 3.0**. Because the scope of this criterion is broad, it also reflects the discussions of the subsequent criteria, including long-term effectiveness and permanence, and short-term effectiveness. Evaluation of this criterion describes how site risks associated with each pathway are eliminated, reduced, or mitigated through treatment, engineering, or LUCs. This criterion also considers whether an alternative poses an unacceptable short-term or cross-media affect.

6.2.2 Criterion 2: Compliance with ARARS

This criterion addresses compliance with promulgated federal and state environmental requirements. The detailed analysis summarizes which requirements are applicable or relevant and appropriate to an alternative and how the alternative meets these requirements. If an alternative cannot meet a requirement, a determination can be made that a waiver under

CERCLA may be appropriate, and a basis for justifying the waiver is presented. ARARs consist of two sets of requirements – those that apply and those that are relevant and appropriate. In certain cases, standards may not exist that address the proposed action or the COC(s). In such cases, non-promulgated advisories, criteria, or guidance developed by the USEPA or other federal agencies or states can be considered. There are three types of ARARs; chemical-specific, location-specific, and action-specific. The chemical-, location-, and action-specific ARARs are presented in **Section 3.2**.

6.2.3 Criterion 3: Long-Term Effectiveness and Permanence

This criterion evaluates the extent to which an alternative achieves an overall reduction in risk to human health and the environment after the RAO is met. The criterion considers the degree to which the alternative provides sufficient long-term controls and reliability to prevent exposures that exceed protective levels for human and environmental receptors. The principal factors addressed by this criterion include magnitude of residual risk and the adequacy and reliability of controls to address such risk. This criterion also addresses the uncertainties associated with these factors.

The evaluation of adequacy and reliability of controls assesses the effectiveness of any treatment, containment, or institutional measures that are part of the alternative. Factors considered include performance characteristics, maintenance requirements, and expected durability. Information and data from past performance and similar technology applications are incorporated appropriately into the evaluation. LUCs are considered where they have the potential to improve the effectiveness of engineered measures.

6.2.4 Criterion 4: Reduction of Toxicity, Mobility, or Volume through Treatment

This criterion reflects the statutory preference that remedial alternatives contain a principal component that substantially reduces toxicity, mobility, or volume of hazardous substances through treatment. The evaluation regarding this criterion considers the extent to which alternative technologies can effectively and permanently fix, transform, immobilize, or reduce the volume of waste materials and contaminated media.

6.2.5 Criterion 5: Short-Term Effectiveness

This criterion addresses the effects of the construction and implementation phases of the alternative until the RAO is achieved. The evaluation regarding this criterion considers the effect on human health and the environment posed by operations conducted during the remedial action phases. Both the potential effect and associated mitigative measures are examined for maintaining protectiveness for the community, remediation workers, and environmental receptors throughout the duration of activities.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

Potential short-term risks to the pubic include inhalation of constituents that may be released during waste removal and treatment operations, and contaminant exposure and physical injury during waste transport off site. Potential short-term risks to workers include direct contact and exposure during construction, waste handling, and transportation; physical injury or death during construction and transportation activities; and non-remediation worker exposures to airborne contaminants during waste and soil removal operations. Alternative analyses also include a description of mitigating measures such as engineering and LUC that are expected to minimize potential risks to the public and workers. This evaluation also addresses the anticipated duration of remedial activities.

6.2.6 Criterion 6: Implementability

This criterion examines the technical and administrative factors affecting implementation of an alternative and considers the availability of services and materials required during implementation. Technical factors to be assessed include the ease and reliability of construction and operations, the prospects for implementing a future action, and the adequacy of monitoring systems to detect failures. Administrative factors include permitting and coordination requirements between the lead agency and regulatory agencies. Service and material considerations include treatment, storage, and disposal capacities, equipment and operator availability, and prospective technology applicability or development requirements.

The assessment of technical feasibility examines the performance history of the technologies in direct applications or considers the expected performance for similar applications. Uncertainties associated with construction, operation, and performance monitoring is also addressed.

The evaluation of administrative feasibility includes a discussion of those actions required to coordinate with regulatory agencies to establish the framework for complying with key substantive technical requirements that must be met by an alternative. Additionally, those alternatives that include off-site transportation of waste are reviewed to assess the feasibility of off-site disposal.

The availability of services and materials is addressed by analyzing the material components of the proposed technologies to determine the locations and quantities of those materials, and by reviewing process operations to identify special services, operator skills, or training required to readily implement the process.

The NCP requires that the evaluation of the relative administrative feasibility of each alternative include "…activities needed to coordinate with other offices and agencies, and the ability and time required to obtain any necessary approvals and permits from other agencies

(for off-site actions). CERCLA, Section 121(e), stipulates that no deferral, state, or local permit shall be required for the portion of any removal or remedial action conducted entirely on site." An action must satisfy the substantive requirements of the permits that will otherwise be required.

6.2.7 Criterion 7: Cost

Cost estimates are included for each remedial alternative. The estimates are based on feasibility level scoping and are intended to aid in making project evaluations and comparisons among alternatives. The estimates have an expected accuracy of +50 to –30 percent for the scope of the action described in **Section 5.0** for each alternative.

The estimates are divided into capital cost and O&M cost, and are developed according to an assumed schedule for the various activities based on similar project experience.

Capital costs are defined as those expenditures required to initiate and install an alternative. These are short-term costs and are exclusive of costs required to maintain the action throughout the project lifetime. Capital costs consist of direct and indirect costs. Direct costs include construction costs (material, labor, and equipment to install an action), service equipment, process and new process buildings, utilities, and waste disposal costs. Indirect costs include design engineering, inspection, project integration, project administration and management, and project contingencies.

O&M costs are long-term costs associated with ongoing remediation at a site. These costs occur after construction and installation are completed. The costs include labor, materials, utilities, and services required to monitor, operate, and maintain the facilities for a period of up to 30 years.

The estimated present worth of each remedial alternative is determined on a discount rate of 2.7 percent and a base maintenance/monitoring period of up to 30 years, unless the alternative evaluated is expected to be complete in less than 30 years.

Appendix B presents detailed cost estimates and the major assumptions used to develop the cost estimates for each remedial alternative.

6.2.8 Criterion 8: State Acceptance

State acceptance of an alternative will be evaluated in the Proposed Plan issued for public comment. Therefore, this criterion is not considered in this FS.

6.2.9 Criterion 9: Community Acceptance

Community acceptance of each alternative will be evaluated after a Proposed Plan is issued for public comment. Therefore, this criterion is not considered in this FS.

6.3 Individual Analysis of Alternatives

6.3.1 Alternative 1 – No Action

Under the no action alternative, no further action would be taken to control human exposure to contaminated groundwater. The contaminated groundwater would remain in place without the implementation of any contaminant removal, treatment, containment, or monitoring. LUCs to prevent access to contaminated site groundwater and restrict land use to nonresidential would not be implemented. This alternative provides a baseline for comparison purposes.

6.3.1.1 Overall Protection of Human Health and the Environment

The no action alternative does not achieve the RAO for LHAAP-04. This alternative provides no control of exposure to the contaminated groundwater or actions to prevent further deterioration of the groundwater as the area of high concentrations remains, and no reduction in the risks to human receptors for current and future land use scenarios. Groundwater contaminants exceed the GW-Ind. Unacceptable risks to the environment were not determined to be associated with LHAAP-04 in the BERA (Shaw, 2007c).

6.3.1.2 Compliance with ARARs

CERCLA, Section 121, cleanup standards, including compliance with ARARs, apply only to actions the USEPA determines should be taken under CERCLA, Sections 104 and 106 authority. A no action decision will be made when no action is deemed necessary to reduce, control, or mitigate exposure because the site does not present a threat to human health and the environment, or because any action taken will worsen the negative effects on human health and the environment. Because no remedial activities are associated with this alternative, compliance with chemical-specific ARARs would not be met. Since no remedial activities would be conducted, action-specific and location-specific ARARs would not apply.

6.3.1.3 Long-Term Effectiveness and Permanence

Magnitude of Residual Risk

The no action alternative would not provide an effective or permanent long-term solution. The groundwater exposure under a no action alternative would be unacceptable at LHAAP-04 for a hypothetical future maintenance worker, although this scenario is unlikely. Currently, the groundwater at LHAAP-04 is not used for drinking water, and would not be used for drinking water under a wildlife refuge future use scenario. The shallow groundwater impacted at the site is unlikely to be used as a water source since it is present in thin discontinuous lenses, likely to be low in yield. Based on the groundwater flow and transport model (Shaw, 2007b), groundwater will not adversely impact Goose Prairie Creek.

Adequacy and Reliability of Controls

The no action alternative would not provide the maintenance of LUCs at LHAAP-04 and, therefore, would not reduce the existing exposure hazards posed by contaminated site groundwater if it were to be used at the site; however use is unlikely.

6.3.1.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Implementation of the no action alternative would not reduce toxicity, mobility, or volume of contaminants because this alternative does not employ treatment.

6.3.1.5 Short-Term Effectiveness

Under the no action alternative, no remedial action would be taken; therefore, the short-term effectiveness criterion is not applicable to this alternative. No short-term risks to workers, the community or the environment would exist.

6.3.1.6 Implementability

This alternative is inherently implementable because no remedial action would be taken.

6.3.1.7 Cost

There are no costs associated with the no action alternative.

6.3.2 Alternative 2 – Monitored Natural Attenuation, LUCs

Alternative 2 relies on monitoring the natural reduction of contaminant levels in groundwater under an MNA program, combined with the maintenance of LUCs to restrict use of the contaminated groundwater at LHAAP-04 to environmental monitoring and testing only and restrict land use to nonresidential use. Groundwater monitoring would ensure that the perchlorate concentrations in groundwater remain stable and continue to degrade naturally. Three new monitoring wells would be installed. LUC for groundwater would be maintained until perchlorate concentrations in groundwater achieve the cleanup level. The LUC restricting land use to nonresidential also would be implemented until the hazardous substances remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure.

6.3.2.1 Overall Protection of Human Health and the Environment

Protection of Human Health

Existing groundwater concentrations of perchlorate pose a hazard to the hypothetical future maintenance worker since the GW-Ind is exceeded.

This alternative would achieve the RAOs for LHAAP-04. Continued maintenance of the LUC for groundwater would prevent human access and exposure to groundwater that poses an unacceptable hazard to human health. The controls would restrict the use of groundwater

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

to environmental monitoring and testing only. It is unlikely that impacted groundwater at the site would be used as a water supply since it is present in narrow discontinuous sand lenses which probably are low yield.

The MNA program would monitor the groundwater plume and ensure that COCs in groundwater are not migrating and that perchlorate continues to degrade to the cleanup level.

Protection of the Environment

The facility-wide ecological baseline risk assessment concluded that risks to ecological receptors at the Group 4 sites were within the acceptable risk range.

6.3.2.2 Compliance with ARARs

Chemical-Specific ARARs

This alternative will achieve the cleanup level for perchlorate in groundwater that exceeds the cleanup level provided perchlorate is naturally degrading. The time frame is estimated to be approximately 12 years based on results from other wells at LHAAP with similar perchlorate concentrations. Since use of groundwater as a water supply is unlikely based on future land use and the probable low yield of the discontinuous water bearing zones at LHAAP-04, the time frame for achievement of groundwater ARARs is considered acceptable. Based on modeling (Shaw, 2007b), the groundwater does not adversely impact surface water.

Location-Specific ARARs

There are no location-specific ARARs at LHAAP-04.

Action-Specific ARARs

The activities that would be conducted under this alternative would comply with all action-specific ARARs.

6.3.2.3 Long-Term Effectiveness and Permanence

Magnitude of Residual Risks

The implementation of LUC for groundwater under this alternative would prevent direct contact by human receptors with the groundwater at LHAAP-04, thus minimizing the potential risk posed by groundwater contamination. The hazard from ingestion of the groundwater for the hypothetical future maintenance worker is from perchlorate.

The USEPA guidance for MNA for perchlorate (USEPA, 2007) provides four tiers of analysis of evidence to support that natural attenuation is occurring. These same lines of evidence may be used to evaluate the long term effectiveness of this technology as a remedial action.

There is not enough groundwater perchlorate data at LHAAP-04 to support a valid evaluation of natural attenuation. The first two years of quarterly sampling will supply the data for evaluation.

Groundwater is currently not used and is unlikely to be used in the future due to 1) the low yield expected from thin discontinuous sand lenses and 2) the proposed future land use. LUC for groundwater will restrict the use of groundwater to only environmental monitoring and testing only.

Adequacy and Reliability of Controls

The implementation of LUC for groundwater would protect potential human receptors from exposure to contaminated groundwater at LHAAP-04 until the perchlorate cleanup level is met. The reliability of LUCs would depend on the long-term maintenance of the controls. The effectiveness of the LUCs would depend on the annual and 5-year CERCLA reviews. The five-year reviews may indicate the need for components of this alternative to be maintained, modified, or replaced.

6.3.2.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Although the alternative provides no active remedial measure to reduce the toxicity, mobility, or volume of perchlorate in groundwater through treatment, reduction of toxicity, mobility, and volume is achieved though natural attenuation of perchlorate. This reduction would be verified through the monitoring program over several years.

6.3.2.5 Short-Term Effectiveness

Protection of the Community during Remedial Action

This alternative is protective of the surrounding community during remedy implementation primarily because all activities would occur on site with very little disturbance of contaminated material.

Protection of Workers during Remedial Action

No significant short-term risks to human health or the environment would exist during implementation of this alternative. However, worker exposure to contaminated groundwater is possible during drilling, well installation, and sampling activities associated with the monitoring events. The short-term risks associated with these activities may be minimized through implementation of an effective health and safety program.

Short-Term Environmental Effects

Since minimal disturbance of contaminated material would occur under this alternative, short-term impacts to the environment are unlikely. The implementation of proper engineering controls would minimize the risk of environmental impacts.

Duration of Remedial Activities

Implementation of LUCs would restrict land use to nonresidential and use of contaminated groundwater to environmental monitoring and testing only. This alternative could provide almost immediate protection because LUCs can be implemented relatively quickly (e.g., within six months). LUC for groundwater would be maintained until perchlorate concentrations in groundwater achieve the cleanup level. The LUC restricting land use to nonresidential also would be implemented until the hazardous substances remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure.

The estimated duration of MNA is approximately 12 years. Five-year reviews are expected to continue through Year 30.

6.3.2.6 Implementability

Technical Feasibility

All components of this alternative are readily implementable. Minimal technical concerns exist that would hinder the implementation of this alternative because no remedial activities other than installation of additional wells and sampling under the MNA program would be performed under this alternative. The means to implement the LUCs portion of this alternative are readily available. All equipment, services and materials are readily available to conduct the activities for this alternative.

Administrative Feasibility

All actions under this alternative are implemented on site and thus do not require permits, though substantive provisions of permits that would otherwise be required are considered to be ARARs. By legal agreement (i.e., the FFA), the U.S. Army shall submit to the USEPA and TCEQ a Responsiveness Summary and a draft ROD. Following consideration of any comments by TCEQ, the ROD will be finalized jointly by the U.S. Army and USEPA, or if they are unable to reach agreement about the selection of the remedial action, by the USEPA Administrator. By addressing the identified ARARs in the ROD, it is anticipated that the alternative would adequately address administrative barriers.

LUCs, although administratively implementable, would require the following: development of an implementation plan as part of the remedial design and internal notices to relevant regulatory offices of the existence of the LUCs. Approval by the USEPA and the State of Texas is required prior to the modification or termination of LUCs, implementation actions, or modification of land-use by the U.S. Army. The U.S. Army shall also seek concurrence from the USEPA and the State of Texas prior to any action that may alter or negate the need for LUCs.

6.3.2.7 Cost

The total project present worth cost of Alternative 2 is approximately $565,000. The details of the cost estimates for all of the alternatives are presented in **Appendix B**.

Direct Capital Cost

The total direct capital cost is estimated at $121,000. The direct capital cost includes the activities associated with LUCs, and three new monitoring wells.

O&M Cost

The total O&M cost is estimated at approximately $444,000. The O&M cost includes maintenance of LUCs, and monitoring through year 15. The long-term monitoring would support the required CERCLA five-year reviews.

6.3.3 Alternative 3 – In Situ Bioremediation, LUCs

This alternative reduces contamination in the area of highest concentrations in the groundwater plume via in situ bioremediation using bioaugmentation, to levels that would result in residual perchlorate remaining in the plume for a decreased duration. It is estimated that the cleanup level in the groundwater would be achieved in 6 years after treatment based on reducing remediation time to half that of MNA. However, this is just an estimate since the hydrogeologic conditions and current extent of contamination has not fully been defined. These actions would reduce perchlorate concentrations in the groundwater to the cleanup level throughout the site, provided bioremediation results are favorable.

Three new monitoring wells would be installed. LUC for groundwater would be maintained until perchlorate concentrations in groundwater achieve the cleanup level. The LUC restricting land use to nonresidential also would be implemented until the hazardous substances remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure.

6.3.3.1 Overall Protection of Human Health and the Environment

Protection of Human Health

Existing groundwater perchlorate concentrations pose a hazard to the hypothetical future maintenance worker since the GW-Ind is exceeded.

The remedial action proposed for this alternative would eventually achieve the destruction of the perchlorate present in groundwater above the cleanup level established for LHAAP-04.

Protection of the Environment

The facility-wide ecological baseline risk assessment concluded that risks to ecological receptors at the Group 4 sites were within the acceptable risk range.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

6.3.3.2 Compliance with ARARs

Chemical-Specific ARARs

This alternative would comply with chemical-specific ARARs for groundwater throughout the site because the perchlorate cleanup level would be achieved in an assumed 6 year time frame after treatment.

Location-Specific ARARs

There are no location-specific ARARs for LHAAP-04.

Action-Specific ARARs

The activities that would be conducted under this alternative would comply with action-specific ARARs.

6.3.3.3 Long-Term Effectiveness and Permanence

Magnitude of Residual Risks

Upon completion of groundwater remediation, the perchlorate concentrations will be below the GW-Ind.

Adequacy and Reliability of Controls

In situ bioremediation should be effective for reducing perchlorate concentrations in LHAAP-04 groundwater. However, optimum groundwater conditions would be required to increase the effectiveness of biological activity on these contaminants. More extensive aquifer characterization is needed before designing the system and to determine the area for optimum bioaugmentation. Due to the limited data on the nature of the current plume, the effectiveness of this technology at LHAAP-04 cannot be fully assessed.

LUC for groundwater would also prevent exposure to groundwater exceeding the perchlorate cleanup level during the time required for groundwater bioremediation. The reliability of LUCs would depend on the maintenance of the controls. Compliance with the LUCs would be monitored and performance of the controls would be assessed throughout the duration of this alternative. The assessment may indicate the need for components of this alternative to be maintained, modified, or replaced.

6.3.3.4 Reduction of Toxicity, Mobility, or Volume through Treatment

In situ bioremediation would irreversibly reduce the toxicity, mobility and volume of the contaminants in LHAAP-04 shallow groundwater. This alternative would satisfy the USEPA statutory preference for remedial actions that permanently reduce contaminant toxicity, mobility and volume and utilize treatment as a principle element.

6.3.3.5 Short-Term Effectiveness

Protection of the Community during Remedial Action

This alternative is protective of the surrounding community during remedy implementation primarily because activities would occur on site with very little disturbance of contaminated material.

Protection of Workers during Remedial Action

This alternative would involve potential short-term risks to workers associated with the operation of drilling equipment and potential exposure to contaminated groundwater during sampling activities. The implementation of an effective health and safety program would minimize potential short-term risks to remediation personnel. Remediation workers would conform to the site health and safety program and would be equipped with the necessary personal protective equipment (PPE). A site-specific health and safety plan would be prepared prior to implementing this alternative.

Short-Term Environmental Effects

Since minimal disturbance of contaminated material would occur under this alternative, short-term impacts to the environment are unlikely. The implementation of proper engineering controls would minimize the risk of environmental impacts.

Duration of Remedial Activities

The duration of this groundwater treatment portion of the alternative is estimated to be approximately 2 years. It is assumed that; in year 1, the treatability study will be performed, the plans prepared, and a bioaugmentation treatment performed. In year 2, 4 quarters of monitoring are performed. In year 3, the effectiveness of the in situ bioremediation remedy will be evaluated and monitoring will continue on a long-term basis at less frequent intervals. The time frames for this alternative are difficult to estimate due to the thin discontinuous nature of the more permeable lenses which facilitate treatment. A treatability study may be needed to determine the most effective locations for injection. Monitoring would be needed until the cleanup level is met. The monitoring time may increase or decrease depending on the effectiveness of the treatment method.

LUC for the groundwater will continue until perchlorate concentrations are below the cleanup level. The LUC restricting land use to nonresidential would continue until the hazardous substances remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure.

6.3.3.6 Implementability

Technical Feasibility

All components of this alternative are implementable. The equipment and materials required for microbe and carbon source delivery are commercially available, but specialized knowledge of in situ biological treatment would be required for implementation. With sufficient study, it is likely that an implementable design could be developed, however subsurface conditions could impact the effectiveness and cost. The LUCs portion of this alternative is readily implemented.

Administrative Feasibility

All actions under this alternative would be implemented on the site and thus do not require permits, though substantive provisions of permits that would otherwise be required are considered to be ARARs. By legal agreement (i.e., the FFA), the U.S. Army shall submit to the USEPA and TCEQ a Responsiveness Summary and a draft ROD. Following consideration of any comments by TCEQ, the ROD will be finalized jointly by the U.S. Army and USEPA, or if they are unable to reach agreement about the selection of the remedial action, by the USEPA Administrator. By addressing the identified ARARs in the ROD and subsequent documents, it is anticipated that the alternative would adequately address all administrative barriers.

LUCs, although administratively implementable, would require the following: development of an implementation plan as part of the remedial design and internal notices to relevant regulatory offices of the existence of the LUCs. Approval by the USEPA and the State of Texas is required prior to the modification or termination of LUCs, implementation actions, or modification of land-use by the U.S. Army. The U.S. Army shall also seek concurrence from the USEPA and the State of Texas prior to any action that may disrupt the effectiveness of the LUCs or any action that may alter or negate the need for LUCs.

6.3.3.7 Cost

The total project present worth cost of Alternative 3 is approximately $638,000. The details of the cost estimates for all of the alternatives are presented in **Appendix B**.

Capital Cost

The total direct capital cost is estimated at approximately $233,000. The direct capital cost includes the activities associated with LUCs, the treatability study, the initial in situ bioremediation, and three new monitoring wells.

O&M Cost

The total O&M cost is estimated at approximately $405,000. The O&M cost includes long-term monitoring through year 8 associated with the LUCs, and the assessment of in situ bioremediation performance. Five-year reviews will continue through Year 30.

6.3.4 Alternative 4, Extraction and Treatment, LUCs

This alternative reduces contamination in the area of highest concentrations in the groundwater plume via extraction and treatment, to levels that attain the cleanup level. Plume areas outside the extraction system would also attain the cleanup level in a short time-frame once the highest concentrations are removed. It is estimated that the cleanup level in the groundwater would be achieved in approximately 15 months of treatment. These actions would reduce perchlorate concentrations in the groundwater to the cleanup level throughout the plume, provided extraction and treatment results are favorable.

Three new monitoring wells would be installed. LUC for groundwater would be maintained until perchlorate concentrations in groundwater achieve the cleanup level. The LUC restricting land use to nonresidential also would be implemented until the hazardous substances remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure.

6.3.4.1 Overall Protection of Human Health and the Environment

Protection of Human Health

Existing groundwater perchlorate concentrations pose a hazard to the hypothetical future maintenance worker since the GW-Ind is exceeded.

The remedial action proposed for this alternative would eventually achieve the destruction of the perchlorate present in groundwater above the cleanup level established for LHAAP-04.

Protection of the Environment

The facility-wide ecological baseline risk assessment concluded that risks to ecological receptors at the Group 4 sites were within the acceptable risk range.

6.3.4.2 Compliance with ARARs

Chemical-Specific ARARs

This alternative would comply with chemical-specific ARARs for groundwater throughout the site because the perchlorate cleanup level would be achieved in an assumed 5 year time frame after treatment.

Location-Specific ARARs

There are no location-specific ARARs for LHAAP-04.

Action-Specific ARARs

The activities that would be conducted under this alternative would comply with action-specific ARARs.

6.3.4.3 Long-Term Effectiveness and Permanence

Magnitude of Residual Risks

Upon completion of groundwater remediation, the perchlorate concentrations will be below the GW-Ind.

Adequacy and Reliability of Controls

Extraction and treatment should be effective for reducing perchlorate concentrations in LHAAP-04 groundwater. Groundwater extraction depends on the hydraulic properties of the formation. More extensive aquifer characterization is needed before designing the system and to determine the area for optimum extraction well placement. Due to the limited data on the nature of the current plume and hydraulic properties of the formation, the effectiveness of this technology at LHAAP-04 cannot be fully assessed.

LUC for groundwater would be in place to restrict access to groundwater exceeding the perchlorate cleanup level during the time required for extraction and treatment. The reliability of LUC would depend on the maintenance of the controls. Compliance with the LUC would be monitored and performance of the controls would be assessed throughout the duration of this alternative. The assessment may indicate the need for components of this alternative to be maintained, modified, or replaced.

6.3.4.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Extraction and treatment would irreversibly reduce the toxicity, mobility and volume of the contaminants in LHAAP-04 shallow groundwater. This alternative would satisfy the USEPA statutory preference for remedial actions that permanently reduce contaminant toxicity, mobility and volume and utilize treatment as a principle element.

6.3.4.5 Short-Term Effectiveness

Protection of the Community during Remedial Action

This alternative is protective of the surrounding community during remedy implementation primarily because activities would occur on site with very little disturbance of contaminated material. LHAAP-04 is along the current auto-tour route at the Caddo Lake National Wildlife Refuge, and the treatment system will be away from the road and will be fenced to ensure access by the public is restricted to protect the public.

Protection of Workers during Remedial Action

This alternative would involve potential short-term risks to workers associated with the operation of drilling equipment and potential exposure to contaminated groundwater during sampling activities. The implementation of an effective health and safety program would minimize potential short-term risks to remediation personnel. Remediation workers would conform to the site health and safety program and would be equipped with the necessary personal protective equipment (PPE). A site-specific health and safety plan would be prepared prior to implementing this alternative.

Short-Term Environmental Effects

Since minimal disturbance of contaminated material would occur under this alternative, short-term impacts to the environment are unlikely. The implementation of proper engineering controls such as double wall piping would minimize the risk of environmental impacts.

Duration of Remedial Activities

The duration of this groundwater treatment portion of the alternative is estimated to be approximately 15 months. It is assumed that; in year 1, quarterly monitoring will begin, the aquifer study will be performed, the plans prepared, and the extraction and treatment system will be installed and begin operating. In year two, four quarters of monitoring is performed as well as continued operation of the extraction and treatment to a total of 15 months operation. Monitoring continues in subsequent years at a reduced semiannual frequency. In addition, residual COCs may be present in the clay matrix surrounding the permeable lenses which could continue to impact water quality into the future, and monitoring is assumed to continue for 5 years. An aquifer study may be needed to determine the most effective location for extraction and injection. Monitoring would be needed until the cleanup level is met to determine trends in groundwater contamination levels and effectiveness of the remedial action. The monitoring time may increase or decrease depending on the effectiveness of the treatment method.

LUC for groundwater will continue until groundwater concentrations are below the perchlorate cleanup level. The LUC restricting land use to nonresidential would continue until the hazardous substances remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure.

6.3.4.6 Implementability

Technical Feasibility

All components of this alternative are implementable. The equipment and materials required for groundwater extraction and treatment are commercially available, but specialized knowledge of perchlorate treatment would be required for implementation. With sufficient

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

study, it is likely that an implementable design could be developed, however subsurface conditions could impact the effectiveness and cost. The LUCs portion of this alternative is readily implemented.

Administrative Feasibility

All actions under this alternative would be implemented on the site, and thus, do not require permits, though substantive provisions of permits that would otherwise be required are considered to be ARARs. By legal agreement (i.e., the FFA), the U.S. Army shall submit to the USEPA and TCEQ a Responsiveness Summary and a draft ROD. Following consideration of any comments by TCEQ, the ROD will be finalized jointly by the U.S. Army and USEPA, or if they are unable to reach agreement about the selection of the remedial action, by the USEPA Administrator. By addressing the identified ARARs in the ROD and subsequent documents, it is anticipated that the alternative would adequately address all administrative barriers.

LUCs, although administratively implementable, would require the following: development of an implementation plan as part of the remedial design and internal notices to relevant regulatory offices of the existence of the LUCs. Approval by the USEPA and the State of Texas is required prior to the modification or termination of LUCs, implementation actions, or modification of land-use by the U.S. Army. The U.S. Army shall also seek concurrence from the USEPA and the State of Texas prior to any action that may disrupt the effectiveness of the LUCs or any action that may alter or negate the need for LUCs.

6.3.4.7 Cost

The total project present worth cost of Alternative 4 is approximately $730,000. The details of the cost estimates for all of the alternatives are presented in **Appendix B**.

Capital Cost

The total direct capital cost is estimated at approximately $312,000. The direct capital cost includes the activities associated with LUCs, constructing the extraction and treatment system, an aquifer study, extraction and injection wells, and three new monitoring wells.

O&M Cost

The total O&M cost is estimated at approximately $418,000. The O&M cost includes extraction and treatment system operation, long-term monitoring through year 5, and costs associated with maintenance of LUCs. Five-year reviews will continue through year 30.

6.3.5 Alternative 5, ICTs, Extraction and Treatment, LUCs

This alternative reduces contamination in the area of highest concentrations in the groundwater plume via extraction using ICTs, then treatment to levels that attain the cleanup

level. Plume areas outside the extraction system would also attain the cleanup level in a short time-frame once the highest concentrations are removed. It is estimated that the cleanup level in the groundwater would be achieved in approximately six months of treatment. These actions would reduce perchlorate concentrations in the groundwater to the cleanup level throughout the plume, provided extraction and treatment results are favorable.

Three new monitoring wells would be installed. LUC for groundwater would be maintained until perchlorate concentrations in groundwater achieve the cleanup level. The LUC restricting land use to nonresidential also would be implemented until the hazardous substances remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure.

6.3.5.1 Overall Protection of Human Health and the Environment

Protection of Human Health

Existing groundwater perchlorate concentrations pose a hazard to the hypothetical future maintenance worker since the GW-Ind is exceeded.

The remedial action proposed for this alternative would eventually achieve the destruction of the perchlorate present in groundwater above the cleanup level established for LHAAP-04.

Protection of the Environment

The facility-wide ecological baseline risk assessment concluded that risks to ecological receptors at the Group 4 sites were within the acceptable risk range.

6.3.5.2 Compliance with ARARs

Chemical-Specific ARARs

This alternative would comply with chemical-specific ARARs for groundwater throughout the site because the perchlorate cleanup level would be achieved within an assumed 5 year time frame after treatment.

Location-Specific ARARs

There are no location-specific ARARs for LHAAP-04.

Action-Specific ARARs

The activities that would be conducted under this alternative would comply with action-specific ARARs.

6.3.5.3 Long-Term Effectiveness and Permanence

Magnitude of Residual Risks

Upon completion of groundwater remediation, the perchlorate concentrations will be below the GW-Ind.

Adequacy and Reliability of Controls

Extraction and treatment should be effective for reducing perchlorate concentrations in LHAAP-04 groundwater. Groundwater extraction depends on the hydraulic properties of the formation. More extensive aquifer characterization is needed before designing the system and to determine the area for optimum ICT placement. An ICT is expected to produce more water than a single extraction well due to the far greater area of the subsurface shallow groundwater zone that will be intersected by the ICT. Due to the limited data on the nature of the current plume and hydraulic properties of the formation, the effectiveness of this technology at LHAAP-04 cannot be fully assessed.

LUC for groundwater would be in place to restrict access to groundwater exceeding the perchlorate cleanup level during the time required for extraction and treatment. The reliability of LUC would depend on the maintenance of the controls. Compliance with the LUC would be monitored and performance of the controls would be assessed throughout the duration of this alternative. The assessment may indicate the need for components of this alternative to be maintained, modified, or replaced.

6.3.5.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Extraction and treatment would irreversibly reduce the toxicity, mobility and volume of the contaminants in LHAAP-04 shallow groundwater. This alternative would satisfy the USEPA statutory preference for remedial actions that permanently reduce contaminant toxicity, mobility and volume and utilize treatment as a principle element.

6.3.5.5 Short-Term Effectiveness

Protection of the Community during Remedial Action

This alternative is protective of the surrounding community during remedy implementation primarily because activities would occur on site with very little disturbance of contaminated material. LHAAP-04 is along the current auto-tour route at the Caddo Lake National Wildlife Refuge, and the treatment system will be away from the road and will be fenced to ensure access by the public is restricted to protect the public.

Protection of Workers during Remedial Action

This alternative would involve potential short-term risks to workers associated with the operation of ICT construction equipment and potential exposure to contaminated groundwater during sampling activities. The implementation of an effective health and safety program would minimize potential short-term risks to remediation personnel. Remediation workers would conform to the site health and safety program and would be equipped with the necessary PPE. A site-specific health and safety plan would be prepared prior to implementing this alternative.

Short-Term Environmental Effects

Since minimal disturbance of contaminated material would occur under this alternative, short-term impacts to the environment are unlikely. The implementation of proper engineering controls such as double wall piping would minimize the risk of environmental impacts from leaks in the treatment system.

Duration of Remedial Activities

The duration of this groundwater treatment portion of the alternative is estimated to be approximately six months. It is assumed that; in year 1, quarterly monitoring will begin, the aquifer study will be performed, the plans prepared, and the extraction and treatment system will be installed and begin operating. In year two, four quarters of monitoring is performed, and the extraction system is eventually abandoned. Monitoring continues in subsequent years at a reduced semiannual frequency. In addition, residual perchlorate may be present in the clay matrix surrounding the permeable lenses which could continue to impact water quality into the future, and monitoring is assumed to continue for 5 years. An aquifer study may be needed to determine the most effective location for extraction and injection. Monitoring would be needed until the cleanup level is met to determine trends in groundwater contamination levels and effectiveness of the remedial action. The monitoring time may increase or decrease depending on the effectiveness of the treatment method.

LUC for groundwater will continue until groundwater concentrations are below the perchlorate cleanup level. The LUC restricting land use to nonresidential would continue until the hazardous substances remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure.

6.3.5.6 Implementability

Technical Feasibility

All components of this alternative are implementable. The equipment and materials required for ICT construction, groundwater extraction and treatment are commercially available, but specialized knowledge of perchlorate treatment would be required for implementation. With sufficient study, it is likely that an implementable design could be developed, however subsurface conditions could impact the effectiveness and cost. The LUCs portion of this alternative is readily implemented.

Administrative Feasibility

All actions under this alternative would be implemented on the site, and thus, do not require permits, though substantive provisions of permits that would otherwise be required are considered to be ARARs. By legal agreement (i.e., the FFA), the U.S. Army shall submit to the USEPA and TCEQ a Responsiveness Summary and a draft ROD. Following consideration of any comments by TCEQ, the ROD will be finalized jointly by the U.S.

Army and USEPA, or if they are unable to reach agreement about the selection of the remedial action, by the USEPA Administrator. By addressing the identified ARARs in the ROD and subsequent documents, it is anticipated that the alternative would adequately address all administrative barriers.

LUCs, although administratively implementable, would require the following: development of an implementation plan as part of the remedial design and internal notices to relevant regulatory offices of the existence of the LUCs. Approval by the USEPA and the State of Texas is required prior to the modification or termination of LUCs, implementation actions, or modification of land-use by the U.S. Army. The U.S. Army shall also seek concurrence from the USEPA and the State of Texas prior to any action that may disrupt the effectiveness of the LUCs or any action that may alter or negate the need for LUCs.

6.3.5.7 Cost

The total project present worth cost of Alternative 5 is approximately $783,000. The details of the cost estimates for all of the alternatives are presented in **Appendix B**.

Capital Cost

The total direct capital cost is estimated at approximately $389,000. The direct capital cost includes the activities associated with LUCs, constructing the ICTs for groundwater extraction, constructing the treatment system, an aquifer study, injection wells, and three new monitoring wells.

O&M Cost

The total O&M cost is estimated at approximately $394,000. The O&M cost includes extraction and treatment system operation, long-term monitoring through year 5, and costs associated with maintenance of LUCs. Five-year reviews will continue through year 30.

6.4 Comparative Analysis of Alternatives

6.4.1 Introduction

This section presents a comparative analysis of the remedial alternatives for LHAAP-04 according to the CERCLA evaluation criteria described in **Section 6.2**. This analysis is the second stage of the detailed evaluation process and provides information that forms the basis for selecting a preferred remedy.

This comparative analysis considers two of the three criteria categories, the threshold criteria and primary balancing criteria. The threshold category contains two criteria that must be satisfied by the selected alternative:

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

- Overall protection of human health and the environment and
- Compliance with ARARs.

These criteria are important because they reflect the key statutory mandates of CERCLA. If an alternative does not satisfy both of these criteria, it is not eligible to be selected.

The primary balancing category contains five criteria under which the relative advantages and disadvantages of the alternatives are compared to determine the most appropriate remedy. The five criteria are the following:

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume through treatment
- Short-term effectiveness
- Implementability
- Cost

The comparison of these five criteria for the alternatives forms the basis of the comparative analysis. The first and second balancing criteria address the statutory preference for treatment as a principal element of the remedy. Together with the third and fourth criteria, they form the basis for determining the general feasibility of each alternative and for determining whether costs are proportional to the overall effectiveness.

The two modifying criteria, state and community acceptance, must be satisfied if the alternative is to be accepted. The modifying criteria of state and community acceptance are typically not evaluated until the public has had an opportunity to comment on the Proposed Plan (PP). Because specific alternatives have not been presented to the state and community, these two criteria are not formally compared in the FS.

A comparative analysis under the threshold and primary balancing criteria is presented in **Sections 6.4.2** and **6.4.3**, respectively, and is consistent with the format of the individual analysis of alternatives in **Section 6.3**.

6.4.2 Threshold Criteria

6.4.2.1 Overall Protection of Human Health and the Environment

The five alternatives provide varying levels of human health protection. Alternative 1, no action, does not achieve the RAOs and provides the least protection of all the alternatives; it provides no reduction in risks to human health or the environment because no measures would be implemented to eliminate the pathway for human exposure to the groundwater contamination.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

Alternatives 2, 3, 4 and 5 all satisfy the RAOs for LHAAP-04. Alternative 2, which relies the most heavily on LUCs combined with MNA and does not provide contaminant removal or treatment in groundwater other than by natural processes, would be protective of human health because the LUCs would prevent human access to the contaminated groundwater. Alternatives 3, 4 and 5provide a higher level of overall protection than Alternative 2 because the ARARs for the perchlorate in groundwater would be achieved at the site in a shorter time frame, thereby eliminating unacceptable exposure hazards sooner.

6.4.2.2 Compliance with ARARs

Alternative 1 does not comply with chemical-specific ARARs for groundwater because no remedial action or measures would be implemented. Alternatives 2, 3, and 4 comply with chemical-specific ARARs for groundwater.

Action-specific ARARs would not apply to Alternative 1 since no remedial activities would be conducted. Alternatives 2, 3, 4 and 5 comply with action-specific ARARs. There are no location-specific ARARs.

6.4.3 Primary Balancing Criteria

6.4.3.1 Long-Term Effectiveness and Permanence

Alternative 1 would be the least effective and permanent in the long term because no contaminant removal or treatment would take place and no measures would be implemented to control exposure risks posed by contaminated site. Alternative 2 offers a moderate degree of long-term effectiveness through the implementation of MNA with LUCs, which would minimize the potential hazard posed by the contaminated groundwater.

Alternatives 3, 4 and 5 are designed to reduce groundwater contaminant concentrations and achieve the cleanup level in a shorter period of time and will provide long-term effectiveness and performance.

6.4.3.2 Reduction of Toxicity, Mobility, or Volume through Treatment

Alternatives 1 and 2 do not employ active treatment to result in a reduction of toxicity, mobility, or volume of contaminants. However, natural bioattenuation achieves a reduction in toxicity, mobility and volume in the aquifer as the contaminants are permanently degraded into non-toxic end products. The monitoring program employed for Alternative 2 would verify the degree with which these processes are occurring.

Alternative 3 provides a reduction in toxicity, mobility and volume via bioattenuation of contaminants, as well. As amendments are added to the aquifer to enhance the natural biological activity, this alternative provides a greater degree of reduction in toxicity, mobility and volume of the groundwater contaminants.

Alternative 4 provides a reduction in toxicity, mobility, and volume via extraction and treatment of groundwater. This alternative provides a greater degree of reduction in toxicity, mobility, and volume of groundwater contaminants in a shorter time.

Alternative 5 provides a reduction in toxicity, mobility, and volume via extraction through ICTs, and treatment of groundwater. This alternative provides the greatest degree of reduction in toxicity, mobility, and volume of groundwater contaminants in the shortest time.
Short-Term Effectiveness

Because Alternative 1 does not involve any remedial measures, no short-term risk to workers, the community or the environment would exist.

Alternatives 2, 3, 4 and 5 involve potential short-term risks to workers associated with exposure to contaminated groundwater and operation of drilling/construction equipment. The time period to achieve the groundwater cleanup level is the most significant difference between Alternatives 2 and Alternatives 3, 4 or 5. Alternative 3 is expected to take less time to achieve the cleanup level than Alternative 2, provided subsurface conditions for in situ bioremediation are favorable. Alternative 4 is expected to take less time to achieve the cleanup level than Alternative 2 or Alternative 3, provided the extraction well can successfully pump water. Alternative 5 is expected to take less time to achieve the cleanup level than Alternative 2, 3 or 4, provided the ICTs can successfully pump water. The implementation of Alternative 3, 4 or 5 would require more time than for Alternative 2 due to the requirement for a remedial design and pre-design activities. Alternative 2 would provide almost immediate protection because the LUCs could be implemented relatively quickly, but maintenance of these controls would be required longer than for Alternative 3, 4 or 5.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

6.4.3.3 Implementability

Under the no action alternative, no remedial action would be taken. Therefore, no difficulties or uncertainties would be associated with its implementation. Alternatives 2, 3, 4 and 5 are easily implemented from a technical standpoint as all equipment, materials, and services required are readily available. Alternative 3 would be slightly more difficult to implement than Alternative 2 from a technical standpoint due to the specialized expertise required to design and construct the in situ bioremediation treatment elements. Alternative 4 would be slightly more difficult than Alternative 3 due to the need for continued operation of a treatment system in an area physically accessible to public visitors to the national wildlife refuge. Alternative 5 would be slightly more difficult than Alternative 4 due to the need for ICT construction in an area accessible to public visitors, followed by continued operation of a treatment system in an area physically accessible to public visitors to the national wildlife refuge. Administratively, all of the alternatives are implementable.

6.4.3.4 Cost

Cost estimates are used in the CERCLA FS process to eliminate those remedial alternatives that are significantly more expensive than competing alternatives without offering commensurate increases in performance or overall protection of human health or the environment. The cost estimates developed are preliminary estimates with an intended accuracy range of +50 to –30 percent. Final costs will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final scope, final schedule, final engineering design, and other variables.

Costs developed are capital costs (including fixed-price remedial construction) and long-term O&M costs (post-remediation). Overall 30-year present worth costs are developed for each alternative assuming a discount rate of 2.7 percent. Total project present worth costs for each alternative is presented in **Appendix B**.

The progression of present worth costs from the least expensive alternative to the most expensive alternative is as follows: Alternative 1, Alternative 2, Alternative 3, Alternative 4, and Alternative 5. No costs are associated with Alternative 1 because no remedial activities would be conducted. Alternative 2 has the lowest present worth cost of the active remedial alternatives. Alternative 5 has the highest present worth cost. The highest cost alternative is approximately one third more expensive than the lowest cost alternative.

The present worth capital cost for Alternative 2 is lower than that of Alternative 3, primarily due to the activities associated with the injection phase of in situ bioremediation under Alternative 3. The costs for continuous operation and security measures push the present worth capital costs for Alternative 4 and Alternative 5 higher than the others. The higher cost of ICTs compared to a vertical extraction well accounts for Alternative 5 costing more than Alternative 4. The present worth capital cost of Alternative 5 is approximately three times more than the present worth capital cost of Alternative 2.

The highest present worth O&M cost is associated with Alternative 2 primarily due to the prolonged period of groundwater sampling compared to the other alternatives. Alternative 5 has the lowest O&M costs primarily due to a shorter groundwater sampling period enabled by the aggressive extraction and treatment system. The difference between the highest and lowest present worth O&M costs is less than 15%.

7.0 REFERENCES

Anderson Columbia Environmental (ACE), 1997, *Closure Report, Pilot Wastewater Treatment Plant, Karnack, Texas, EPA Identification No. TX6213820583, Solid Waste Registration No. 30990*, September.

Jacobs Engineering Group, Inc. (Jacobs), 2002, *Remedial Investigation Report Addendum for the Group 4 Sites, Remedial Investigation Report, Sites 04, 08, 67, and Hydrocarbon Study, Longhorn Army Ammunition Plant, Karnack, Texas,* Oak Ridge, Tennessee, February.

Jacobs, 2003, *Final Baseline Human Health and Screening Ecological Risk Assessment for the Group 4 Sites (Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, 67, Goose Prairie Creek, Saunders Branch, Central Creek, and Caddo Lake), Longhorn Army Ammunition Plant, Karnack, Texas,* Final, Oak Ridge, Tennessee, June.

Plexus, 2005, *Environmental Site Assessment, Phase I and II Report, Final, Production Areas, Longhorn Army Ammunition Plant, Karnack, Texas*, February.

Shaw Environmental, Inc. (Shaw), 2007a, *Data Gaps Investigation, Longhorn Army Ammunition Plant, Karnack, Texas,* Final, Houston, Texas, April.

Shaw, 2007b, *Final Modeling Report, Derivation of Soil and Groundwater Concentrations Protective of Surface Water and Sediment, Revision 1, Longhorn Army Ammunition Plant, Karnack, Texas*, February.

Shaw, 2007c, *Final Installation-Wide Baseline Ecological Risk Assessment, Longhorn Army Ammunition Plant, Karnack, Texas*, Houston, Texas, November.

Shaw, 2009, *Engineering Evaluation/Cost Analysis for LHAAP-04*.

Shaw, 2011, *Final Completion Report Non-Time-Critical Removal Action, Longhorn Army Ammunition Plant, Karnack, Texas*, Houston, Texas, August.

Solutions to Environmental Problems (STEP), 2005, *Plant-Wide Perchlorate Investigation, Longhorn Army Ammunition Plant, Karnack, Texas*, Final, Oak Ridge, Tennessee, April.

Texas Commission on Environmental Quality (TCEQ), 2006, Updated Examples of Standard No. 2, Appendix II, Medium-Specific Concentrations, March 31.

Texas Natural Resource Conservation Commission, (TNRCC) 1998, Conditional Approval Letter for Closure of Former Pilot Wastewater Treatment Plant.

U.S. Department of the Army, (U.S. Army), 1991, Federal Facility Agreement (FFA), September 11, effective date December 30.

U.S. Environmental Protection Agency (USEPA), 1988a, *CERCLA Compliance With Other Laws Manual, Volume I,* OSWER Directive 9234.1-01, Washington, DC, August.

USEPA, 1988b, *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA,* Interim Final, OSWER Directive 9355.3-01, Washington, DC.

USEPA, 1989, *CERCLA Compliance with State Requirements,* OSWER Directive 9234.2-05FS, Washington, DC, December.

USEPA, 1991, *ARARs Q's & A's: General Policy, RCRA, CWA, SDWA, Post-ROD Information, and Contingent Waivers,* OSWER Directive 9234.2-01FS-A, Washington, DC.

USEPA, 1999, *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*, April.

USEPA, 2007, Monitored Natural Attenuation of Inorganic Contaminants in Ground Water, Volume 2, EPA/600/R-07/140, October.

Appendix A

Analytical Reports, Field Data, Boring Logs, and Well Construction

Analytical Reports are provided electronically on the Shaw/Army Portal at:

https://extranet.shawgrp.com/sites/Longhorn/stakeholders/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2fsites%2fLonghorn%2fstakeholders%2fShared%20Documents%2fLHAAP%2d04%20DF%20FS%20for%20GW%20Nov%202011&View=%7b1EAFB093%2d88CA%2d462B%2d8821%2dF199CAA68643%7d

Laboratory Reports

Filename	Date	Sampled Wells	Analysis
LHAAP-04 CLO4_VOC (0820) L10080631.pdf	8/20/10	04WW03, LHSMW02	VOCs, perchlorate
LHAAP-04 CLO4 (0903) L10090193.pdf	9/3/10	04WW01, 04WW02, 04WW04, 04WW05, LHSMW01	perchlorate
LHAAP-04 CLO4 (1013) L10100391.pdf	10/13/10	04WW04	perchlorate
LHAAP-04 CLO4 (1110) L10110398.pdf	11/10/10	04WW04, 04WW05	perchlorate
LHAAP-04 CLO4 (0223) L11020661.pdf	3/8/11	04WW01, 04WW04, 04WW05, LHSMW01, LHSMW02	perchlorate

Table A-1

Groundwater Sample Results

LOCATION_CODE			04WW01					04WW01					04WW02					04WW03					04WW04					04WW04				
SAMPLE_NO			04WW01-100903					04WW01-110223					04WW02-100903					04WW03-100820					04WW04-100903					04WW04-101013				
SAMPLE_DATE			3-Sep-10					23-Feb-11					3-Sep-10					20-Aug-10					3-Sep-10					13-Oct-10				
SAMPLE_PURPOSE			REG					REG					REG					REG					REG					REG				
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	Result	Qual	ValQual	RC	DF	Result	Qual	ValQual	RC	DF	Result	Qual	ValQual	RC	DF	Result	Qual	ValQual	RC	DF	Result	Qual	ValQual	RC	DF
GEN CHEMISTRY	Perchlorate	ug/L	0.1	U	U		1	0.114	J	J	15	1	0.1	U	U		1	0.1	U	U		1	4590				10000	2920				1000
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L																0.25	U	U		1										
VOLATILES	1,1,1-Trichloroethane	ug/L																0.25	U	U		1										
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L																0.2	U	U		1										
VOLATILES	1,1,2-Trichloroethane	ug/L																0.25	U	U		1										
VOLATILES	1,1-Dichloroethane	ug/L																0.125	U	U		1										
VOLATILES	1,1-Dichloroethene	ug/L																0.5	U	U		1										
VOLATILES	1,1-Dichloropropene	ug/L																0.25	U	U		1										
VOLATILES	1,2,3-Trichlorobenzene	ug/L																0.15	U	U		1										
VOLATILES	1,2,3-Trichloropropane	ug/L																0.5	U	U		1										
VOLATILES	1,2,4-Trichlorobenzene	ug/L																0.2	U	U		1										
VOLATILES	1,2,4-Trimethylbenzene	ug/L																0.25	U	U		1										
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L																1	U	U		1										
VOLATILES	1,2-Dibromoethane	ug/L																0.25	U	U		1										
VOLATILES	1,2-Dichlorobenzene	ug/L																0.125	U	U		1										
VOLATILES	1,2-Dichloroethane	ug/L																0.25	U	U		1										
VOLATILES	1,2-Dichloropropane	ug/L																0.2	U	U		1										
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L																0.25	U	U		1										
VOLATILES	1,3,5-Trimethylbenzene	ug/L																0.25	U	U		1										
VOLATILES	1,3-Dichlorobenzene	ug/L																0.25	U	U		1										
VOLATILES	1,3-Dichloropropane	ug/L																0.2	U	U		1										
VOLATILES	1,4-Dichlorobenzene	ug/L																0.125	U	U		1										
VOLATILES	2,2-Dichloropropane	ug/L																0.25	U	U		1										
VOLATILES	2-Butanone	ug/L																2.5	U	U		1										
VOLATILES	2-Chloroethyl vinyl ether	ug/L																2	U	U		1										
VOLATILES	2-Chlorotoluene	ug/L																0.125	U	U		1										
VOLATILES	2-Hexanone	ug/L																2.5	U	U		1										
VOLATILES	4-Chlorotoluene	ug/L																0.25	U	U		1										
VOLATILES	Acetone	ug/L																2.5	U	U		1										
VOLATILES	Benzene	ug/L																0.125	U	U		1										
VOLATILES	Bromobenzene	ug/L																0.125	U	U		1										
VOLATILES	Bromochloromethane	ug/L																0.2	U	U		1										
VOLATILES	Bromodichloromethane	ug/L																0.25	U	U		1										
VOLATILES	Bromoform	ug/L																0.5	U	U		1										
VOLATILES	Bromomethane	ug/L																0.5	U	U		1										
VOLATILES	Carbon disulfide	ug/L																0.5	U	U		1										
VOLATILES	Carbon tetrachloride	ug/L																0.25	U	U		1										
VOLATILES	Chlorobenzene	ug/L																0.125	U	U		1										
VOLATILES	Chloroethane	ug/L																0.5	U	U		1										
VOLATILES	Chloroform	ug/L																0.125	U	U		1										
VOLATILES	Chloromethane	ug/L																0.5	U	U		1										
VOLATILES	cis-1,2-Dichloroethene	ug/L																0.25	U	U		1										
VOLATILES	cis-1,3-Dichloropropene	ug/L																0.25	U	U		1										
VOLATILES	Dibromochloromethane	ug/L																0.25	U	U		1										
VOLATILES	Dibromomethane	ug/L																0.25	U	U		1										
VOLATILES	Dichlorodifluoromethane	ug/L																0.25	U	U		1										
VOLATILES	Ethylbenzene	ug/L																0.25	U	U		1										
VOLATILES	Hexachlorobutadiene	ug/L																0.25	U	U		1										
VOLATILES	Isopropylbenzene	ug/L																0.25	U	U		1										
VOLATILES	m,p-Xylenes	ug/L																0.5	U	U		1										
VOLATILES	Methyl isobutyl ketone	ug/L																2.5	U	U		1										
VOLATILES	Methylene chloride	ug/L																0.25	U	U		1										
VOLATILES	Naphthalene	ug/L																0.2	U	U		1										
VOLATILES	n-BUTYLBENZENE	ug/L																0.25	U	U		1										
VOLATILES	n-PROPYLBENZENE	ug/L																0.125	U	U		1										
VOLATILES	p-ISOPROPYLTOLUENE	ug/L																0.25	U	U		1										
VOLATILES	sec-BUTYLBENZENE	ug/L																0.25	U	U		1										
VOLATILES	Styrene	ug/L																0.125	U	U		1										
VOLATILES	tert-BUTYLBENZENE	ug/L																0.25	U	U		1										
VOLATILES	Tetrachloroethene	ug/L																0.25	U	U		1										
VOLATILES	Toluene	ug/L																0.25	U	U		1										
VOLATILES	trans-1,2-Dichloroethene	ug/L																0.25	U	U		1										
VOLATILES	trans-1,3-Dichloropropene	ug/L																0.5	U	U		1										
VOLATILES	Trichloroethene	ug/L																0.25	U	U		1										
VOLATILES	Trichlorofluoromethane	ug/L																0.25	U	U		1										
VOLATILES	Vinyl acetate	ug/L																2.5	U	U		1										
VOLATILES	Vinyl chloride	ug/L																0.25	U	U		1										

Table A-1

Groundwater Sample Results

LOCATION_CODE			04WW04					04WW04					04WW05					04WW05					04WW05					04WW05				
SAMPLE_NO			04WW04-101110					04WW04-110223					04WW05-100903					04WW05-101110					04WW05-110223					DUP01-110223				
SAMPLE_DATE			10-Nov-10					23-Feb-11					3-Sep-10					10-Nov-10					23-Feb-11					23-Feb-11				
SAMPLE_PURPOSE			REG					REG					REG					REG					REG					FD				
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	Result	Qual	ValQual	RC	DF	Result	Qual	ValQual	RC	DF	Result	Qual	ValQual	RC	DF	Result	Qual	ValQual	RC	DF	Result	Qual	ValQual	RC	DF
GEN CHEMISTRY	Perchlorate	ug/L	5410				10000	1580				1000	0.9				1	6.58				1	0.326				1	0.327				1
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L																													
VOLATILES	1,1,1-Trichloroethane	ug/L																													
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L																													
VOLATILES	1,1,2-Trichloroethane	ug/L																													
VOLATILES	1,1-Dichloroethane	ug/L																													
VOLATILES	1,1-Dichloroethene	ug/L																													
VOLATILES	1,1-Dichloropropene	ug/L																													
VOLATILES	1,2,3-Trichlorobenzene	ug/L																													
VOLATILES	1,2,3-Trichloropropane	ug/L																													
VOLATILES	1,2,4-Trichlorobenzene	ug/L																													
VOLATILES	1,2,4-Trimethylbenzene	ug/L																													
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L																													
VOLATILES	1,2-Dibromoethane	ug/L																													
VOLATILES	1,2-Dichlorobenzene	ug/L																													
VOLATILES	1,2-Dichloroethane	ug/L																													
VOLATILES	1,2-Dichloropropane	ug/L																													
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L																													
VOLATILES	1,3,5-Trimethylbenzene	ug/L																													
VOLATILES	1,3-Dichlorobenzene	ug/L																													
VOLATILES	1,3-Dichloropropane	ug/L																													
VOLATILES	1,4-Dichlorobenzene	ug/L																													
VOLATILES	2,2-Dichloropropane	ug/L																													
VOLATILES	2-Butanone	ug/L																													
VOLATILES	2-Chloroethyl vinyl ether	ug/L																													
VOLATILES	2-Chlorotoluene	ug/L																													
VOLATILES	2-Hexanone	ug/L																													
VOLATILES	4-Chlorotoluene	ug/L																													
VOLATILES	Acetone	ug/L																													
VOLATILES	Benzene	ug/L																													
VOLATILES	Bromobenzene	ug/L																													
VOLATILES	Bromochloromethane	ug/L																													
VOLATILES	Bromodichloromethane	ug/L																													
VOLATILES	Bromoform	ug/L																													
VOLATILES	Bromomethane	ug/L																													
VOLATILES	Carbon disulfide	ug/L																													
VOLATILES	Carbon tetrachloride	ug/L																													
VOLATILES	Chlorobenzene	ug/L																													
VOLATILES	Chloroethane	ug/L																													
VOLATILES	Chloroform	ug/L																													
VOLATILES	Chloromethane	ug/L																													
VOLATILES	cis-1,2-Dichloroethene	ug/L																													
VOLATILES	cis-1,3-Dichloropropene	ug/L																													
VOLATILES	Dibromochloromethane	ug/L																													
VOLATILES	Dibromomethane	ug/L																													
VOLATILES	Dichlorodifluoromethane	ug/L																													
VOLATILES	Ethylbenzene	ug/L																													
VOLATILES	Hexachlorobutadiene	ug/L																													
VOLATILES	Isopropylbenzene	ug/L																													
VOLATILES	m,p-Xylenes	ug/L																													
VOLATILES	Methyl isobutyl ketone	ug/L																													
VOLATILES	Methylene chloride	ug/L																													
VOLATILES	Naphthalene	ug/L																													
VOLATILES	n-BUTYLBENZENE	ug/L																													
VOLATILES	n-PROPYLBENZENE	ug/L																													
VOLATILES	p-ISOPROPYLTOLUENE	ug/L																													
VOLATILES	sec-BUTYLBENZENE	ug/L																													
VOLATILES	Styrene	ug/L																													
VOLATILES	tert-BUTYLBENZENE	ug/L																													
VOLATILES	Tetrachloroethene	ug/L																													
VOLATILES	Toluene	ug/L																													
VOLATILES	trans-1,2-Dichloroethene	ug/L																													
VOLATILES	trans-1,3-Dichloropropene	ug/L																													
VOLATILES	Trichloroethene	ug/L																													
VOLATILES	Trichlorofluoromethane	ug/L																													
VOLATILES	Vinyl acetate	ug/L																													
VOLATILES	Vinyl chloride	ug/L																													

Table A-1

Groundwater Sample Results

LOCATION_CODE			LHSMW01					LHSMW01					LHSMW01					LHSMW02					LHSMW02				
SAMPLE_NO			LHSMW01-100903					LHSMW01-100903-FD					LHSMW01-110223					LHSMW02-100820					LHSMW02-110223				
SAMPLE_DATE			3-Sep-10					3-Sep-10					23-Feb-11					20-Aug-10					23-Feb-11				
SAMPLE_PURPOSE			REG					FD					REG					REG					REG				
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	Result	Qual	ValQual	RC	DF	Result	Qual	ValQual	RC	DF	Result	Qual	ValQual	RC	DF	Result	Qual	ValQual	RC	DF
GEN CHEMISTRY	Perchlorate	ug/L	0.676				1	0.609				1	0.208				1	0.1	U	U		1	1.3				1
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L																0.25	U	U		1					
VOLATILES	1,1,1-Trichloroethane	ug/L																0.25	U	U		1					
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L																0.2	U	U		1					
VOLATILES	1,1,2-Trichloroethane	ug/L																0.25	U	U		1					
VOLATILES	1,1-Dichloroethane	ug/L																0.125	U	U		1					
VOLATILES	1,1-Dichloroethene	ug/L																0.5	U	U		1					
VOLATILES	1,1-Dichloropropene	ug/L																0.25	U	U		1					
VOLATILES	1,2,3-Trichlorobenzene	ug/L																0.15	U	U		1					
VOLATILES	1,2,3-Trichloropropane	ug/L																0.5	U	U		1					
VOLATILES	1,2,4-Trichlorobenzene	ug/L																0.2	U	U		1					
VOLATILES	1,2,4-Trimethylbenzene	ug/L																0.25	U	U		1					
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L																1	U	U		1					
VOLATILES	1,2-Dibromoethane	ug/L																0.25	U	U		1					
VOLATILES	1,2-Dichlorobenzene	ug/L																0.125	U	U		1					
VOLATILES	1,2-Dichloroethane	ug/L																0.25	U	U		1					
VOLATILES	1,2-Dichloropropane	ug/L																0.2	U	U		1					
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L																0.25	U	U		1					
VOLATILES	1,3,5-Trimethylbenzene	ug/L																0.25	U	U		1					
VOLATILES	1,3-Dichlorobenzene	ug/L																0.25	U	U		1					
VOLATILES	1,3-Dichloropropane	ug/L																0.2	U	U		1					
VOLATILES	1,4-Dichlorobenzene	ug/L																0.125	U	U		1					
VOLATILES	2,2-Dichloropropane	ug/L																0.25	U	U		1					
VOLATILES	2-Butanone	ug/L																2.5	U	U		1					
VOLATILES	2-Chloroethyl vinyl ether	ug/L																2	U	U		1					
VOLATILES	2-Chlorotoluene	ug/L																0.125	U	U		1					
VOLATILES	2-Hexanone	ug/L																2.5	U	U		1					
VOLATILES	4-Chlorotoluene	ug/L																0.25	U	U		1					
VOLATILES	Acetone	ug/L																2.5	U	U		1					
VOLATILES	Benzene	ug/L																0.125	U	U		1					
VOLATILES	Bromobenzene	ug/L																0.125	U	U		1					
VOLATILES	Bromochloromethane	ug/L																0.2	U	U		1					
VOLATILES	Bromodichloromethane	ug/L																0.25	U	U		1					
VOLATILES	Bromoform	ug/L																0.5	U	U		1					
VOLATILES	Bromomethane	ug/L																0.5	U	U		1					
VOLATILES	Carbon disulfide	ug/L																0.853	J	J	15	1					
VOLATILES	Carbon tetrachloride	ug/L																0.25	U	U		1					
VOLATILES	Chlorobenzene	ug/L																0.125	U	U		1					
VOLATILES	Chloroethane	ug/L																0.5	U	U		1					
VOLATILES	Chloroform	ug/L																0.125	U	U		1					
VOLATILES	Chloromethane	ug/L																0.5	U	U		1					
VOLATILES	cis-1,2-Dichloroethene	ug/L																0.25	U	U		1					
VOLATILES	cis-1,3-Dichloropropene	ug/L																0.25	U	U		1					
VOLATILES	Dibromochloromethane	ug/L																0.25	U	U		1					
VOLATILES	Dibromomethane	ug/L																0.25	U	U		1					
VOLATILES	Dichlorodifluoromethane	ug/L																0.25	U	U		1					
VOLATILES	Ethylbenzene	ug/L																0.25	U	U		1					
VOLATILES	Hexachlorobutadiene	ug/L																0.25	U	U		1					
VOLATILES	Isopropylbenzene	ug/L																0.25	U	U		1					
VOLATILES	m,p-Xylenes	ug/L																0.5	U	U		1					
VOLATILES	Methyl isobutyl ketone	ug/L																2.5	U	U		1					
VOLATILES	Methylene chloride	ug/L																0.25	U	U		1					
VOLATILES	Naphthalene	ug/L																2.05				1					
VOLATILES	n-BUTYLBENZENE	ug/L																0.25	U	U		1					
VOLATILES	n-PROPYLBENZENE	ug/L																0.125	U	U		1					
VOLATILES	p-ISOPROPYLTOLUENE	ug/L																0.25	U	U		1					
VOLATILES	sec-BUTYLBENZENE	ug/L																0.25	U	U		1					
VOLATILES	Styrene	ug/L																0.125	U	U		1					
VOLATILES	tert-BUTYLBENZENE	ug/L																0.25	U	U		1					
VOLATILES	Tetrachloroethene	ug/L																0.25	U	U		1					
VOLATILES	Toluene	ug/L																0.25	U	U		1					
VOLATILES	trans-1,2-Dichloroethene	ug/L																0.25	U	U		1					
VOLATILES	trans-1,3-Dichloropropene	ug/L																0.5	U	U		1					
VOLATILES	Trichloroethene	ug/L																0.25	U	U		1					
VOLATILES	Trichlorofluoromethane	ug/L																0.25	U	U		1					
VOLATILES	Vinyl acetate	ug/L																2.5	U	U		1					
VOLATILES	Vinyl chloride	ug/L																0.25	U	U		1					

Notes:
U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.
J - The analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed
15 - Quantitation

00116202

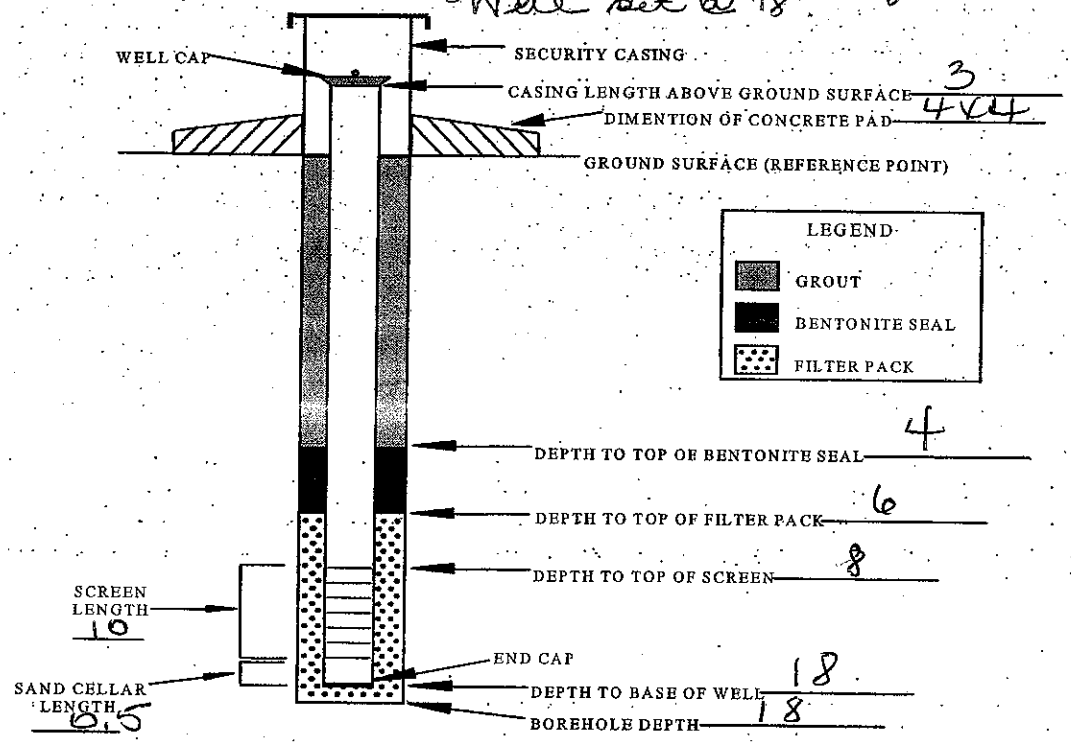
WELL COMPLETION FORM (Stickup or Above Grade Completion Well)

FIELD REPRESENTATIVE: Allen, S.
DRILLING CONTRACTOR: ETTL
DRILLING TECHNIQUE: Rotary
AUGER SIZE AND TYPE: 4"
BOREHOLE IDENTIFICATION: 04WW04
BOREHOLE DIAMETER: 4"
WELL IDENTIFICATION: 04WW04
WELL CONSTRUCTION START DATE: 08/18/10
WELL CONSTRUCTION COMPLETE DATE:
SCREEN MATERIAL: Sch 40 PVC
SCREEN DIAMETER: ~~4"~~ 2"
STRATUM-SCREENED INTERVAL (FT): 8 - 18
CASING MATERIAL: Sch 40 PVC
CASING DIAMETER: 2"

TYPE OF FILTER PACK: Sand
GRADIATION: 20/40
AMOUNT OF FILTER PACK USED: 9
TYPE OF BENTONITE: Pellets
AMOUNT BENTONITE USED: 5 (L) for seal
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 8
GROUT MATERIALS USED: —
DIMENSIONS OF SECURITY CASING: 3 X 3
TYPE OF WELL CAP: Sch 40 PVC
TYPE OF END CAP: Sch 40 PVC

COMMENTS:
4 buckets of pellets used to fill from 18-28 ft.
Water Set @ 18'

SPECIAL CONDITIONS (describe and draw)



INSTALLED BY: ETTL - B Reagan INSTALLATION OBSERVED BY: S. Allen
DISCREPANCIES: NONE

00116203

HOLE NO. 04WW04

BORING LOG	DIVISION	INSTALLATION LHAAP-04	SHEET 1 OF 2 SHEETS
1. PROJECT LHAAP		9. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL	
2. LOCATION LHAAP-04		10. MANUFACTURER'S DESIGNATION OF DRILL B5500	
3. DRILLING AGENCY ETTL		11. OVERBURDEN SAMPLES	DISTURBED — UNDISTURBED —
4. HOLE NO. (As shown on drawing title and file number) 04WW04		12. TOTAL NUMBER CORE BOXES —	
		13. ELEVATION GROUND WATER 15.5 (DTW)	
5. NAME OF DRILLER B. Reagan		14. DATE HOLE STARTED 08/17/10	COMPLETED 08/18/10
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED 0 DEG. FROM VERT.		15. ELEVATION TOP OF HOLE —	
7. TOTAL DEPTH OF HOLE 27		16. TOTAL CORE RECOVERY FOR BORING 100 %	
8. SIZE AND TYPE OF BIT 4" auger		17. LOGGED BY Allen, S	QC KE

PID (ppm) a	DEPTH b	USCS c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	SAMPLE f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	1		Backfill put in place during Shaw excavation activities.			
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
0.0		CL	Clay, sandy, low plasticity, dense, dry, friable, black	100%		

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | Hole No. D4WW04

PROJECT: LHAAP | INSTALLATION: LHAAP-04 | SHEET 2 OF 2 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	13	SC	Sand, clayey, med grain, med to well sorted, dry, grey			
	14	CL	Clay, sandy, low to no plasticity dense, dry, black to grey			
0.0	15	CL/CH	- becomes more moist, high plasticity, soft			▼
	16		- Saturated			
	17	CL	- becomes dry, low to no plasticity, dense			Bentonite up to 18'. Set screen from 8 to 18.
	18					
	19					
0.0	20					
	21					
	22					
	23					
	24					
	25					
0.0	26					
	27		End of Boring			

ENG FORM 1836—APREVIOUS EDITIONS ARE OBSOLETE. MAR 71

PROJECT: LHAAP | HOLE NO.: 04WW04

00116205

STATE OF TEXAS WELL REPORT for Tracking #233508

Owner:	**USACE - LHAAP**	Owner Well #:	**04WW04**
Address:	**Spur 449 @ Hwy 134 Karnack , TX 75661**	Grid #:	**35-23-6**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 59" N**
Well County:	**Harrison**	Longitude:	**094° 09' 06" W**
Elevation:	**No Data**	GPS Brand Used:	**Garmin 12 GPS**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Date: Started: **8/17/2010**
Completed: **8/18/2010**

Diameter of Hole: Diameter: **7 7/8 in From Surface To 28 ft**

Drilling Method: **Mud Rotary Hollow Stem Auger**

Borehole Completion: Gravel Packed From: **6 ft to 18 ft**
Gravel Pack Size: **20/40**

Annular Seal Data: 1st Interval: **From 0 ft to 4 ft with 1 cement (#sacks and material)**
2nd Interval: **From 4 ft to 6 ft with 1 bentonite (#sacks and material)**
3rd Interval: **From 18 ft to 28 ft with 4 bentonite (#sacks and material)**
Method Used: **Tremie pipe**
Cemented By: **Driller**
Distance to Septic Field or other Concentrated Contamination: **No Data**
Distance to Property Line: **No Data**
Method of Verification: **No Data**
Approved by Variance: **No Data**

Surface Completion: **Surface Sleeve Installed**

Water Level: Static level: **No Data**
Artesian flow: **No Data**

Packers: **No Data**

Plugging Info: Casing or Cement/Bentonite left in well: **No Data**

Type Of Pump: **No Data**

Well Tests: **No Data**

Water Quality: Type of Water: **No Data**
Depth of Strata: **No Data**
Chemical Analysis Made: **No Data**
Did the driller knowingly penetrate any strata which contained undesirable constituents: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.

Company Information: **ETTL Engineers & Consultants Inc.**
1717 E. Erwin

	Tyler , TX 75702
Driller License Number:	**54683**
Licensed Well Driller Signature:	**Wilburn Ragon, Jr.**
Registered Driller Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Comments:	**No Data**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking number (Tracking **#233508**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0-12 Fill
12-12.5 Sandy lean clay - black
12.5-13.5 Clayey sand - gray
13.5-28 Sandy lean clay - black & gray

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
2 New PVC Sch. 40 0 - 8
2 New PVC Sch. 40 - slotted 8 - 18 0.010"

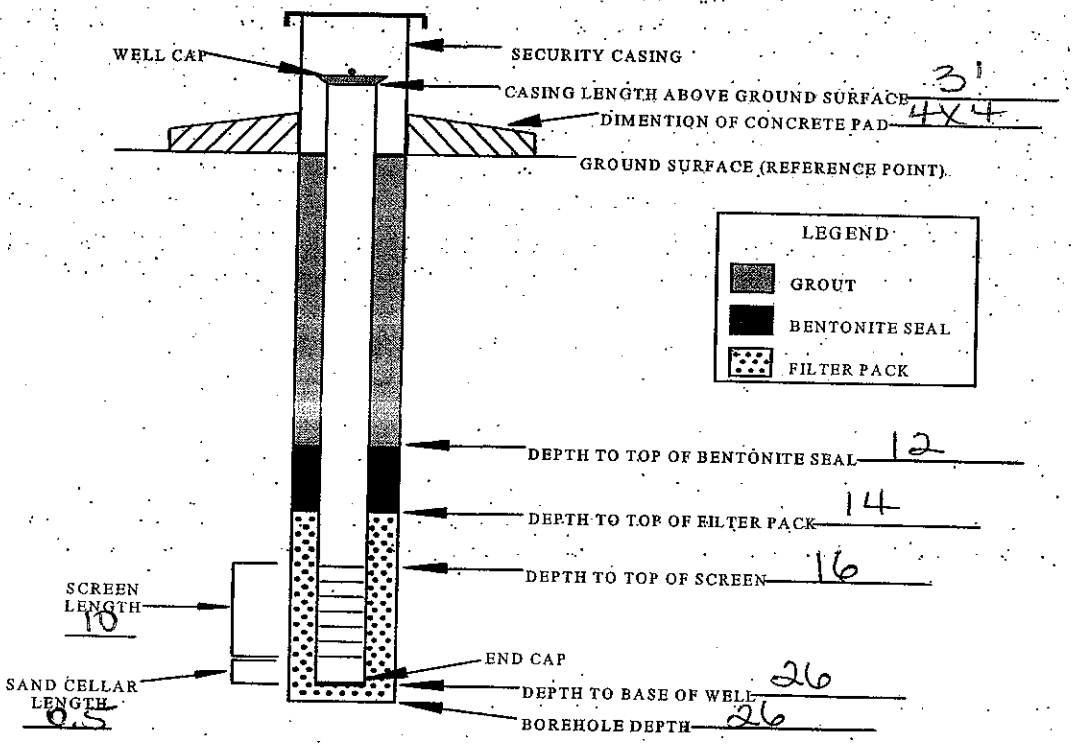
00116207

WELL COMPLETION FORM (Stickup or Above Grade Completion Well)

FIELD REPRESENTATIVE: S. Allen
DRILLING CONTRACTOR: ETTL
DRILLING TECHNIQUE: Rotary
AUGER SIZE AND TYPE: 4"
BOREHOLE IDENTIFICATION: 04WW05
BOREHOLE DIAMETER: 4"
WELL IDENTIFICATION: 04WW05
WELL CONSTRUCTION START DATE: 08/18/10
WELL CONSTRUCTION COMPLETE DATE:
SCREEN MATERIAL: Sch 40 PVC
SCREEN DIAMETER: 4" 2"
STRATUM-SCREENED INTERVAL (FT): 16-26'
CASING MATERIAL: Sch 40 PVC
CASING DIAMETER: 4" 2"

TYPE OF FILTER PACK: Sand
GRADIATION: 20/40
AMOUNT OF FILTER PACK USED: 7 bags
TYPE OF BENTONITE: Pellet
AMOUNT BENTONITE USED: 1 Bucket
TYPE OF CEMENT: Portland
AMOUNT CEMENT USED: 8
GROUT MATERIALS USED: —
DIMENSIONS OF SECURITY CASING: 3"X3"
TYPE OF WELL CAP: Sch 40 PVC
TYPE OF END CAP: Sch 40 PVC
COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: ETTL- B Reagen
INSTALLATION OBSERVED BY: S. Allen
DISCREPANCIES: NONE

00116208

HOLE NO. 04WW05

BORING LOG	DIVISION	INSTALLATION: LHAAP-04	SHEET 1 OF 2 SHEETS
1. PROJECT: LHAAP		9. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL	
2. LOCATION: LHAAP-04		10. MANUFACTURER'S DESIGNATION OF DRILL: B5500	
3. DRILLING AGENCY: ETTL		11. OVERBURDEN SAMPLES: DISTURBED —	UNDISTURBED —
4. HOLE NO. (As shown on drawing title and file number): 04WW05		12. TOTAL NUMBER CORE BOXES: —	
		13. ELEVATION GROUND WATER: 22' (DTW)	
5. NAME OF DRILLER: B. Reagan		14. DATE HOLE: STARTED 08/18/10	COMPLETED 08/18/10
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED 0 DEG. FROM VERT.		15. ELEVATION TOP OF HOLE: —	
7. TOTAL DEPTH OF HOLE: 26'		16. TOTAL CORE RECOVERY FOR BORING: 99.9%	
8. SIZE AND TYPE OF BIT: 4" auger		17. LOGGED BY: Allen S	QC: KR

PID (ppm) a	DEPTH b	USCS c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	SAMPLE f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0	OH	Topsoil			
	1	CL	Clay, sandy, no plasticity, hard, dry, rocky, brown			
	2	SC	Sand, clayey, med grain med sorting, dry, rocky, brown			
0.0	3	CL	Clay, sandy, low to no plasticity, hard, dry, brown to reddish brown	100%		
	4					
	5					
	6					
	7					
0.0	8			100%		
	9					
	10					
	11					
	12					
		SC	Sand, clayey, rocky, med grain, poorly sorted,			

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE — | Hole No. 04WW05

PROJECT: LHAAP | INSTALLATION: LHAAP-04 | SHEET 2 OF 2 SHEETS

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (Description) (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) (g)
	13		friable w/ dark red-brown staining, dry, yellow to reddish brown			
		CL	Clay, sandy, no plasticity dense-hard, dry, black to grey			
0.0	14			100%		
	15					
	16					
	17					
0.0	18					
	19			100%		
	20					
	21					Expansive clay had caused core to become lodged in auger. Will go to short pushes
0.0	22		saturated	0%		
	23					
	24					
		CL	Clay, sandy, no plasticity, hard, dry, black-grey mottled			
0.0	25					
	26		END of Boring			Set well @ 26' Screen 16-26'
	27					

00116210

STATE OF TEXAS WELL REPORT for Tracking #233509

Owner:	**USACE - LHAAP**	Owner Well #:	**04WW05**
Address:	**Spur 449 @ Hwy 134 Karnack , TX 75661**	Grid #:	**35-23-6**
Well Location:	**Hwy 143 @ Spur 449, LHAAP Karnack , TX 75661**	Latitude:	**32° 40' 58" N**
Well County:	**Harrison**	Longitude:	**094° 09' 07" W**
Elevation:	**No Data**	GPS Brand Used:	**Garmin 12 GPS**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Date: Started: **8/18/2010**
Completed: **8/18/2010**

Diameter of Hole: Diameter: **8.25 in From Surface To 26 ft**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: Gravel Packed From: **14 ft to 26 ft**
Gravel Pack Size: **20/40**

Annular Seal Data: 1st Interval: **From 0 ft to 12 ft with 3 cement (#sacks and material)**
2nd Interval: **From 12 ft to 14 ft with 1 bentonite (#sacks and material)**
3rd Interval: **No Data**
Method Used: **Tremie pipe**
Cemented By: **Driller**
Distance to Septic Field or other Concentrated Contamination: **No Data**
Distance to Property Line: **No Data**
Method of Verification: **No Data**
Approved by Variance: **No Data**

Surface Completion: **Surface Sleeve Installed**

Water Level: Static level: **No Data**
Artesian flow: **No Data**

Packers: **No Data**

Plugging Info: Casing or Cement/Bentonite left in well: **No Data**

Type Of Pump: **No Data**

Well Tests: **No Data**

Water Quality: Type of Water: **No Data**
Depth of Strata: **No Data**
Chemical Analysis Made: **No Data**
Did the driller knowingly penetrate any strata which contained undesirable constituents: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.

Company Information: **ETTL Engineers & Consultants Inc.**
1717 E. Erwin

00116211

	Tyler , TX 75702
Driller License Number:	**54683**
Licensed Well Driller Signature:	**Wilburn Ragon, Jr.**
Registered Driller Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Comments:	**No Data**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking number (Tracking **#233509**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0-0.5 Top soil
0.5-1.5 Sandy clay - brown
1.5-3 Clayey sand - brown
3-12.5 Sandy lean clay - brown & reddish brown
12.5-13.5 Clayey sand - red-brown, yellow, & reddish brown
13.5-26 Sandy lean clay - black & gray

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
2 New PVC Sch. 40 0 - 16
2 New PVC Sch. 40 - slotted 16 - 26 0.010"

00116212

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0004A100
Weather: CLEAR 90°F

Sampling location ID: Site 04
Sample ID: 04WW01-100903
Collection Time/Date: 13:10 9/3/10

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): N/A
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 27.00
Initial (pre-installation) DTW/time: 10.15
Final (after pump priming) DTW/time: 10.16
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): N/A

Installation date/beginning time: 9/3/10 11:55
Installation date/completion time: 9/3/10 12:05
Screen Interval (ft. BTOC): 17.00 to 27.00
Pump intake depth (ft BTOC): 22.00
Post-installation DTW/time: 10.10
Max. sustainable pump rate (mL/min): 100
Appearance of ~~product~~ water: MURKY
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = N/A psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18								
Refill Setting	15								
Discharge Setting	18								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/3/10 12:05
Initial (pre-purging) DTW (ft. BTOC): 10.16
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): N/A
Purge date/completion time: 9/3/10 13:10
Final (post-purging) DTW (ft. BTOC): 10.25
No. of tubing + pump volumes purged: N/A

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = N/A psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18	18	18	18	18	18	18	18	18
Refill Setting	15	15	15	15	15	15	15	15	15
Discharge Setting	18	18	18	18	18	18	18	18	18
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
12:10	10.20	100	.5	22.62	3.128	6.13	-7.9	6.32	23.4
12:15	10.22	100	1.0	21.69	3.190	5.86	-4.1	2.65	99.1
12:20	10.23	100	1.5	21.24	3.182	5.76	-5.8	1.36	90.4
12:25	10.24	100	2.0	21.24	3.163	5.66	-6.7	0.78	62.7
12:30	10.25	100	2.5	21.23	3.140	5.58	-5.5	0.58	52.1
12:35	10.25	100	3.0	21.28	3.108	5.51	-5.4	0.50	47.4
12:40	10.25	100	3.5	21.14	3.084	5.40	-3.1	0.46	43.3
12:45	10.25	100	4.0	20.84	3.032	5.32	-1.8	0.43	39.7

Shaw®

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

04WW01

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
12:50	10.25	100	4.5	20.77	3.002	5.31	-0.7	0.41	36.5
12:55	10.25	100	5.0	20.80	3.000	5.36	-1.0	0.38	37.6
13:00	10.25	100	5.5	20.77	3.001	5.36	-1.1	0.36	36.2
13:05	10.25	100	6.0	20.79	2.998	5.37	-0.5	0.35	36.0
13:10	10.25	100	6.5	20.80	2.998	5.37	-0.2	0.35	36.3

Sampling

Sampling beginning time: 13:10 Sampling completion time: 13:13

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
[redacted]									

Sample Information

Sample ID: 04WW01-100903 Sample collection date/time: 9/3/10 13:10

Duplicate sample collected (Y/N): N Duplicate sample ID: N/A

Split sample collected (Y/N): N Split sample ID: N/A

COC No(s): 6021

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Perchlorate	6850	1-250 ml plastic			

Comments: DO meter readings IN mg/L

12:10 - 0.7 12:25 - 0.4 12:40 - 0.3 12:55 - 0.4 13:10 - 0.4

12:15 - 0.4 12:30 - 0.4 12:45 - 0.3 13:00 - 0.4

12:20 - 0.3 12:35 - 0.3 12:50 - 0.4 13:05 - 0.4

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

FERROUS IRON - 1.45 mg/L

00116214

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

04WW02

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0004A100
Weather: CLEAR 92°F

Sampling location ID: Site 04
Sample ID: 04WW02-100903
Collection Time/Date: 14:20 9/3/10

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): N/A
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 26.45
Initial (pre-installation) DTW/time: 9.10
Final (after pump priming) DTW/time: 9.08
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): N/A

Installation date/beginning time: 9/3/10 13:30
Installation date/completion time: 9/3/10 13:40
Screen Interval (ft. BTOC): 16.45 to 26.45
Pump intake depth (ft BTOC): 21.50
Post-installation DTW/time: 9.04
Max. sustainable pump rate (mL/min): 100
Appearance of ~~water~~ product: MURKY
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = N/A psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18								
Refill Setting	15								
Discharge Setting	18								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/3/10 13:40
Initial (pre-purging) DTW (ft. BTOC): 9.08
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): N/A
Purge date/completion time: 9/3/10 14:20
Final (post-purging) DTW (ft. BTOC): 9.19
No. of tubing + pump volumes purged: N/A

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = N/A psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18	18	18	18	18	18	18	18	18
Refill Setting	15	15	15	15	15	15	15	15	15
Discharge Setting	18	18	18	18	18	18	18	18	18
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
13:45	9.10	100	.5	25.91	0.549	5.82	-0.5	3.62	39.4
13:50	9.12	100	1.0	25.71	0.542	5.65	7.4	1.18	15.0
13:55	9.14	100	1.5	25.72	0.538	5.60	11.0	0.86	8.3
14:00	9.15	100	2.0	25.76	0.531	5.57	14.7	0.75	5.3
14:05	9.16	100	2.5	25.86	0.525	5.58	16.5	0.66	1.9
14:10	9.17	100	3.0	26.03	0.520	5.58	17.0	0.65	-1.8
14:15	9.18	100	3.5	26.09	0.520	5.57	18.1	0.65	-6.7
14:20	9.19	100	4.0	26.10	0.519	5.57	18.3	0.65	-7.9

00116215

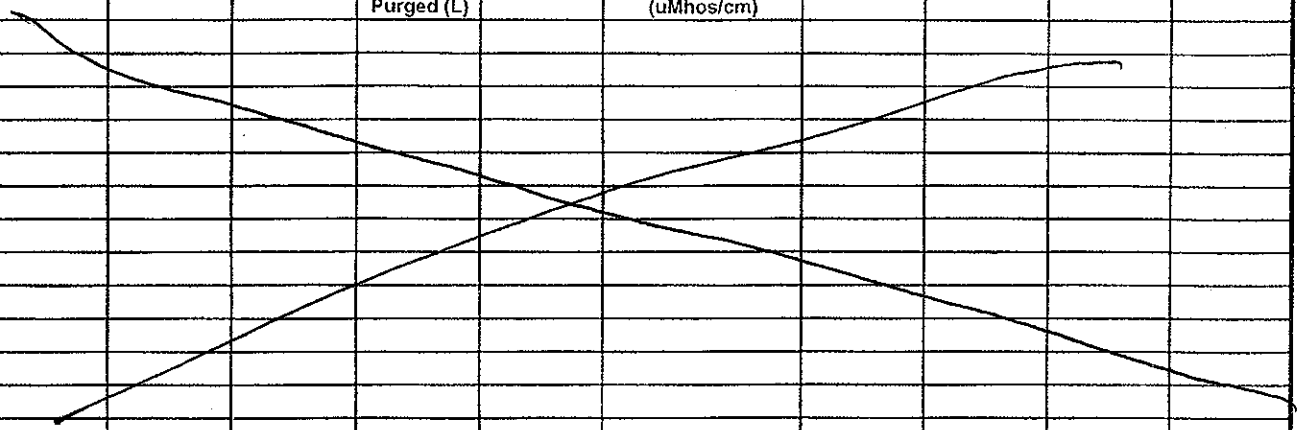
GROUNDWATER SAMPLING FORM

Sheet 2 of 2

04WW02

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)



Sampling

Sampling beginning time: 14:20 Sampling completion time: 14:23

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 04WW02-100903 Sample collection date/time: 9/3/10 14:20

Duplicate sample collected (Y/N): N Duplicate sample ID: N/A

Split sample collected (Y/N): N Split sample ID: N/A

COC No(s): 60240

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Perchlorate	6850	1-250 ml plastic			

Comments: DO meter Readings in mg/L

13:45 - 0.5 14:00 - 0.4 14:15 - 0.3

13:50 - 0.4 14:05 - 0.3 14:20 - 0.3

13:55 - 0.3 14:10 - 0.3

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

Ferrous Iron - 1.00 mg/L

00116216

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0009A100
Weather: SUNNY 100°F
Sampling location ID: SITE 04
Sample ID: 04WW03-100820
Collection Time/Date: 3:15 8/20/10

Pump Installation

Pump installation crew: BEESINGER
PID/FID reading (well head/background): N/A
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 26.88
Initial (pre-installation) DTW/time: 16.80
Final (after pump priming) DTW/time: 16.78
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): N/A
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = N/A psi

Installation date/beginning time: 8/20/10 1:55
Installation date/completion time: 8/20/10 2:05
Screen Interval (ft. BTOC): 16.88 to 26.88
Pump intake depth (ft BTOC): 22.00
Post-installation DTW/time: 16.75
Max. sustainable pump rate (mL/min): 100
Appearance of ~~product~~ water: MURKY
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	16								
Refill Setting	15								
Discharge Setting	18								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: BEESINGER
Purge date/beginning time: 8/20/10 2:05
Initial (pre-purging) DTW (ft. BTOC): 16.78
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = N/A psi

PID/FID reading (well head/background): N/A
Purge date/completion time: 8/20/10 3:15
Final (post-purging) DTW (ft. BTOC): 16.90
No. of tubing + pump volumes purged: N/A

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18	18	18	18	18	18	18	18	18
Refill Setting	15	15	15	15	15	15	15	15	15
Discharge Setting	18	18	18	18	18	18	18	18	18
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
2:10	16.80	100	.5	23.65	3.162	7.03	-103.8	0.40	23.3
2:15	16.82	100	1.0	21.93	3.247	6.84	-110.4	0.20	23.6
2:20	16.83	100	1.5	21.39	3.273	6.69	-101.5	0.21	20.8
2:25	16.84	100	2.0	21.48	3.255	6.63	-97.3	0.22	20.5
2:30	16.85	100	2.5	21.44	3.252	6.59	-94.1	0.21	21.1
2:35	16.86	100	3.0	21.40	3.230	6.55	-89.6	0.20	17.0
2:40	16.87	100	3.5	21.30	3.206	6.55	-84.4	0.19	13.4
2:45	16.88	100	4.0	21.29	3.141	6.50	-80.6	0.19	12.0

00116217

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

04WW03

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
2:50	16.89	100	~~2.45~~	20.75	3,000	6.47	-75.4	0.18	6.7
2:55	16.90	100	5.0	20.98	2,890	6.48	-74.6	0.17	4.9
3:00	16.90	100	5.5	20.98	2,834	6.48	-71.5	0.17	4.0
3:05	16.90	100	6.0	20.98	2,830	6.47	-70.0	0.16	2.7
3:10	16.90	100	6.5	21.00	2,829	6.48	-69.2	0.16	3.2
3:15	16.90	100	7.0	21.01	2,829	6.48	-69.0	0.16	2.9

Sampling

Sampling beginning time: 3:15 Sampling completion time: 3:18

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 04WW03-100820
Sample collection date/time: 8/20/10 3:15
Duplicate sample collected (Y/N): NO
Duplicate sample ID: N/A
Split sample collected (Y/N): NO
Split sample ID: N/A
COC No(s): 6005

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		2-40mL GLASS			
PERCHLORATE	6850	1-250mL PLASTIC			

Comments: DO METER ONLY READINGS IN MG/L
2:10 - 0.7 2:25 - 0.4 2:40 - 0.3 2:55 - 0.4 3:10 - 0.3
2:15 - 0.4 2:30 - 0.3 2:45 - 0.3 3:00 - 0.4 3:15 - 0.3
2:20 - 0.4 2:35 - 0.3 2:50 - 0.4 3:05 - 0.4

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

FERROUS IRON - 0.76 MG/L

00116218

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0009A100
Weather: CLEAR 80°F

Sampling location ID: Site 04
Sample ID: 04WW04-100903
Collection Time/Date: 9:40 9/3/10

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): N/A
Casing diameter (inches): 2"
Total well Depth (ft. BTOC): 21.35
Initial (pre-installation) DTW/time: 7.63
Final (after pump priming) DTW/time: 7.63
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): N/A

Installation date/beginning time: 9/3/10 8:30
Installation date/completion time: 9/3/10 8:40
Screen Interval (ft. BTOC): 11.35 to 21.35
Pump intake depth (ft BTOC): 16.50
Post-installation DTW/time: 7.58
Max. sustainable pump rate (mL/min): 100
Appearance of ~~product~~ water: MURKY
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = N/A psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17								
Refill Setting	14								
Discharge Setting	17								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/3/10 8:40
Initial (pre-purging) DTW (ft. BTOC): 7.63
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): N/A
Purge date/completion time: 9/3/10 9:40
Final (post-purging) DTW (ft. BTOC): 7.69
No. of tubing + pump volumes purged: N/A

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = N/A psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17	17	17	17	17	17	17	17	17
Refill Setting	14	14	14	14	14	14	14	14	14
Discharge Setting	17	17	17	17	17	17	17	17	17
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:45	7.65	100	.5	25.65	0.792	5.72	60.9	5.72	193.6
8:50	7.67	100	1.0	25.07	1,459	5.60	57.8	3.36	193.7
8:55	7.68	100	1.5	24.62	2.555	5.77	46.7	1.45	70.9
9:00	7.69	100	2.0	24.34	3.407	5.87	43.9	1.04	46.7
9:05	7.69	100	2.5	24.20	3.703	5.89	46.0	0.85	46.2
9:10	7.69	100	3.0	24.14	3.846	5.88	49.1	0.75	25.6
9:15	7.69	100	3.5	24.07	3.938	5.87	51.7	0.72	29.0
9:20	7.69	100	4.0	24.07	4.046	5.87	54.2	0.69	19.4

00116219

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

04WW04

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:25	7.69	100	4.5	24.03	4.089	5.86	55.0	0.69	19.2
9:30	7.69	100	5.0	24.24	4.088	5.86	58.6	0.66	18.0
9:35	7.69	100	5.5	24.20	4.090	5.86	60.4	0.65	12.3
9:40	7.69	100	6.0	24.21	4.090	5.86	60.2	0.65	8.9

Sampling

Sampling beginning time: 9:40 Sampling completion time: 9:43

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:45	7.69	100	6.5	24.22	4.091	5.86	60.7	0.65	7.0

Sample Information

Sample ID: 04WW04-100903 Sample collection date/time: 9/3/10 9:40

Duplicate sample collected (Y/N): NO Duplicate sample ID: N/A

Split sample collected (Y/N): NO Split sample ID: N/A

COC No(s): 6024

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
PERCHLORATE	6850	1-250 mL plastic			

Comments: DO meter readings IN mg/L

8:45 - 0.4 8:00 - 0.4 9:15 - 0.7 9:30 - 0.4

8:50 - 0.4 9:05 - 0.5 9:20 - 0.4 9:35 - 0.4

8:55 - 0.3 9:10 - 0.6 9:25 - 0.4 9:40 -

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

Ferrous IRON - 0.85 mg/L

00116220

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0009A100
Weather: Clear 82°F
Sampling location ID: Site 04
Sample ID: 04WW05-100903
Collection Time/Date: 11:00 9/3/10

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): N/A
Casing diameter (inches): 2"
Total well Depth (ft. BTOC): 29.30
Initial (pre-installation) DTW/time: 9.02
Final (after pump priming) DTW/time: 9.01
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): N/A
Installation date/beginning time: 9/3/10 09:50
Installation date/completion time: 9/3/10 10:05
Screen Interval (ft. BTOC): 19.30 to 29.30
Pump intake depth (ft BTOC): 24.50
Post-installation DTW/time: 8.97
Max. sustainable pump rate (mL/min): 100
Appearance of ~~product~~ water: [redacted] Little murky
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = N/A psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18								
Refill Setting	15								
Discharge Setting	18								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/3/10 10:05
Initial (pre-purging) DTW (ft. BTOC): 9.01
Calculated tubing + pump volume: NA
PID/FID reading (well head/background): N/A
Purge date/completion time: 9/3/10 11:00
Final (post-purging) DTW (ft. BTOC): 9.17
No. of tubing + pump volumes purged: N/A

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = N/A psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18	18	18	18	18	18	18	18	18
Refill Setting	15	15	15	15	15	15	15	15	15
Discharge Setting	18	18	18	18	18	18	18	18	18
Flow rate (mL/min)	100	100	100	100	100	100	180	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:10	9.03	100	.5	26.87	0.771	6.42	87.3	9.14	17.1
10:15	9.05	100	1.0	25.31	1.784	6.14	103.4	4.34	34.5
10:20	9.07	100	1.5	25.31	1.793	6.03	113.5	2.19	[redacted] 40.1
10:25	9.09	100	2.0	25.00	1.777	5.99	121.2	1.60	60.4
10:30	9.11	100	2.5	23.57	1.675	5.93	129.7	1.56	74.6
10:35	9.13	100	3.0	23.47	1.517	5.90	139.1	1.90	41.2
10:40	9.14	100	3.5	23.54	1.385	5.87	151.1	2.64	25.3
10:45	9.15	100	4.0	23.46	1.339	5.85	160.4	3.25	24.9

Shaw®

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

04WW05

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:50	9.16	100	4.5	23.52	1.335	5.81	169.7	3.30	12.1
10:55	9.17	100	5.5	23.50	1.334	5.80	169.9	3.31	6.2
11:00	9.17	100	6.0	23.48	1.336	5.80	170.5	3.31	4.2

Sampling

Sampling beginning time: 11:00 Sampling completion time: 11:03

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
11:05	9.17	100	6.5	23.49	1.336	5.79	171.0	3.32	3.0

Sample Information

Sample ID: 04NW05-100903 Sample collection date/time: 9/3/10 11:00

Duplicate sample collected (Y/N): N Duplicate sample ID: N/A

Split sample collected (Y/N): N Split sample ID: N/A

COC No(s): 6020

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Perchlorate	6850	1-250ml plastic			

Comments: DO meter readings in mg/L

10:10 - 4.7 10:25 - 5.6 10:40 - 5.6 10:55 - 5.3

10:15 - 5.1 10:30 - 5.5 10:45 - 5.4 11:00 - 5.3

10:20 - 5.4 10:35 - 5.5 10:50 - 5.3

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

Ferrous Iron - 0.44 mg/L

00116222

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0009A100
Weather: Clear 75°F
Sampling location ID: Site 04
Sample ID: LHSMW01-100903
Collection Time/Date: 8:10 9/3/10

Pump Installation

Pump installation crew: Beesley
PID/FID reading (well head/background): N/A
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 18.70
Initial (pre-installation) DTW/time: 8.70
Final (after pump priming) DTW/time: 8.67
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 225
Discharge tube length (ft.): N/A
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = N/A psi

Installation date/beginning time: 9/3/10 7:00
Installation date/completion time: 9/3/10 7:20
Screen Interval (ft. BTOC): 8.70 to 18.70
Pump intake depth (ft BTOC): 13.50
Post-installation DTW/time: 8.63
Max. sustainable pump rate (mL/min): 100
Appearance of ~~product~~ water: Clear
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17	16							
Refill Setting	14	13							
Discharge Setting	17	16							
Flow rate (mL/min)	125	100							

Purging

Purging/sampling crew: Beesley
Purge date/beginning time: 9/3/10 7:20
Initial (pre-purging) DTW (ft. BTOC): ~~8.67~~ 8.67
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = N/A psi

PID/FID reading (well head/background): N/A
Purge date/completion time: 9/3/10 8:10
Final (post-purging) DTW (ft. BTOC): 8.73
No. of tubing + pump volumes purged: N/A

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	16	16	16	16	16	16	16	16	16
Refill Setting	13	13	13	13	13	13	13	13	13
Discharge Setting	16	16	16	16	16	16	16	16	16
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
7:25	8.70	100	.5	22.71	9.417	5.91	110.9	5.22	-4.0
7:30	8.71	100	1.0	22.55	9.679	5.83	124.3	2.69	-4.3
7:35	8.72	100	1.5	22.53	9.624	5.81	132.0	2.63	-4.5
7:40	8.73	100	2.0	22.54	9.585	5.80	136.9	2.15	-3.9
7:45	8.73	100	2.5	22.55	9.512	5.81	140.4	1.74	-4.4
7:50	8.73	100	3.0	22.60	9.239	5.82	142.4	1.73	-4.5
7:55	8.73	100	3.5	22.62	8.713	5.84	145.1	1.61	-4.6
8:00	8.73	100	4.0	22.71	8.710	5.84	146.7	1.60	-5.0

00116223

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

LHSMW01

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:05	8.73	100	4.5	22.76	8.709	5.83	148.1	1.60	-5.2
8:10	8.73	100	5.0	22.82	8.708	5.83	149.5	1.59	-5.6

Sampling

Sampling beginning time: 8:10 Sampling completion time: 8:20

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
8:15	8.73	100	5.5	22.83	8.708	5.83	149.0	1.59	-5.1

Sample Information

Sample ID: LHSMW01-100903
Duplicate sample collected (Y/N): Y
Split sample collected (Y/N): Y
COC No(s): 6020

Sample collection date/time: 9/3/10 8:10
Duplicate sample ID: LHSMW01-100903-FD
Split sample ID: LHSMW01-100903-MS
LHSMW01-100903-MSD

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
PERCHLORATE	6850	4-250ml plastic			

Comments: DO meter readings in mg/L
7:25 - 1.3 7:40 - 0.4 7:55 - 0.4 8:10 - 0.4
7:30 - 0.5 7:45 - 0.4 8:00 - 0.4
7:35 - 0.4 7:50 - 0.4 8:05 - 0.4

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

FERROUS IRON - 0.06 mg/L

00116224

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0009A100
Weather: SUNNY 95°F
Sampling location ID: ~~LHS~~ SITE 04
Sample ID: LHSMW02-100820
Collection Time/Date: 1:35 8/20/10

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 19.00
Initial (pre-installation) DTW/time: 14.78
Final (after pump priming) DTW/time: 14.79
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 250
Discharge tube length (ft.): NA
Installation date/beginning time: 8/20/10 12:40
Installation date/completion time: 8/20/10 12:50
Screen Interval (ft. BTOC): 9.00 to 19.00
Pump intake depth (ft BTOC): 17.00
Post-installation DTW/time: 14.75
Max. sustainable pump rate (mL/min): 100
Appearance of ~~product~~ water: Clear
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20	17							
Refill Setting	17	14							
Discharge Setting	20	17							
Flow rate (mL/min)	150	100							

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 8/20/10 12:50
Initial (pre-purging) DTW (ft. BTOC): 14.79
Calculated tubing + pump volume: NA
PID/FID reading (well head/background): NA
Purge date/completion time: 8/20/10 1:35
Final (post-purging) DTW (ft. BTOC): 14.90
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17	17	17	17	17	17	17	17	17
Refill Setting	14	14	14	14	14	14	14	14	14
Discharge Setting	17	17	17	17	17	17	17	17	17
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1:00	14.82	100	1.0	23.11	3.742	6.80	-113.5	0.17	4.8
1:05	14.84	100	1.5	22.27	3.685	6.38	-96.1	0.12	5.3
1:10	14.86	100	2.0	21.87	3.657	6.42	-95.7	0.10	4.3
1:15	14.87	100	2.5	21.62	3.647	6.38	-106.9	0.10	3.1
1:20	14.88	100	3.0	21.55	3.649	6.36	-117.5	0.10	2.1
1:25	14.89	100	3.5	21.47	3.652	6.36	-119.0	0.10	1.8
1:30	14.90	100	4.0	21.50	3.653	6.35	-120.1	0.09	1.0
1:35	14.90	100	4.5	21.51	3.653	6.35	-120.3	0.09	0.7

00116225

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

LHSMW02

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 1:35 Sampling completion time: 1:38

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: LHSmw02-100820
Sample collection date/time: 8/20/10 1:35
Duplicate sample collected (Y/N): N
Duplicate sample ID: NA
Split sample collected (Y/N): N
Split sample ID: NA
COC No(s): 6005

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC		2-40ml glass			
Perchlorate	6850	1-250ml plastic			

Comments: DO meter only readings in mg/L
1:00 - 0.5 1:15 - 0.3 1:30 - 0.4
1:05 - 0.4 1:20 - 0.3 1:35 - 0.4
1:10 - 0.4 1:25 - 0.4

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

Ferrous Iron - 0.66 mg/L

Groundwater Elevations Measured on October 13, 2010

Well	TOC	DTW	GW Ele
LHSMW01	214.43	9.69	**204.74**
LHSMW02	215.43	16.35	**199.08**
04WW01	212.51	10.73	**201.78**
04WW02	216.7	10.32	**206.38**
04WW03	215.93	19.55	**196.38**
04WW04	214.66	8.45	**206.21**
04WW05	214.3	9.85	**204.45**

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0009A100
Weather: CLEAR 80°F
Sampling location ID: Site 04
Sample ID: 04WW04-101013
Collection Time/Date: 14:00 10/13/10

Pump Installation

Pump installation crew: Beesmyer
PID/FID reading (well head/background): NA
Casing diameter (inches): 2"
Total well Depth (ft. BTOC): 21.35
Initial (pre-installation) DTW/time: 8.45
Final (after pump priming) DTW/time: 8.37
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): NA
Installation date/beginning time: 10/13/10 12:35
Installation date/completion time: 10/13/10 12:47
Screen Interval (ft. BTOC): 11.35 to 21.35
Pump intake depth (ft BTOC): 16.50
Post-installation DTW/time: 8.40
Max. sustainable pump rate (mL/min): 100
Appearance of product: MURKY
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	16								
Refill Setting	13								
Discharge Setting	16								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesmyer
Purge date/beginning time: 10/13/10 12:50
Initial (pre-purging) DTW (ft. BTOC): 8.37
Calculated tubing + pump volume: NA
PID/FID reading (well head/background): NA
Purge date/completion time: 10/13/10 14:00
Final (post-purging) DTW (ft. BTOC): 8.47
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	16	16	16	16	16	16	16	16	16
Refill Setting	13	13	13	13	13	13	13	13	13
Discharge Setting	16	16	16	16	16	16	16	16	16
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
12:55	8.40	100	.5	25.10	0.456	5.99	116.1	0.97	109.3
1300	8.42	100	1.0	24.76	0.485	5.92	107.7	0.71	89.1
1305	8.43	100	1.5	24.67	1.106	5.98	102.2	0.60	62.3
1310	8.44	100	2.0	24.61	2.201	6.19	90.5	0.56	43.2
1315	8.45	100	2.5	24.83	2.294	6.26	86.2	0.54	38.3
1320	8.46	100	3.0	24.49	2.639	6.29	85.5	0.43	30.9
1325	8.47	100	3.5	24.75	2.696	6.30	85.8	0.44	24.6
1330	8.47	100	4.0	24.64	2.985	6.37	83.2	0.39	17.5

00116228

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1335	8.47	100	4.5	24.62	3.469	6.40	80.3	0.36	12.1
1340	8.49	100	5.0	24.47	3.655	6.47	76.8	0.34	7.0
1345	8.47	100	5.5	24.58	3.648	6.50	75.5	0.34	4.7
1350	8.47	100	6.0	24.55	3.644	6.49	76.1	0.33	4.5
1355	8.47	100	6.5	24.52	3.645	6.49	77.0	0.33	4.0
1400	8.47	100	7.0	24.50	3.645	6.49	77.2	0.33	3.8

Sampling

Sampling beginning time: 14:00 Sampling completion time: 14:03

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 04WW04-101013
Sample collection date/time: 10/13/10 1400
Duplicate sample collected (Y/N): NO
Duplicate sample ID: NA
Split sample collected (Y/N): NO
Split sample ID: NA
COC No(s): 6033

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
PERCHLORATE	6850	1-250 ml plastic			

Comments:

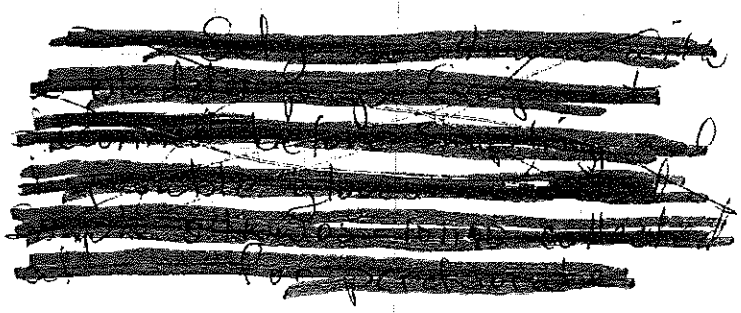
Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00116229

3.0 Sampling of 04ww04

Clear 80 °F

1535 - Setup on 04ww04 with peristaltic adder pump. Equipment is decontaminated and disposable tubes were used. Sample 04ww04.101013 collected at 14:00 for perchlorate only.



Chain of Custody

NO. 6034

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: MICROBAC Address: 158 STARLITE DR. MARIETTA, OH. Contact: Stephanie MOSSBURG

Project Name: LHAAP Project Location: KARNACK, TX.

Project No.: 117591.0009A100 Project Contact: Jen HOANG Project Telephone No.: 281-531-3108

Point of Contact: Scott Beesinger Telephone No.: 903-679-3448

Project Manager/Supervisor: PRAVEEN SRIVASTAV

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	Perchlorate Method 6850	Remarks
1	04WW04-101013	10/13/10	14:00		✓	W	Site 04	1	1	
2										
3										
4										
5										
6										
7										
8										
9										
10										

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time
Scott Beesinger	10/13/10 15:00		

Special Instructions: 7 DAY TAT

FedEx Airbill No.:

Sampler's Signature: Scott Beesinger

TAT: _____ Standard _____ Rush Date _____

Microbac OVD
Received: 10/14/2010 10:03
By: CARA STRICKLER
221000009619

Cara Strickler

Good Condition _____ Y _____ N _____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_2
Rev. 10-19-07

00116230

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: CHAAP — Sampling location ID: SITE 04
Project Name/#: 117591.0009A.505 — Sample ID: 04WW04-101110
Weather: Clear 75°F — Collection Time/Date: 1350 11/10/10

Pump Installation

Pump installation crew: BEESINGER — Installation date/beginning time: 11/10/10 ~~12:05~~ 12:10
PID/FID reading (well head/background): NA — Installation date/completion time: 11/10/10 12:25
Casing diameter (inches): 2" — Screen Interval (ft. BTOC): 11.35 to 21.35
Total well Depth (ft. BTOC): 21.35 — Pump intake depth (ft BTOC): 16.50
Initial (pre-installation) DTW/time: 7.83 — Post-installation DTW/time: 7.78
Final (after pump priming) DTW/time: 7.85 — Max. sustainable pump rate (mL/min): 100
Free product (circle): LNAPL / DNAPL — Appearance of product: MURKY
Volume of water removed during priming (mL): 100 — Discharge tube diameter (3/8" or 1/4"): 1/4"
Discharge tube length (ft.): NA — Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18								
Refill Setting	15								
Discharge Setting	18								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: BEESINGER — PID/FID reading (well head/background): NA
Purge date/beginning time: 11/10/10 12:25 — Purge date/completion time: 11/10/10
Initial (pre-purging) DTW (ft. BTOC): 7.85 — Final (post-purging) DTW (ft. BTOC): 7.95
Calculated tubing + pump volume: NA — No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	18	18	18	18	18	18	18	18	18
Refill Setting	15	15	15	15	15	15	18	15	15
Discharge Setting	18	18	18	18	18	18	18	18	18
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
12:30	7.88	100	.5	23.87	0.406	5.67	168.5	0.68	168.3
12:35	7.90	100	1.0	23.62	0.418	5.66	161.0	0.41	191.6
12:40	7.92	100	1.5	23.73	0.438	5.66	155.0	0.31	182.3
12:45	7.93	100	2.0	23.78	0.537	5.71	146.3	0.23	150.1
12:50	7.94	100	2.5	24.07	0.680	5.76	135.5	0.23	149.9
12:55	7.95	100	3.0	23.90	0.859	5.82	120.2	0.15	131.3
13:00	7.95	100	3.5	24.04	1.165	5.90	98.9	0.16	102.0
1305	7.95	100	4.0	23.78	1.545	6.00	78.8	0.13	92.1

Shaw®

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1310	7.95	100	4.5	23.54	1.471	5.98	69.8	0.10	83.1
1315	7.95	100	5.0	23.35	1.777	6.05	61.2	0.11	55.3
1320	7.95	100	5.5	23.30	1.839	6.06	58.2	0.14	40.1
1325	7.95	100	6.0	23.39	1.926	6.09	57.0	0.10	36.7
1330	7.95	100	6.5	23.50	1.921	6.15	49.3	0.13	20.1
1335	7.95	100	7.0	23.56	1.925	6.12	48.1	0.14	13.7
1340	7.95	100	7.5	23.59	1.926	6.12	45.4	0.12	10.0
1345	7.95	100	8.0	23.61	1.927	6.13	44.3	0.12	5.5
1350	7.95	100	8.5	23.62	1.928	6.13	43.8	0.12	5.3

Sampling

Sampling beginning time: 1350 Sampling completion time: 1353

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 04WW04-101110
Duplicate sample collected (Y/N): N
Split sample collected (Y/N): N
COC No(s): 6038

Sample collection date/time: 11/10/10 1350
Duplicate sample ID: NA
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
PERCHLORATE	6850	1-250 ml plastic			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Shaw®

Operable Unit/Site ID: LHAAP — Sampling location ID: Site 04
Project Name/#: 117591.0009A505 — Sample ID: 04WW05-101110
Weather: CLEAR 75°F — Collection Time/Date: 1500 11/10/10

Pump Installation

Pump installation crew: BEESINGER — Installation date/beginning time: 11/10/10 14:00
PID/FID reading (well head/background): NA — Installation date/completion time: 11/10/10 14:05
Casing diameter (inches): 2" — Screen Interval (ft. BTOC): 19.40 to 29.40
Total well Depth (ft. BTOC): 29.40 — Pump intake depth (ft BTOC): 24.50
Initial (pre-installation) DTW/time: 9.13 — Post-Installation DTW/time: 9.07
Final (after pump priming) DTW/time: 9.15 — Max. sustainable pump rate (mL/min): 100
Free product (circle): LNAPL / DNAPL — Appearance of product: MURKY (slightly)
Volume of water removed during priming (mL): 100 — Discharge tube diameter (3/8" or 1/4"): 1/4"
Discharge tube length (ft.): NA — Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20								
Refill Setting	17								
Discharge Setting	20								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: BEESINGER — PID/FID reading (well head/background): NA
Purge date/beginning time: 11/10/10 ~~9~~ 14:05 — Purge date/completion time: 11/10/10 1500
Initial (pre-purging) DTW (ft. BTOC): 9.15 — Final (post-purging) DTW (ft. BTOC): 9.29
Calculated tubing + pump volume: NA — No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20	20	20	20	20	20	20	20	20
Refill Setting	17	17	17	17	17	17	17	17	17
Discharge Setting	20	20	20	20	20	20	20	20	20
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1410	9.18	100	.5	23.19	1.884	6.73	104.9	1.80	30.1
1415	9.20	100	1.0	23.13	2.062	6.69	29.9	0.56	25.0
1420	9.22	100	1.5	23.08	2.049	6.69	10.6	0.45	23.7
1425	9.23	100	2.0	22.81	2.000	6.70	6.0	0.35	19.5
1430	9.23	100	2.5	23.03	1.950	6.71	4.8	0.33	18.0
1435	9.24	100	3.0	23.09	1.870	6.72	6.5	0.37	16.2
1440	9.25	100	3.5	23.13	1.837	6.73	8.3	0.41	14.7
1445	9.26	100	4.0	23.14	1.798	6.73	12.0	0.51	10.3

Shaw®

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1450	9.27	100	4.5	23.12	1.795	6.73	12.3	0.53	9.9
1455	9.28	100	5.0	23.10	1.793	6.73	13.0	0.54	8.0
1500	9.29	100	5.5	23.12	1.792	6.73	12.8	0.54	6.9

Sampling

Sampling beginning time: 1500 Sampling completion time: 1503

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 04WW05-101110 Sample collection date/time: 11/10/10 1500

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s): 6038

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
PERCHLORATE	6850	1-250 ml plastic			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

10/10 Site 04 Sampling

Clear 75°F

1350 - Setup on 04WW04 with a bladder pump and disposable gloves were used. Equipment decon'ed prior to sampling. Sample 04WW04-101110 collected at 1350 for perchlorate.

1500 Setup on 04WW05 with a bladder pump. Equipment decon'ed before sampling and disposable gloves were used. Sample 04WW05-101110 collected at 1500 for perchlorate.

Chain of Custody

NO. 6038

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: ENVIRONMENTAL WASTE SOLUTIONS C/O MICROBAC Address: 158 STARLITE DR. MARIETTA, OH Contact: STEPHANIE MOSSBURG

Project Name: LHAAP Project Location: KARNACK, TX.

Project No.: 117591.0009A505 Project Contact: JEN HOANG Project Telephone No.: 281-531-3108

Point of Contact: Scott Beesinger Telephone No.: 903-679-3448

Project Manager/Supervisor: PRAVEEN SRIVASTAV

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	PERCHLORATE METHOD 6850						Remarks
1	04WW04-101110	11/10/10	1350		✓	W	Site 04	1	✓						
2	04WW05-101110	11/10/10	1500		✓	W	site 04	1	✓						
3															
4															
5															
6															
7															
8															
9															
10															

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
Scott Beesinger	11/10/10 15:45 SB			7 DAY TAT
				FedEx Airbill No.:
		Laboratory		Sampler's Signature: Scott Beesinger

Intact? ____ Y ____ N Received Good Condition ____ Y ____ N ____ Cold

Microbac OVD
Received: 11/11/2010 09:44
By: BRENDA GREENWALT
221000010266

Brenda Greenwalt

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_2
Rev. 10-19-07

00116236

00116237

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP — Sampling location ID: Site 04
Project Name/#: 117591.0009A505 — Sample ID: LHSMW02-110223
Weather: Cloudy 58°F — Collection Time/Date: 8:55 2/23/11

Pump Installation

Pump installation crew: Beesinger — Installation date/beginning time: 2/23/11 ~~0735~~ 0735
PID/FID reading (well head/background): NA — Installation date/completion time: 2/23/11 ~~0900~~ 0910
Casing diameter (inches): 4" — Screen Interval (ft. BTOC): 8.26 to 18.76
Total well Depth (ft. BTOC): 18.76 — Pump intake depth (ft BTOC): 16.50
Initial (pre-installation) DTW/time: 14.12 — Post-installation DTW/time: 14.10
Final (after pump priming) DTW/time: 14.15 — Max. sustainable pump rate (mL/min): 100
Free product (circle): LNAPL / DNAPL — Appearance of product: CLEAR
Volume of water removed during priming (mL): 100 — Discharge tube diameter (3/8" or 1/4"): 1/4"
Discharge tube length (ft.): NA — Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	13								
Refill Setting	10								
Discharge Setting	13								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger — PID/FID reading (well head/background): NA
Purge date/beginning time: 2/23/11 ~~0750~~ 8:10 — Purge date/completion time: 2/23/11 8:55
Initial (pre-purging) DTW (ft. BTOC): 14.15 — Final (post-purging) DTW (ft. BTOC): 14.27
Calculated tubing + pump volume: NA — No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	13	13	13	13	13	13	13	13	13
Refill Setting	10	10	10	10	10	10	10	10	10
Discharge Setting	13	13	13	13	13	13	13	13	13
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

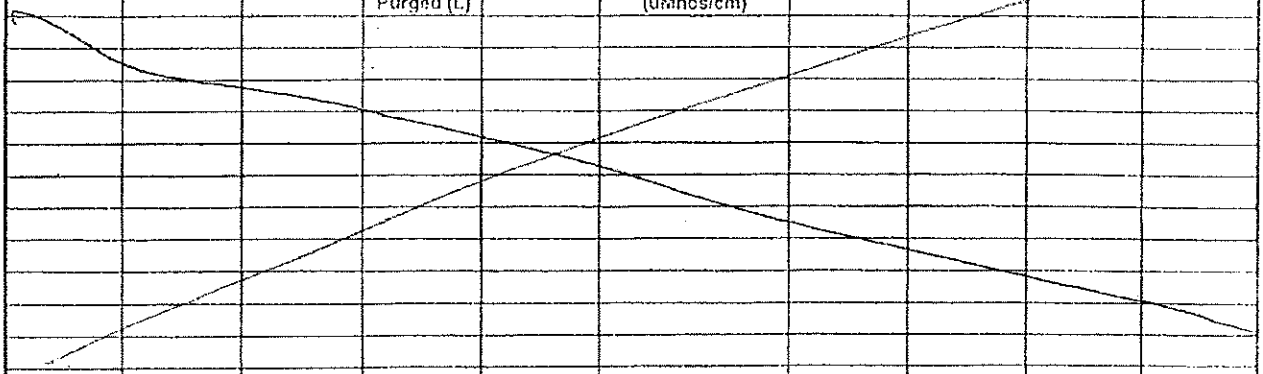
Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
0820	14.17	100	1.0	15.41	4.419	6.87	242.5	7.30	1.6
0825	14.19	100	1.5	15.07	4.452	6.87	243.1	6.68	1.8
0830	14.20	100	2.0	15.00	4.410	6.88	243.6	9.28	1.8
0835	14.22	100	2.5	15.08	4.389	6.89	244.1	7.53	1.3
0840	14.24	100	3.0	15.14	4.318	6.89	244.7	7.67	1.4
0845	14.25	100	3.5	15.18	4.370	6.90	245.1	7.69	1.5
0850	14.26	100	4.0	15.18	4.369	6.90	245.7	7.70	1.2
0855	14.27	100	4.5	15.19	4.364	6.90	245.7	7.71	0.9

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

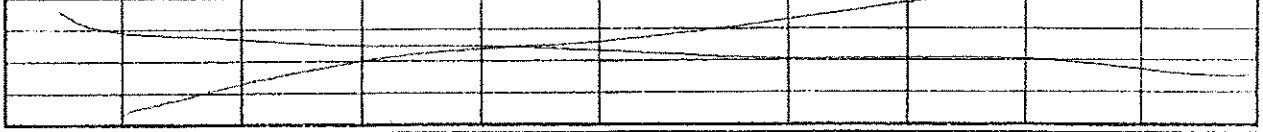


Sampling

Sampling beginning time: 8:55 Sampling completion time: 8:58

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)



Sample Information

Sample ID: LHSMW02-110223 Sample collection date/time: 2/23/11 8:55

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s): 6044

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Perchlorate	6850	1-250 ml plastic			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0009A505
Weather: Cloudy 60°F

Sampling location ID: Site 04
Sample ID: 04MW01-110223
Collection Time/Date: 9:55 2/23/11

Pump Installation

Pump installation crew: Beesmyer
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 27.05
Initial (pre-installation) DTW/time: 8.45
Final (after pump priming) DTW/time: 8.45
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): NA

Installation date/beginning time: 2/23/11 9:05
Installation date/completion time: 2/23/11 9:15
Screen Interval (ft. BTOC): 17.05 to 27.05
Pump intake depth (ft BTOC): 22.00
Post-installation DTW/time: 8.41
Max. sustainable pump rate (mL/min): 100
Appearance of product: Little murky
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): Y

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	19								
Refill Setting	16								
Discharge Setting	19								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesmyer
Purge date/beginning time: 2/23/11 9:15
Initial (pre-purging) DTW (ft. BTOC): ~~8.45~~ 8.45
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 2/23/11 9:55
Final (post-purging) DTW (ft. BTOC): 8.50
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	19	19	19	19	19	19	19	19	19
Refill Setting	16	16	16	16	16	16	16	16	16
Discharge Setting	19	19	19	19	19	19	19	19	19
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
9:20	8.47	100	.5	15.69	3.049	7.16	246.2	9.55	23.1
9:25	8.48	100	1.0	15.86	3.037	7.02	244.2	7.15	19.5
9:30	8.49	100	1.5	16.05	3.018	6.99	241.3	5.45	16.5
9:35	8.50	100	2.0	16.14	3.009	6.99	239.3	5.78	12.9
0940	8.50	100	2.5	16.18	3.007	6.99	237.2	4.80	9.0
0945	8.50	100	3.0	16.21	3.006	6.98	235.8	4.76	7.4
0950	8.50	100	3.5	16.23	3.004	6.98	235.1	4.78	6.7
0955	8.50	100	4.0	16.22	3.002	6.98	234.4	4.73	5.6

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sampling

Sampling beginning time: 9:55 Sampling completion time: 9:58

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 04wwe1-110223
Sample collection date/time: 2/23/11 9:55
Duplicate sample collected (Y/N): N
Duplicate sample ID: NA
Split sample collected (Y/N): N
Split sample ID: NA
COC No(s): 6044

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Perchlorate	6850	1-250 plastic			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00116241

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP — Sampling location ID: SWE 04
Project Name/#: 117591.0009.A505 — Sample ID: LHSWW01-110223
Weather: Cloudy 62°F — Collection Time/Date: 11:10 2/23/11

Pump Installation

Pump installation crew: Beesinger — Installation date/beginning time: 2/23/11 10:05
PID/FID reading (well head/background): NA — Installation date/completion time: 2/23/11 10:15
Casing diameter (inches): 4" — Screen Interval (ft. BTOC): 7.73 to 17.73
Total well Depth (ft. BTOC): 17.73 — Pump intake depth (ft BTOC): 12.75
Initial (pre-installation) DTW/time: 4.85 — Post-installation DTW/time: 4.80
Final (after pump priming) DTW/time: 4.86 — Max. sustainable pump rate (mL/min): 100
Free product (circle): LNAPL / DNAPL — Appearance of product: CLEAR
Volume of water removed during priming (mL): 100 — Discharge tube diameter (3/8" or 1/4"): 1/4"
Discharge tube length (ft.): NA — Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17								
Refill Setting	14								
Discharge Setting	17								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger — PID/FID reading (well head/background): NA
Purge date/beginning time: ~~10:15~~ 2/23/11 10:15 — Purge date/completion time: 2/23/11 11:10
Initial (pre-purging) DTW (ft. BTOC): 4.86 — Final (post-purging) DTW (ft. BTOC): 4.89
Calculated tubing + pump volume: NA — No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17	17	17	17	17	17	17	17	17
Refill Setting	14	14	14	14	14	14	14	14	14
Discharge Setting	17	17	17	17	17	17	17	17	17
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1020	4.87	100	1.5	14.77	6.056	6.55	250.3	8.94	-0.6
1025	4.88	100	1.0	14.56	5.672	6.36	264.0	8.50	-1.1
1030	4.89	100	1.5	14.30	5.212	6.30	288.5	8.70	-1.4
1035	4.89	100	2.0	14.17	5.059	6.25	309.6	8.63	-1.6
1040	4.89	100	2.5	14.23	5.136	6.22	325.9	8.57	-1.6
1045	4.89	100	3.0	14.28	5.267	6.19	338.8	8.60	-1.8
1050	4.89	100	3.5	14.32	5.390	6.18	350.0	8.55	-1.9
1055	4.89	100	4.0	14.37	5.500	6.17	361.9	8.53	-1.9

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
11:00	4.89	100	4.5	14.40	5.505	6.17	362.0	8.50	-1.9
11:05	4.89	100	5.0	14.41	5.508	6.17	363.1	8.50	-1.8
11:10	4.89	100	5.5	14.42	5.509	6.17	363.9	8.49	-1.8

Sampling

Sampling beginning time: 11:10 Sampling completion time: 11:13

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: LHSmw01-110223
Sample collection date/time: 2/23/11 11:10
Duplicate sample collected (Y/N): N
Duplicate sample ID: NA
Split sample collected (Y/N): N
Split sample ID: NA
COC No(s): 6074

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Perchlorate	6850	1-250ml plastic			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0009A505
Weather: Cloudy 68°F

Sampling location ID: Site 04
Sample ID: 04WM05 - 110223
Collection Time/Date: 2/23/11 1320

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 2"
Total well Depth (ft. BTOC): 29.38'
Initial (pre-installation) DTW/time: 6.80
Final (after pump priming) DTW/time: 6.82
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.): NA

Installation date/beginning time: 2/23/11 11:55
Installation date/completion time: 2/23/11 12:05
Screen Interval (ft. BTOC): 19.38 to 29.38
Pump intake depth (ft BTOC): 24.50
Post-installation DTW/time: 6.76
Max. sustainable pump rate (mL/min): 100
Appearance of product: Little Murky
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20								
Refill Setting	17								
Discharge Setting	20								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 2/23/11 12:05
Initial (pre-purging) DTW (ft. BTOC): 6.82
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 2/23/11 1320
Final (post-purging) DTW (ft. BTOC): 6.90
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20	20	20	20	20	20	20	20	20
Refill Setting	17	17	17	17	17	17	17	17	17
Discharge Setting	20	20	20	20	20	20	20	20	20
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1210	6.84	100	.5	17.84	1.197	6.83	276.1	7.60	96.7
1215	6.85	100	1.0	18.00	1.102	6.69	270.3	5.23	117.0
1220	6.86	100	1.5	18.14	1.065	6.63	261.8	4.54	119.8
1225	6.87	100	2.0	18.26	1.052	6.60	250.7	4.27	144.8
1230	6.88	100	2.5	18.36	1.046	6.58	242.2	1.62	130.8
1235	6.89	100	3.0	18.52	1.039	6.57	233.1	1.68	119.7
1240	6.90	100	3.5	18.48	1.035	6.55	223.8	1.77	111.1
1245	6.90	100	4.0	18.53	1.030	6.54	217.9	1.62	99.3

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1250	6.90	100	4.5	18.60	1025	6.53	209.7	1.51	82.0
1255	6.90	100	5.0	18.76	1.022	6.52	203.7	1.40	59.1
1300	6.90	100	5.5	18.80	1.019	6.52	198.4	1.09	55.3
1305	6.90	100	6.0	18.80	1.016	6.51	193.2	0.99	46.8
1310	6.90	100	6.5	18.76	1.013	6.52	188.3	0.94	36.1
1315	6.90	100	7.0	18.78	1.010	6.52	183.9	0.94	25.0
1320	6.90	100	7.5	18.75	1.010	6.52	181.6	0.93	25.5

Sampling

Sampling beginning time: 1320 Sampling completion time: 1325

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 04MW05-110223
Duplicate sample collected (Y/N): YES
Split sample collected (Y/N): N
COC No(s): 6044

Sample collection date/time: 2/23/11 1320
Duplicate sample ID: Dup 01-110223
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Perchlorate	6850	2-250 ml plastic			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0009.0505
Weather: Cloudy 72°F
Sampling location ID: SITE 04
Sample ID: 04MW04-110223
Collection Time/Date: 2/23/11 1500

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 2"
Total well Depth (ft. BTOC): 21.35
Initial (pre-installation) DTW/time: 5.03
Final (after pump priming) DTW/time: 5.05
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): NA
Installation date/beginning time: 2/23/11 1335
Installation date/completion time: 2/23/11 1345
Screen Interval (ft. BTOC): 11.35 to 21.35
Pump intake depth (ft BTOC): 16.35
Post-installation DTW/time: 4.98
Max. sustainable pump rate (mL/min): 100
Appearance of product: MURKY
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/N): N

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17								
Refill Setting	14								
Discharge Setting	17								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 2/23/11 1345
Initial (pre-purging) DTW (ft. BTOC): 5.05
Calculated tubing + pump volume: NA
PID/FID reading (well head/background): NA
Purge date/completion time: 2/23/11 1500
Final (post-purging) DTW (ft. BTOC): 5.13
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	17	17	17	17	17	17	17	17	17
Refill Setting	14	14	14	14	14	14	14	14	14
Discharge Setting	17	17	17	17	17	17	17	17	17
Flow rate (mL/min)	100	100	100	100	100	100	100	100	100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1350	5.08	100	.5	16.33	0.462	5.92	106.8	3.49	305.4
1355	5.10	100	1.0	16.47	0.451	5.76	87.2	1.43	249.0
1400	5.11	100	1.5	16.72	0.453	5.75	81.4	1.29	203.3
1405	5.12	100	2.0	16.91	0.469	5.73	75.8	1.23	154.7
1410	5.13	100	2.5	16.97	0.484	5.73	74.3	1.21	134.5
1415	5.13	100	3.0	17.05	0.565	5.73	71.9	1.31	101.5
1420	5.13	100	3.5	17.20	0.741	5.75	68.4	1.32	85.3
1425	5.13	100	4.0	17.24	0.944	5.78	64.6	1.87	76.9

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

Shaw

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1430	5.13	100	4.5	17.33	1.078	5.80	62.3	2.01	67.2
1435	5.13	100	5.0	17.33	1.237	5.82	59.7	2.06	62.6
1440	5.13	100	5.5	17.33	1.354	5.84	58.0	2.21	54.0
1445	5.13	100	6.0	17.34	1.360	5.85	56.7	2.18	49.0
1450	5.13	100	6.5	17.34	1.362	5.85	56.3	2.20	48.8
1455	5.13	100	7.0	17.35	1.362	5.85	56.0	2.19	48.7
1500	5.13	100	7.5	17.35	1.363	5.85	56.2	2.18	48.8

Sampling

Sampling beginning time: 1500 Sampling completion time: 1503

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)

Sample Information

Sample ID: 04mw04-110223 Sample collection date/time: 2/23/11 1500

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s): 6044

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Perchlorate	6850	1-250 ml plastic			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

Site 04 Sampling

Cloudy 55°F

0735 Setup on LHSMW02 with a bladder pump and used disposable gloves AND Equipment decon'ed before Sampling. Sample LHSMW02-110223 collected at 9:55 for perchlorate.

0905 - Setup on 04MW01 with bladder pump. Disposable gloves were used and Equipment decon'ed prior to Sampling. Sample 04MW01-110223 collected at 9:55 for perchlorate

10:05 - Setup on LHSMW01 with a bladder pump. Decon'ed Equipment prior to Sampling and used disposable gloves. Sample LHSMW01-110223 collected at 11:10 for perchlorate

11:50 - Setup on 04MW05 with a bladder pump. Equipment decon'ed before Sampling AND used disposable gloves Sample 04MW01-110223 collected at 13.20 for perchlorate. Duplicate Sample Collected on this well. Dup ID:

Dup01-110223

Site 04 Sampling Cont

1335 Setup on 04MW04 with a bladder pump. Used Disposable gloves and decon'ed equipment before Sampling Sample 04MW04-110223 collected at ~~15:18~~ 15:00 for perchlorate.

15:15 - WATER LEVELS for 04MW02
D.T.W. - 6.81 T.D. - 26.50

1520 - WATER LEVEL for 04MW03
D.T.W. - 18.18 T.D. - 26.75

1525 - WATER LEVEL for LHSMW03
D.T.W. - 28.97 T.D. - 35.30

1535 - WATER LEVEL for 35A MW04
D.T.W. - DRY T.D. - 25.20

0041624

Chain of Custody

NO. 6044

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: MICROBAC Address: MARIETTA, OH Contact:

Project Name	Project Location	Analysis and Method Desired (Indicate separate containers)	Remarks
Project No.	Project Contact	Project Telephone No.	
Point of Contact: Telephone No.	Project Manager/Supervisor:		

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	
1	LHSMW02-110223	2/23/11	8:55					1	
2	04WW01-110223	2/23/11	9:55					1	
3	LHSMW01-110223	2/23/11	11:10					1	
4	04WW05-110223	2/23/11	1320					1	
5	Dup 01-110223	2/23/11						1	
6	04WW04-110223	2/23/11	15:00					1	
7									
8									
9									
10									

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
				STANDARD TAT
				FedEx Airbill No.:
		Laboratory		Sampler's Signature

TAT: _____ Standard _____ Rush Date _____ Seals Intact? _____ Y _____ N Received Good Condition _____ Y _____ N _____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

Form Number: 433_2
Rev. 10-19-07

00116248

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • August 2012

Appendix B

Basis of Estimate for LHAAP-04 Groundwater Remediation

Alternative 2
Monitored Natural Attenuation, LUC

SHAW ENVIRONMENTAL, INC.
KARNACK, TEXAS **KARNACK, TEXAS** **DATE: May 2012**

Year	FY	Capital Costs	O & M Costs				Present Value (NPV)		
							Discount Rate	Capital	O & M
		MNA	MNA	LTM	Five-Year Review	Total	2.7%		
1	2012	109,109	58,020			58,020	NPV	$ 121,000	$ 444,000
2	2013		58,020			58,020			
3	2014	11,587		27,905		27,905	Total Capital and O&M		$ 565,000
4	2015			27,905		27,905			
5	2016			27,905	42,525	70,430			
6	2011			17,222		17,222			
7	2012			17,222		17,222			
8	2013			17,222		17,222			
9	2014			17,222		17,222			
10	2015			17,222	42,525	59,747			
11	2016					0			
12	2017					0			
13	2018					0			
14	2019					0			
15	2020			17,222	42,525	59,747			
16	2021					0			
17	2022					0			
18	2023					0			
19	2024					0			
20	2025				42,525	42,525			
21	2026					0			
22	2027					0			
23	2028					0			
24	2029					0			
25	2030				42,525	42,525			
26	2031					0			
27	2032					0			
28	2033					0			
29	2034					0			
30	2035				42,525	42,525			
		120,695	116,040	187,049	255,150	558,239			

Note:

Discount rate of 2.7% is based on the Office of Management and Budget Circular No. A-94, December 2009.

Alternative 2
Monitored Natural Attenuation, LUC

COMPANY NAME: SHAW ENVIRONMENTAL, INC. **DATE:** May 2012
PROJECT LOCATION: KARNACK, TEXAS

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Year 1														
	Capital costs														
1	Allowance for Legal Fees, Administration Controls, and Documentation	1	lot										15,000	15,000	15,000
2	Additional Characterization for RD	1	ea	40	40	geol	71.20	2,848	200	200			5000	5,000	8,048
	Additional Characterization Samples	8	ea	10	80	tech	34.30	2,744					275	2,200	4,944
	Per Diem and Travel Costs	4	days						159	636	80.00	320			956
	Mob / Demob	1	ea	40	40	eng	81.60	3,264	1,200	1,200	1,000	1,000			5,464
3	Install 2 new Shallow Monitoring wells	2	ea	8	16	tech	34.30	549	400	800			5,000	10,000	11,349
4	Install 1 new Intermediate Monitoring well	1	ea	16	16	eng	81.60	1,306	700	700			7,000	7,000	9,006
5	Establish initial database, licenses, work plans	1	ea	300	300	eng	81.60	24,480	5,000	5,000			5000	5,000	34,480
	Capital Costs Subtotal							**35,190**		**8,536**		**1,320**		**44,200**	**89,246**
	Taxes @ 6.5 %									555					555
	Subtotal														**89,801**
	Indirects @ 21.5%														19,307
	Year 1 total Capital costs														**$ 109,109**
	Year 1 - Quarterly Monitoring (O&M) - 8 wells to be monitored + 1 QC sample set														
1	Collect and prepare samples quarterly (GW)	36	ea	16	576	tech	34.30	19,760	110	3,960	36	1,296			25,016
2	Sample analysis (perchlorate, MNA)	36	ea										475	17,100	17,100
3	Annual report	1	ea	64	64	eng	81.60	5,220	150	150					5,370
	Subtotal							**24,980**		**4,110**		**1,296**		**17,100**	**47,486**
	Taxes @ 6.5 %									267					267
	Subtotal														**47,753**
	Indirects @ 21.5%														10,267
	Year 1 Annual Cost (O&M), Year 2 the same														**$ 58,020**

Alternative 2
Monitored Natural Attenuation, LUC

COMPANY NAME: SHAW ENVIRONMENTAL, INC. **DATE:** May 2012
PROJECT LOCATION: KARNACK, TEXAS

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Year 3														
	Capital costs for MNA Evaluation														
1	Prepare MNA Evaluation	1	ea	60	60	eng	81.60	4,900							4,900
2	Produce MNA Evaluation Report	1	ea	60	60	geol	71.20	4,270	250	250	100	100			4,620
	Capital Costs Subtotal							**9,170**		**250**		**100**		**0**	**9,520**
	Taxes @ 6.5 %									16					16
	Subtotal														**9,536**
	Indirects @ 21.5%														2,050
	Year 3 total Capital costs													**$**	**11,587**
	Year 3 LTM - Semiannual Monitoring - 8 wells to be monitored + 1 QC set														
1	Collect and prepare samples semiannually	18	ea	16	288	tech	34.30	9,878	110	1,980	36	648			12,506
2	Sample analysis (perchlorate)	18	ea										275	4,950	4,950
3	Annual report	1	ea	64	64	eng	81.60	5,222	150	150					5,372
	Subtotal							**15,101**		**2,130**		**648**		**4,950**	**22,829**
	Taxes @ 6.5 %									138					138
	Subtotal														**22,967**
	Indirects @ 21.5%														4,938
	Year 3 Annual Cost (O&M), Years 4 and 5 the same													**$**	**27,905**
	Five-Year Review Report/Inspection														
1	Five Year report/inspection	1	ea										35,000	35,000	35,000
	Subtotal							**0**		**0**		**0**		**35,000**	**35,000**
	Taxes @ 6.5 %									0					0
	Subtotal														**35,000**
	Indirects @ 21.5%														7,525
	Year 5 Total Cost (O&M)													**$**	**42,525**
	Total Cost for Years 10, 15, 20, 25, 30 (Same as Year 5)														

Alternative 2
Monitored Natural Attenuation, LUC

COMPANY NAME: SHAW ENVIRONMENTAL, INC. **DATE:** May 2012
PROJECT LOCATION: KARNACK, TEXAS

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Year 6 LTM - Annual Monitoring														
1	Collect and prepare samples Annually	9	ea	16	144	tech	34.30	4,939	110	990	36	324			6,253
2	Sample analysis (perchlorate)	9	ea										275	2,475	2,475
3	Annual report	1	ea	64	64	eng	81.60	5,222	150	150					5,372
	Subtotal							**10,162**		**1,140**		**324**		**2,475**	**14,101**
	Taxes @ 6.5 %									74					74
	Subtotal														**14,175**
	Indirects @ 21.5%														3,048
	Year 6 Annual Cost (O&M), Years 7 through 10 the same														**$17,222.26**
	Year 15 LTM - to Support Five-Year Review														
1	Collect and prepare samples once every 5 yrs	9	ea	16	144	tech	34.30	4,939	110	990	36	324			6,253
2	Sample analysis (perchlorate)	9	ea										275	2,475	2,475
3	Event report	1	ea	64	64	eng	81.60	5,222	150	150					5,372
	Subtotal							**10,162**		**1,140**		**324**		**7,425**	**14,101**
	Taxes @ 6.5 %									74					74
	Subtotal														**14,175**
	Indirects @ 21.5%														3,048
	Year 15 Total Cost (O&M)														**$ 17,222**
	Expected Duration is 12 years, no further sampling.														

Alternative 3
in Situ Bioremediation, LUC
Present Value

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE: May 2012**

Year	FY	Capital Costs		O & M Costs				Present Value (NPV)		
		Bioremediation	Plans and Wells	Monitoring	LTM	Five-Year Review	Total	Discount Rate	Capital	O & M
1	2012	136,832	85,362	58,020			58,020	2.7%		
2	2013			58,020			58,020	**NPV**	**233,000**	**405,000**
3	2014	11,587			27,905		27,905			
4	2015				27,905		27,905			
5	2016				27,905	42,525	70,430	**Total Capital and O&M**		**$638,000**
6	2017				17,222		17,222			
7	2018				17,222		17,222			
8	2019				17,222		17,222			
9	2020						0			
10	2021					42,525	42,525			
11	2022						0			
12	2023						0			
13	2024						0			
14	2025						0			
15	2026					42,525	42,525			
16	2027						0			
17	2028						0			
18	2029						0			
19	2030						0			
20	2031					42,525	42,525			
21	2032						0			
22	2033						0			
23	2034						0			
24	2035						0			
25	2036					42,525	42,525			
26	2037						0			
27	2038						0			
28	2039						0			
29	2040						0			
30	2041					42,525	42,525			
		148,418	85,362	116,040	135,382	255,150	506,573			

Note:

Discount rate of 2.7% is based on the Office of Management and Budget Circular No. A-94, December 2009.

Alternative 3
In Situ Bioremediation

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE:** May 2012

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Perform Direct Injection Bioremediation in Year 1 - near 04WW04														
	Treatability Study														
1	Work plans, safety plans	1	ea	240	240	eng	81.60	19,584	200	200					19,784
2	UIC Permit and Design	1	ea	160	160	geol	71.20	11,392	200	200					11,592
3	Additional Characterization for RD	1	ea	40	40	geol	71.20	2,848	200	200			5000	5,000	8,048
	Additional Characterization Samples	8	ea	10	80	tech	34.30	2,744					275	2,200	4,944
	Per Diem and Travel Costs	4	days						159	636	80.00	320			956
	Mob / Demob	1	ea	40	40	eng	81.60	3,264	1,200	1,200	1,000	1,000			5,464
4	Treatability/Pilot Study	1	ea	120	120	eng	81.60	9,792	200	200			1650	1,650	11,642
5	Treatability/Pilot Sample Collection	1	hr	50	50	geol	71.20	3,560							3,560
6	Driller for Treatability/Pilot Sampling	3	borings										3150	9,450	9,450
7	Per Diem and Travel Costs	4	days						159	636	80.00	320			956
8	Mob / Demob	1	ea	40	40	eng	81.60	3,264	1,200	1,200	1,000	1,000			5,464
	Site Clearing for Injection Access														
9	Superintendent	2	dy	10	20	super	72.30	1,446							1,446
10	Geologist	2	dy	10	20	geol	71.20	1,424							1,424
11	Technician	2	dy	10	20	tech	34.30	686							686
12	Equipment Rental	1	wk								1000	1,000			1,000
	Injection Activities														
13	Superintendent	3	dy	10	30	super	72.30	2,169							2,169
14	Geologist	3	dy	10	30	geol	71.20	2,136							2,136
15	Technician	3	dy	10	30	tech	34.30	1,029							1,029
16	Bioaugmentation Materials, Lactate and	4	pts	60% Sodium Lactate					36.00	144					144
	Bacterial Culture specific for perchlorate	1	ea	Shipping Lactate, Trailer, Mob/Demob					1,000	1,000	5,000	5,000	3,000	3,000	9,000
		4	pts	Bacterial Culture (perchlorate specific)					150	600	cost	150	shipping		750
17	Injection System - Equipment, materials	3	days						400	1,200	400	1,200			2,400
	and flush water	4	pts	Injection Chase Water					4	16					16
18	DPT Injections	4	ea										500	2,000	2,000
19	Airfare	2	ea										500	1,000	1,000
20	Per Diem and PPE, Crew Truck, Lodging	15	m-day						175	2,625	75	1,125	77	1,155	4,905
	Subtotal							**65,338**		**10,057**		**11,115**		**25,455**	**111,965**
	Taxes @ 6.5 %									654					654
	Subtotal														**112,619**

Alternative 3
In Situ Bioremediation

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE:** May 2012

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Indirects @ 21.5%														24,213
	Year 1 Total Capital Costs														**$ 136,832**

Alternative 3
Groundwater Monitoring and LUC

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE:** May 2012

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Year 1									0					
	Capital costs														
1	Allowance for Legal Fees, Administration Controls, and Documentation	1	lot										15,000	15,000	15,000
2	Install 2 new Shallow Monitoring wells	2	ea	8	16	tech	34.30	549	400	800			5,000	10,000	11,349
3	Install 1 new Intermediate Monitoring well	1	ea	16	16	eng	81.60	1,306	700	700			7,000	7,000	9,006
4	Establish initial database, licenses, work plans	1	ea	300	300	eng	81.60	24,480	5,000	5,000			5000	5,000	34,480
	Capital Costs Subtotal							**26,334**		**6,500**		**0**		**37,000**	**69,834**
	Taxes @ 6.5 %									423					423
	Subtotal														**70,257**
	Indirects @ 21.5%														15,105
	Year 1 total Capital costs														**$ 85,362**
	Year 1 - Quarterly Monitoring (O&M) - 8 wells to be monitored + 1 QC sample set														
1	Collect and prepare samples quarterly (GW)	36	ea	16	576	tech	34.30	19,760	110	3,960	36	1,296			25,016
2	Sample analysis (perchlorate)	36	ea										475	17,100	17,100
3	Annual report	1	ea	64	64	eng	81.60	5,220	150	150					5,370
	Subtotal							**24,980**		**4,110**		**1,296**		**17,100**	**47,486**
	Taxes @ 6.5 %									267					267
	Subtotal														**47,753**
	Indirects @ 21.5%														10,267
	Year 1 Annual Cost (O&M), Year 2 the same														**$ 58,020**
	Year 3														
	Capital costs for ISB Evaluation														
1	Prepare ISB Evaluation	1	ea	60	60	eng	81.60	4,900							4,900
2	Produce ISB Evaluation Report	1	ea	60	60	geol	71.20	4,270	250	250	100	100			4,620
	Capital Costs Subtotal							**9,170**		**250**		**100**		**0**	**9,520**
	Taxes @ 6.5 %									16					16
	Subtotal														**9,536**
	Indirects @ 21.5%														2,050
	Year 3 total Capital costs														**$ 11,587**

Alternative 3
Groundwater Monitoring and LUC

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE:** May 2012

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Year 3 LTM - Semiannual Monitoring - 8 wells to be monitored + 1 QC set														
1	Collect and prepare samples semiannually	18	ea	16	288	tech	34.30	9,878	110	1,980	36	648			12,506
2	Sample analysis (perchlorate)	18	ea										275	4,950	4,950
3	Annual report	1	ea	64	64	eng	81.60	5,222	150	150					5,372
	Subtotal							**15,101**		**2,130**		**648**		**4,950**	**22,829**
	Taxes @ 6.5 %									138					138
	Subtotal														**22,967**
	Indirects @ 21.5%														4,938
	Year 3 Annual Cost (O&M), Years 4 and 5 the same														**$ 27,905**
	Five-Year Review Report/Inspection														
1	Five-Year Inspection and Review	1	ea										35,000	35,000	35,000
	Subtotal							**0**		**0**		**0**		**35,000**	**35,000**
	Taxes @ 6.5 %									0					0
	Subtotal														**35,000**
	Indirects @ 21.5%														7,525
	Year 5 Total Cost (O&M)														**$ 42,525**
	Total Cost for Years 10, 15, 20, 25, 30 (Same as Year 5)														
	Year 6 LTM - Annual Monitoring														
1	Collect and prepare samples Annually	9	ea	16	144	tech	34.30	4,939	110	990	36	324			6,253
2	Sample analysis (perchlorate)	9	ea										275	2,475	2,475
3	Annual report	1	ea	64	64	eng	81.60	5,222	150	150					5,372
	Subtotal							**10,162**		**1,140**		**324**		**2,475**	**14,101**
	Taxes @ 6.5 %									74					74
	Subtotal														**14,175**
	Indirects @ 21.5%														3,048
	Year 6 Annual Cost (O&M)														**$ 17,222**
	Total Cost for Years 7 and 8 (Same as Year 6)														
	Expected Duration is 6 years, no further sampling after Year 8.														

Alternative 4
Extraction and Treatment, LUC
Present Value

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE: May 2012**

Year	FY	Capital Costs		O & M Costs				Present Value (NPV)		
		Extract / Treat	Plans and Wells	Monitoring	Extract / Treat	Five-Year Review	Total	Discount Rate	Capital	O & M
1	2012	199,878	85,362	49,272	19,068		68,340	2.7%		
2	2013	27,664		49,272	57,203		106,475	**NPV**	**312,000**	**418,000**
3	2014			27,905			27,905			
4	2015			27,905			27,905			
5	2016			27,905		42,525	70,430	**Total Capital and O&M**		**$730,000**
6	2017						0			
7	2018						0			
8	2019						0			
9	2020						0			
10	2021					42,525	42,525			
11	2022						0			
12	2023						0			
13	2024						0			
14	2025						0			
15	2026					42,525	42,525			
16	2027						0			
17	2028						0			
18	2029						0			
19	2030						0			
20	2031					42,525	42,525			
21	2032						0			
22	2033						0			
23	2034						0			
24	2035						0			
25	2036					42,525	42,525			
26	2037						0			
27	2038						0			
28	2039						0			
29	2040						0			
30	2041					42,525	42,525			
		227,542	85,362	182,260	76,271	255,150	513,681			

Note:

Discount rate of 2.7% is based on the Office of Management and Budget Circular No. A-94, December 2009.

Alternative 4
Extraction and Treatment

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE:** May 2012

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Field Work in Year 1 - Capital Costs									0					
1	Work plans, safety plans	1	ea	240	240	eng	81.60	19,584	200	200					19,784
2	UIC Permit and Design	1	ea	160	160	geol	71.20	11,392	200	200					11,592
3	Additional Characterization for RD	1	ea	40	40	geol	71.20	2,848	200	200			5000	5,000	8,048
	Additional Characterization Samples	8	ea	10	80	tech	34.30	2,744					275	2,200	4,944
	Per Diem and Travel Costs	4	days						159	636	80.00	320			956
	Mob / Demob	1	ea	40	40	eng	81.60	3,264	1,200	1,200	1,000	1,000			5,464
4	Aquifer Study	1	ea	120	120	eng	81.60	9,792	200	200			1650	1,650	11,642
	Aquifer Study Sample Collection	1	hr	50	50	geol	71.20	3,560							3,560
	Driller for Aquifer Study	3	borings										3150	9,450	9,450
	Per Diem and Travel Costs	4	days						159	636	80.00	320			956
	Mob / Demob	1	ea	40	40	eng	81.60	3,264	1,200	1,200	1,000	1,000			5,464
5	Field H&S	1	hr	80	80	h/s	55.70	4,456	50	50	160	160			4,666
6	Field Super/Geolog	1	hr	60	60	geol	71.20	4,272			2,825	2,825			7,097
7	Vehicles	21	day						10	210	80	1,680			1,890
8	Per Diem	63	day										109	6,867	6,867
9	Driller Mob/Demob	1	ea										2400	2,400	2,400
10	Install injection wells, 25' dpt, 2" dia.	4	ea										3,000	12,000	12,000
11	Install extraction well, 25' deep, 4" dia	1	ea								1000	1,000	5,000	5,000	6,000
12	Well survey	1	ea										3,000	3,000	3,000
13	Well drill waste disposal	4	drum										250	1,000	1,000
14	Collect & prepare well waste drum samples	4	ea	12	48	tech	34.30	1,646	60	240	36	144			2,030
15	Sample analysis (waste char)	4	ea										1,500	6,000	6,000
16	Electrical Connection	1	ea										1,500	1,500	1,500
17	Extraction / Treatment Piping	550	LF										8	4,400	4,400
18	Treatment Trailer	1	ea						2,000	2,000	5000	5,000	5,000	5,000	12,000
19	Security Fencing with wide gate	440	LF						gate	1,000			12	5,280	6,280
20	Influent Tank 5,000 gallons	1	ea								2000	2,000	500	500	2,500
21	Effluent Tank 5,000 gallons	1	ea								2000	2,000	500	500	2,500
	Subtotal							**66,822**		**7,972**		**17,449**		**71,747**	**163,990**
	Taxes @ 6.5 %									518					518
	Subtotal														**164,509**
	Indirects @ 21.5%														35,369
	Year 1 Total Capital Costs														**$ 199,878**

Alternative 4
Extraction and Treatment

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE:** May 2012

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Field Work in Year 2 - Capital Costs														
1	Field H&S	1	hr	40	40	h/s	55.70	2,228	50	50	160	160			2,438
2	Field Super/Geolog	1	hr	40	40	geol	71.20	2,848			2,825	2,825			5,673
3	Vehicles	4	days						10	40	80	320			360
4	Per Diem	8	day										109	872	872
5	Travel Costs, Hotel	2	trips										500	1,000	1,000
6	Demolition Contractor Mob/Demob	1	ea										2000	2,000	2,000
7	Abandon Extraction and Injection Wells	5	ea										1000	5,000	5,000
8	Disconnect Electricity	1	ea										500	500	500
9	Remove or abandon Piping	550	LF										2	1,100	1,100
10	Remove Treatment Trailer	1	ea										1,000	1,000	1,000
11	Remove Security Fencing with wide gate	440	LF										3	1,320	1,320
12	Remove Tanks	1	ea										1,500	1,500	1,500
	Subtotal							**5,076**		**90**		**3,305**		**14,292**	**22,763**
	Taxes @ 6.5 %									6					6
	Subtotal														**22,769**
	Indirects @ 21.5%														4,895
	Year 1 Total Capital Costs														**$ 27,664**
	Operating Extraction and Treatment system in Years 1 and 2 - 15 Months of Operation (O&M)														
1	Average Daily Operation	450	ea	0.5	225	tech	34.30	7,718	1	450			2	900	9,068
2	Electric Power for Pumping, Miscellaneous	15	monthly						100	1,500			200	3,000	4,500
3	Quarterly Adjustment	4	ea	8.0	32	eng	81.60	2,611	300	1,200	250	1,000			4,811
4	Collect and prepare samples daily startup	16	ea	0.5	8	tech	34.30	274	122	1,952	36	576			2,802
5	Collect and prepare samples weekly effluent	68	ea	0.5	34	tech	34.30	1,166	122	8,296	36	2,448			11,910
6	Collect and prepare samples monthly influent	17	ea	0.5	9	tech	34.30	292	122	2,074	36	612			2,978
7	Sample analysis (perchlorate)	88	ea										275	24,200	24,200
8	Monthly Resin Tests	15	ea										100	1,500	1,500
	Subtotal							**12,061**		**15,472**		**4,636**		**29,600**	**61,769**
	Taxes @ 6.5 %									1,006					1,006
	Subtotal														**62,775**
	Indirects @ 21.5%														13,497
	Years 1 and 2 O&M Costs														**76,271**
	25% of Cost Assigned to Year 1														**$ 19,068**

Alternative 4
Extraction and Treatment

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE:** May 2012

Item				LABOR				MATERIAL		EQUIPMENT		SUBCONTRACT		
NO	DESCRIPTION	QTY	UNIT	UNIT MH	TOTAL MH	CRAFT	$/MH	$ VALUE	$/UNIT	$ VALUE	$/UNIT	$ VALUE	$/UNIT	$ VALUE	TOTAL ($)
	75% of Cost Assigned to Year 2														**$ 57,203**

Alternative 4
Groundwater Monitoring and LUC

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE:** May 2012

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Year 1 - Capital Costs														
1	Allowance for Legal Fees, Administration	1	lot										15,000	15,000	15,000
2	Install 2 new Shallow Monitoring wells	2	ea	8	16	tech	34.30	549	400	800			5,000	10,000	11,349
3	Install 1 new Intermediate Monitoring well	1	ea	16	16	eng	81.60	1,306	700	700			7,000	7,000	9,006
4	Establish initial database, licenses, coordinate well characterization & other well info, develop work plans, etc	1	ea	300	300	eng	81.60	24,480	5,000	5,000			5,000	5,000	34,480
	Subtotal							**26,334**		**6,500**		**0**		**37,000**	**69,834**
	Taxes @ 6.5 %									423					423
	Subtotal														**70,257**
	Indirects @ 21.5%														15,105
	Year 1 Total Capital Costs														**$ 85,362**
	Year 1 - Quarterly Monitoring (O&M) - 8 wells to be monitored + 1 QC sample set														
1	Collect and prepare samples quarterly (GW)	36	ea	16	576	tech	34.30	19,760	110	3,960	36	1,296			25,016
2	Sample analysis (perchlorate)	36	ea										275	9,900	9,900
3	Annual report	1	ea	64	64	eng	81.60	5,220	150	150					5,370
	Subtotal							**24,980**		**4,110**		**1,296**		**9,900**	**40,286**
	Taxes @ 6.5 %									267					267
	Subtotal														**40,553**
	Indirects @ 21.5%														8,719
	Year 1 Annual Cost (O&M), Year 2 the same														**$ 49,272**
	Year 3 LTM - Semiannual Monitoring - 8 wells to be monitored + 1 QC set														
1	Collect and prepare samples semiannually	18	ea	16	288	tech	34.30	9,878	110	1,980	36	648			12,506
2	Sample analysis (perchlorate)	18	ea										275	4,950	4,950
3	Annual report	1	ea	64	64	eng	81.60	5,222	150	150					5,372
	Subtotal							**15,101**		**2,130**		**648**		**4,950**	**22,829**
	Taxes @ 6.5 %									138					138
	Subtotal														**22,967**
	Indirects @ 21.5%														4,938
	Year 3 Annual Cost (O&M), Years 4 and 5 the same														**$ 27,905**

Alternative 4
Groundwater Monitoring and LUC

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE:** May 2012

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Five-Year Review Report/Inspection														
1	Five-Year Inspection and Review	1	ea										35,000	35,000	35,000
	Subtotal							**0**		**0**		**0**		**35,000**	**35,000**
	Taxes @ 6.5 %									0					0
	Subtotal														**35,000**
	Indirects @ 21.5%														7,525
	Year 5 Total Cost (O&M)														**$ 42,525**
	Total Cost for Years 10, 15, 20, 25, 30 (Same as Year 5)														

Alternative 5
ICTs, Extraction & Treatment, LUC
Present Value

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE: May 2012**

Year	FY	Capital Costs		O & M Costs				Present Value (NPV)		
		Extract / Treat	Plans and Wells	Monitoring	Extract / Treat	Five-Year Review	Total	Discount Rate	Capital	O & M
1	2012	269,133	85,362	49,272	50,218		99,490	2.7%		
2	2013	35,683		49,272			49,272	**NPV**	**389,000**	**394,000**
3	2014			27,905			27,905			
4	2015			27,905			27,905			
5	2016			27,905		42,525	70,430	**Total Capital and O&M**		**$783,000**
6	2017						0			
7	2018						0			
8	2019						0			
9	2020						0			
10	2021					42,525	42,525			
11	2022						0			
12	2023						0			
13	2024						0			
14	2025						0			
15	2026					42,525	42,525			
16	2027						0			
17	2028						0			
18	2029						0			
19	2030						0			
20	2031					42,525	42,525			
21	2032						0			
22	2033						0			
23	2034						0			
24	2035						0			
25	2036					42,525	42,525			
26	2037						0			
27	2038						0			
28	2039						0			
29	2040						0			
30	2041					42,525	42,525			
		304,816	85,362	182,260	50,218	255,150	487,628			

Note:

Discount rate of 2.7% is based on the Office of Management and Budget Circular No. A-94, December 2009.

Alternative 5
ICTs, Extraction and Treatment

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE:** May 2012

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Field Work in Year 1 - Capital Costs														
1	Work plans, safety plans	1	ea	240	240	eng	81.60	19,584	200	200					19,784
2	UIC Permit and Design	1	ea	160	160	geol	71.20	11,392	200	200					11,592
3	Additional Characterization for RD	1	ea	40	40	geol	71.20	2,848	200	200			5000	5,000	8,048
	Additional Characterization Samples	8	ea	10	80	tech	34.30	2,744					275	2,200	4,944
	Per Diem and Travel Costs	4	days						159	636	80.00	320			956
	Mob / Demob	1	ea	40	40	eng	81.60	3,264	1,200	1,200	1,000	1,000			5,464
4	Aquifer Study	1	ea	120	120	eng	81.60	9,792	200	200			1650	1,650	11,642
	Aquifer Study Sample Collection	1	hr	50	50	geol	71.20	3,560							3,560
	Driller for Aquifer Study	3	borings										3150	9,450	9,450
	Per Diem and Travel Costs	4	days						159	636	80.00	320			956
	Mob / Demob	1	ea	40	40	eng	81.60	3,264	1,200	1,200	1,000	1,000			5,464
5	Field H&S	1	hr	80	80	h/s	55.70	4,456	50	50	160	160			4,666
6	Field Super/Geolog	1	hr	60	60	geol	71.20	4,272			2,825	2,825			7,097
7	Vehicles	21	day						10	210	80	1,680			1,890
8	Per Diem	63	day										109	6,867	6,867
9	Driller Mob/Demob	1	ea										2,400	2,400	2,400
10	Install injection wells, 25' dpt, 2" dia.	2	ea										3,000	6,000	6,000
11	ICT contractor Mobilization	1	ea										10,000	10,000	10,000
12	ICT contractor Demobilization	1	ea										10,000	10,000	10,000
13	Install ICTs, 25'deep, 2' wide.	240	LF								35	8,400	165	39,600	48,000
14	Well and ICT survey	1	ea										3,000	3,000	3,000
15	Well drill waste disposal	4	rolloffs										500	2,000	2,000
16	Collect & prepare waste rolloff samples	4	ea	12	48	tech	34.30	1,646	60	240	36	144			2,030
17	Sample analysis (waste char)	4	ea										1,500	6,000	6,000
18	Electrical Connection	1	ea										1,500	1,500	1,500
19	Extraction / Treatment Piping	550	LF										8	4,400	4,400
20	Treatment Trailer	1	ea						2,000	2,000	5000	5,000	5,000	5,000	12,000
21	Security Fencing with wide gate	440	LF						gate	1,000			12	5,280	6,280
22	Influent Tank 5,000 gallons	1	ea								2000	2,000	500	500	2,500
23	Effluent Tank 5,000 gallons	1	ea								2000	2,000	500	500	2,500
	Subtotal							**66,822**		**7,972**		**24,849**		**121,347**	**220,990**
	Taxes @ 6.5 %									518					518
	Subtotal														**221,509**
	Indirects @ 21.5%														47,624
	Year 1 Total Capital Costs														**$ 269,133**

Alternative 5
ICTs, Extraction and Treatment

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE:** May 2012

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Field Work in Year 2 - Capital Costs														
1	Field H&S	1	hr	40	40	h/s	55.70	2,228	50	50	160	160			2,438
2	Field Super/Geolog	1	hr	40	40	geol	71.20	2,848			2,825	2,825			5,673
3	Vehicles	4	days						10	40	80	320			360
4	Per Diem	8	day										109	872	872
5	Travel Costs, Hotel	2	trips										500	1,000	1,000
6	Demolition Contractor Mob/Demob	1	ea										2000	2,000	2,000
7	Abandon Injection Wells	2	ea										1000	2,000	2,000
8	Abandon ICTs	240	LF										40	9,600	9,600
9	Disconnect Electricity	1	ea										500	500	500
10	Remove or abandon Piping	550	LF										2	1,100	1,100
11	Remove Treatment Trailer	1	ea										1,000	1,000	1,000
12	Remove Security Fencing with wide gate	440	LF										3	1,320	1,320
13	Remove Tanks	1	ea										1,500	1,500	1,500
	Subtotal							**5,076**		**90**		**3,305**		**20,892**	**29,363**
	Taxes @ 6.5 %									6					6
	Subtotal														**29,369**
	Indirects @ 21.5%														6,314
	Year 2 Total Capital Costs														**$ 35,683**
	Operating Extraction and Treatment system in Years 1 - 6 Months of Operation (O&M)														
1	Average Daily Operation	180	ea	1.0	180	tech	34.30	6,174	2	360			4	720	7,254
2	Electric Power for Pumping, Miscellaneous	6	monthly						150	900			300	1,800	2,700
3	Monthly Adjustment	6	ea	8.0	48	eng	81.60	3,917	300	1,800	250	1,500			7,217
4	Collect and prepare samples daily startup	16	ea	0.5	8	tech	34.30	274	122	1,952	36	576			2,802
5	Collect and prepare samples weekly effluent	28	ea	0.5	14	tech	34.30	480	122	3,416	36	1,008			4,904
6	Collect and prepare samples monthly influent	7	ea	0.5	4	tech	34.30	120	122	854	36	252			1,226
7	Sample analysis (perchlorate)	51	ea										275	14,025	14,025
8	Monthly Resin Tests	6	ea										100	600	600
	Subtotal							**10,965**		**9,282**		**3,336**		**17,145**	**40,728**
	Taxes @ 6.5 %									603					603
	Subtotal														**41,332**
	Indirects @ 21.5%														8,886
	Years 1 O&M Costs														**50,218**

Alternative 5
Groundwater Monitoring and LUC

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE:** May 2012

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Year 1 - Capital Costs														
1	Allowance for Legal Fees, Administration	1	lot										15,000	15,000	15,000
2	Install 2 new Shallow Monitoring wells	2	ea	8	16	tech	34.30	549	400	800			5,000	10,000	11,349
3	Install 1 new Intermediate Monitoring well	1	ea	16	16	eng	81.60	1,306	700	700			7,000	7,000	9,006
4	Establish initial database, licenses, coordinate well characterization & other well info, develop work plans, etc	1	ea	300	300	eng	81.60	24,480	5,000	5,000			5,000	5,000	34,480
	Subtotal							**26,334**		**6,500**		**0**		**37,000**	**69,834**
	Taxes @ 6.5 %									423					423
	Subtotal														**70,257**
	Indirects @ 21.5%														15,105
	Year 1 Total Capital Costs														**$ 85,362**
	Year 1 - Quarterly Monitoring (O&M) - 8 wells to be monitored + 1 QC sample set														
1	Collect and prepare samples quarterly (GW)	36	ea	16	576	tech	34.30	19,760	110	3,960	36	1,296			25,016
2	Sample analysis (perchlorate)	36	ea										275	9,900	9,900
3	Annual report	1	ea	64	64	eng	81.60	5,220	150	150					5,370
	Subtotal							**24,980**		**4,110**		**1,296**		**9,900**	**40,286**
	Taxes @ 6.5 %									267					267
	Subtotal														**40,553**
	Indirects @ 21.5%														8,719
	Year 1 Annual Cost (O&M), Year 2 the same														**$ 49,272**
	Year 3 LTM - Semiannual Monitoring - 8 wells to be monitored + 1 QC set														
1	Collect and prepare samples semiannually	18	ea	16	288	tech	34.30	9,878	110	1,980	36	648			12,506
2	Sample analysis (perchlorate)	18	ea										275	4,950	4,950
3	Annual report	1	ea	64	64	eng	81.60	5,222	150	150					5,372
	Subtotal							**15,101**		**2,130**		**648**		**4,950**	**22,829**
	Taxes @ 6.5 %									138					138
	Subtotal														**22,967**
	Indirects @ 21.5%														4,938
	Year 3 Annual Cost (O&M), Years 4 and 5 the same														**$ 27,905**

Alternative 5
Groundwater Monitoring and LUC

COMPANY NAME: SHAW ENVIRONMENTAL, INC.
PROJECT LOCATION: KARNACK, TEXAS **DATE:** May 2012

Item NO	DESCRIPTION	QTY	UNIT	LABOR UNIT MH	LABOR TOTAL MH	LABOR CRAFT	LABOR $/MH	LABOR $ VALUE	MATERIAL $/UNIT	MATERIAL $ VALUE	EQUIPMENT $/UNIT	EQUIPMENT $ VALUE	SUBCONTRACT $/UNIT	SUBCONTRACT $ VALUE	TOTAL ($)
	Five-Year Review Report/Inspection														
1	Five-Year Inspection and Review	1	ea										35,000	35,000	35,000
	Subtotal							**0**		**0**		**0**		**35,000**	**35,000**
	Taxes @ 6.5 %									0					0
	Subtotal														**35,000**
	Indirects @ 21.5%														7,525
	Year 5 Total Cost (O&M)														**$ 42,525**
	Total Cost for Years 10, 15, 20, 25, 30 (Same as Year 5)														