LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

CHRONOLOGICAL INDEX

Volume 9 of 19
2010

Bate Stamp Numbers

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Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976 – 2010

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

VOLUME 9 of 19

2010

A. Title: Report – Final Feasibility Study, LHAAP-17, Burning Ground No. 2/Flashing Area, Group 2, Longhorn Army Ammunition Plant, Karnack, Texas, April 2010
Author(s): US Army Corps of Engineers
Recipient: USEPA
Date: April 29, 2010
Bate Stamp: 00089088 – 00090092

FINAL
FEASIBILITY STUDY
LHAAP-17, BURNING GROUND NO. 2/FLASHING AREA, GROUP 2
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Shaw®

ON THE LINE

APRIL 2010

Shaw® Shaw Environmental, Inc.

Date: ***April 29, 2010***

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, LHAAP-17
Contract No. W912QR-04-D-0027/DS02

For: Review____ As Requested ____ Approval____ Corrections____ Submittal ____ Other X____

Item No:	***No. of Copies***	***Date:***	***Document Title***
1	2	April 2010	**Final Feasibility Study, LHAAP-17, Burning Ground No. 2/Flashing Area, Group 2, Longhorn Army Ammunition Plant, Karnack, Texas**

Aaron– Enclosed are two copies of Shaw's final version of the above-named document. Copies have been distributed as indicated below.

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)
Mr. M. Mechenes – 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

April 29, 2010

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, LHAAP-17, Burning Ground No. 2/Flashing Area, Group 2, Longhorn Army Ammunition Plant, Karnack, Texas, April 2010

Dear Mr. Tzhone,

The above-referenced document is being transmitted to you for your files. 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. Mechenes, USAEC, MD
P. Srivastav, Shaw – Houston, TX (for project files)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

April 29, 2010

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, LHAAP-17, Burning Ground No. 2/Flashing Area, Group 2, Longhorn Army Ammunition Plant, Karnack, Texas, April 2010
SUP 126

Dear Ms. Duke,

The above-referenced document is being transmitted to you for your files. 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
M. Mechenes, USAEC, MD
A. Williams, USACE, Tulsa District, OK
P. Srivastav, Shaw, Houston, TX (for project files)

From: Tzhone.Stephen@epamail.epa.gov [mailto:Tzhone.Stephen@epamail.epa.gov]
Sent: Wednesday, April 21, 2010 3:49 PM
To: rose.zeiler@us.army.mil
Cc: Jones, Greg N; Srivastav, Praveen; Lambert, John R SWT; Everett, Kay; Watson, Susan; Fay Duke; Burton.Terry@epamail.epa.gov
Subject: Re: FW: Longhorn: EPA review of Army LHAAP-17 FS (Track Changes)
Attachments: RTCs_LHAAP-17 DF FS_TCEQ Rev02 04 16 10.doc; 04 10 FINAL FS LHAAP-17 Brng Grnd 2 Flsg Area Grp 2.doc

Hi Rose, Greg:

Army's response (email 4/21/2010) is acceptable to EPA.

The same resolution on LHAAP-17 FS ARARs is appropriate for LHAAP-29 FS, as well as, for the remaining FS on Longhorn NPL sites. This concludes EPA's comments on LHAAP-17 FS.

Thanks,

Stephen L. Tzhone
Superfund Remedial Project Manager
USEPA Region 6 (6SF-RA)
214.665.8409
tzhone.stephen@epa.gov

From: Fay Duke [mailto:FDUKE@tceq.state.tx.us]
Sent: Wednesday, April 28, 2010 4:24 PM
To: Tzhone.Stephen@epa.gov; Watson, Susan; Aaron K SWT Williams
Cc: Jones, Greg N; Everett, Kay; Srivastav, Praveen; John R SWT Lambert; rose.zeiler@us.army.mil
Subject: RE: LHAAP-17 DF FS Response to TCEQ's 042610 Comments

Rose,

Thanks for the additional clarifications. We have reviewed the responses to our comments and concurs with the responses.

Thanks, fd

Fay Duke (MC-136)
Remediation Division, TCEQ
PO Box 13087
Austin, Texas 78711-3087
512-239-2443
512-239-2450 (Fax)

>>> On 4/28/2010 at 3:14 PM, <Aaron.K.Williams@usace.army.mil> wrote:
Just one point of clarification for response to comment #4- The Army did not agree that the contingency language was not appropriate for the FS but rather agreed that the contingency language would be removed from the FS and will be included in the Proposed Plan.

Thanks,
Aaron K. Williams
Environmental Engineer, ARMY/FUDS Section
HTRW Design Center
Tulsa District
U.S. Army Corps of Engineers
918-669-4915

From: Watson, Susan
Sent: Wednesday, April 28, 2010 2:59 PM
To: Tzhone.Stephen@epa.gov; FDUKE@tceq.state.tx.us
Cc: 'Williams, Aaron K SWT'; 'rose.zeiler@us.army.mil'; 'Lambert, John R SWT'; Srivastav, Praveen; Everett, Kay; Jones, Greg N
Subject: LHAAP-17 DF FS Response to TCEQ's 042610 Comments

Fay and Steve,

Please see below for the embedded responses to Fay's April 26, 2010 comments on the Draft Final Feasibility Study for LHAAP-17. As discussed in the teleconference yesterday, we are trying to get this document out this week and your quick response will be greatly appreciated.

Thanks in advance for your review,
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

Please see embedded responses below.

From: Fay Duke [mailto:FDUKE@tceq.state.tx.us]
Sent: Mon 4/26/2010 6:12 PM
To: Jones, Greg N; Tzhone, Stephen
Cc: Everett, Kay; Lambert, John R SWT; rose.zeiler@us.army.mil; Srivastav, Praveen; Watson, Susan; Williams, Aaron K SWT
Subject: Re: LHAAP-17 FS (Track Changes)

Rose,

We have reviewed the tracked changes and have a couple of comments on ARARs and found some inconsistencies in the text.

1. I went though the ARAR table and the absence of couple of waste management standards jump out at me. First, because LHAAP-17 is located in the 100-year flood plain, 40 CFR 264.18 requires that remediation be designed, constructed and operated to prevent washout of any hazardous waste by a 100-year flood. The standard should be added to the potential ARAR tables.

Response: Concur. The regulation is for hazardous waste facilities in floodplains. The requirement is for a hazardous waste treatment, storage, or disposal facility used for remediation of waste and located in the 100-year floodplain must be designed, constructed, operated, and maintained to prevent washout of such waste by a 100-year flood unless owner/operator shows that procedures are in effect to remove waste safely before flood water can reach the facility. These requirement would not be expected to apply to any temporary staging areas because the excavated soil is not expected to RCRA hazardous waste. However, if the soil is determined to be hazardous, the requirements would be relevant and appropriate. If the latter is the case, then if soil is staged, procedures would be instituted to remove any hazardous waste safely before flood waters can reach those areas. This will be added to the location-specific ARAR table.

Table 3-2
Potential Location-Specific ARARs/TBCs

Resource/Citation	Activity or Prerequisite Status	Requirement
Requirements for Hazardous Waste Facilities in Floodplains Resource Conservation and Recovery Act (RCRA) 40 CFR 264.18(b)	If excavated soil is found to constitute RCRA hazardous waste, these requirements are relevant and appropriate since LHAAP-17 is located within a 100-year floodplain. However, it is not anticipated that the excavated soil will be classified as hazardous.	A hazardous waste treatment, storage, or disposal facility used for remediation waste and located in the 100-year floodplain must be designed, constructed operated, and maintained to prevent washout of such waste by a 100-year flood unless owner/operator show that procedures are in effect to remove waste safely before flood water can reach the facility.

2. The substantive requirements of TAC Chapter 331 Subchapter H should be included in the table of potential ARARs.

Response: Concur. TAC Chapter 331 Subchapter H is for Class V injection wells. The substantive requirements will be added to the potential action-specific ARAR table and text. These would apply if injection wells are used as part of the remedy. It is expected the TCEQ UIC program would review the design documents that use injection wells as part of the remedy. The following will be added to the table.

Table 3-3
Potential Action-Specific ARARs/TBCs

Citation	Activity or Prerequisite/Status	Requirement
Injection Wells		
Underground Injection Control, Standards for Class V Wells 30 TAC 331.131 to 133 Subchapter H	Installation, operation, and closure of injection wells for in situ chemical oxidation 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.

3. Section 5.2.4.2 -Information in this section is not consistent with similar information in Section 6.3.4.5.4. For example, in Section 5.2.4.2 states that 3 wells will be sampled for performance while Section 6.3.4.5.4 states that eight wells will be sampled. Why only 3 wells will be sampled? Additionally, Section 6.3.4.5.4 needs to be revised to reflect the number of years of extraction expected. It still states that pump and treat is expected to last for 3 years.

Response: Concur. The number of wells appears inconsistent, but both are correct. In Section 5.2.4.2, 3 wells will be used for extraction and sampled specifically to evaluate the performance of the extraction wells. In Section 6.3.4.5.4, in the first paragraph, 3 years will be revised to 1.5 years for extraction. The second paragraph will be replaced with:

During extraction activities, samples will be collected from the three extraction wells in the shallow zone monthly for approximately 6 months to monitor the effectiveness of the action. After 6 months, performance monitoring will be reduced to quarterly for approximately 1 year or until pumping ceases. At this point, MNA will begin with quarterly monitoring of several wells for 2 years (Year 3.5), reducing to semiannual sampling for 3 years , and thereafter annually until the next 5-year review. MNA will be implemented in the intermediate zone concurrent with the extraction in the shallow zone. MNA monitoring in the intermediate zone will be conducted quarterly for the first 2 years, semiannual sampling for the following three years, and further reduced to annual monitoring until the next 5-year review. The sampling frequencies may change based on the results of the 5-year reviews and the contaminant concentrations at those times.

4. In case where MNA is not effective, the contingent action for the intermediate zone cited in Section 5.2.4.3 (extraction) is inconsistent with Section 5.4.4.4 (bioremediation)

Response: Concur. The sections where a contingency remedy for the intermediate zone (5.2.3.4, 5.2.4.3, and 5.2.4.4) should have been revised to remove the contingency language statement. It was agreed that the contingency language was not appropriate for the FS and will be included in the Proposed Plan.

Please let me know if you should have any questions regarding my comments.

Thanks, fd

Fay Duke (MC-136)
Remediation Division, TCEQ
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Austin, Texas 78711-3087
512-239-2443
512-239-2450 (Fax)

Comments on Draft Final Feasibility Study, LHAAP-17 (published April 2009)
Longhorn Army Ammunition Plant, Karnack, Texas

Comments Received: May and December 2009, and February 2010

Reviewer: Texas Commission on Environmental Quality
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]	Comment	C, D[1], E or X	Response
1	5-9	General	Based on the agreement reached in the April 26 2009 meeting, the preferred remedy is to utilize pump and treat to treat the most contaminated area of the shallow zone and follow by MNA to reduce contaminants to cleanup levels, provided, that an appropriate "trigger" to cease pumping can be agreed upon.	C	The proposed trigger value to cease pumping is 20,000 μg/L perchlorate. This concentration of perchlorate would be conducive for natural attenuation of VOCs. This is based on data from LHAAP sites where both high concentrations of perchlorate and evidence of TCE attenuation are present in the same plume. Three wells were selected for the evaluation, 50WW02, 29WW15, and 17WW06. Monitoring well 50WW02 has a lower concentration of perchlorate at 18,000 μg/L with evidence of TCE attenuation (half life 4.7 years). At 29WW15, the perchlorate concentrations have ranged from 16,800 to 88,000 μg/L with evidence of TCE attenuation (half life 4.5 years). Monitoring well 17WW06 had a perchlorate concentration of 32,000 μg/L and still shows evidence of TCE attenuation but at a lower rate (half life 23 years). Thus, 20,000 μg/L perchlorate was selected as the proposed trigger value since it is near the low end of the range between 18,000 and 32,000 μg/L. An average concentration of the area greater than 20,000 μg/L was calculated using isopleths. The batch flow method was used to calculate the number of pore volumes required to reduce the average plume concentration of 71,000 μg/L, C_o, to the trigger level of 20,000 μg/L, C_t, using the equation below (*Design Guidelines for Conventional Pump-and-Treat Systems*, EPA/540/S-97/504, September 1997): $PV = -R * \ln(C_t/C_o)$ Where: PV is the number of pore volumes for the initial concentration (Co) to reach the target concentration (Ct). R is the retardation factor calculated by using the following equation: $R = 1 + \rho_b K_d/n$ Where: • ρ_b is density of soil (assumed 1.8 kg/L) • K_d (distribution coefficient) = Koc * foc (assumed K_{oc} (for perchlorate) = 1.47 and f_{oc} (for soil) = 0.003) • n is the porosity, 0.25 R = 1.03 Thus, solving for the PV estimates approximately 1.3 pore volumes would be required to reduce the initial concentration to the trigger level to cease pumping. The estimated volume of contaminated water less than 20,000 μg/L is approximately 2.5 million gallons in one	D	A proposed trigger value of 20,000 ug/l is proposed to be used to cease the pumping and treat component of the remedy. The proposal was based on data from LHAAP sites where both high concentration of perchlorate and evidence of TCE attenuation are presented in the same plume. Three wells (29WW15, 50WW02, and 17WW06) were selected for this evaluation. As we've discussed in the December Manager Meeting, we question the basis for which the trigger value was developed. For example, in well 29WW15 the degradation of TCE was probably enhanced by the degradation of methylene chloride. In well, 50WW02, there were no data suggesting TCE degradation when the perchlorate was measured at 18,000 ug/l. However, data in well 50WW02 suggests that at concentration approximately 10,000 ug/l, there are evidence of TCE attenuation. Although we believe that the value of 20,000 ug/l maybe highly optimistic, but lack of additional data for further evaluation, we are unable to suggest an alternative trigger value. However, we suggest a lower value be used to account for the 'rebound" effect and any other uncertainties. Finally, due to the uncertainty of the effectiveness of natural attenuation at this site, it is imperative that we implement the approach agreed by all for this site. In reviewing your response to EPA Comment No.1, we believe your response does not capture the entire approach agreed to at the April 27 meeting. It is our understanding that after the P&T, the second component of the remedy (MNA or a different technology) will be determine after three years of MNA performance. Please correct.	E/C	At 50WW02, when 18,000 μg/L of perchlorate was detected in 1998, TCE was 2,900 μg/L. TCE daughter products (cis¬1,2-DCE at 2,100 μg/L and vinyl chloride (VC) at 100 μg/L) were also detected, which are indicative of TCE attenuation. It is proposed that 20,000 μg/L be used as the trigger value. MNA monitoring will not be initiated until after the pumping is completed because most of the plume will be affected by pump and treat. **Question to the reviewer**: In the next to last sentence of the comment, is the reference to the second component the same as a contingency remedy? A contingency remedy will not be included in the FS. A contingency may be proposed in the proposed plan because of the uncertainty about the trigger value of 20,000 μg/L perchlorate and the time it might take to reach that value. If the 20,000 ug/L trigger value has not been reached by the end of the estimated 1.5 year pumping period (anticipated to be late 2010 to May 2012), pumping may be ceased pending lead agency and regulatory approval to initiate a contingency action. A contingency may also be proposed if MNA is not supported after a specified evaluation period. The proposed remedy and contingency will be selected and presented in the proposed plan.

Comments on Draft Final Feasibility Study, LHAAP-17 (published April 2009)
Longhorn Army Ammunition Plant, Karnack, Texas

Comments Received: **May and December 2009, and February 2010**

Reviewer: Texas Commission on Environmental Quality
Respondents: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
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Comment #	Page	Section/ Paragraph	Comment	C, D[1], E or X	Response	A or D[2]	Comment	C, D[1], E or X	Response
1 *(cont.)*					pore volume. Assuming 1.3 pore volumes will need to be removed, approximately 3.3 million gallons of water will be pumped to the LHAAP-18/24 groundwater treatment plant from LHAAP-17. A pump test was conducted at 17WW01, 17WW02, and 17WW06 for a period of approximately 4 hours. After the rate stabilized, pump rates ranged from 0.89 to 1.49 gallons per minute. Using these rates, it is estimated to take approximately 1.7 years to reduce the perchlorate concentration to 20,000 µg/L. Final pump rates and number/placement of wells will be included in the RD. Throughput capacity of the LHAAP-18/24 groundwater treatment plant is 3,000,000 gallons per month. Assuming approximately 1,000,000 gallons from other LHAAP sites, the treatment plant could accept up to 2,000,000 gallons of more water per month from LHAAP-17. This would yield an annual quantity of 24,000,000 gallons that the plant could receive from LHAAP-17. Thus, the treatment plant has the capacity to receive the quantity to be pumped and is not a limiting factor.				
2	Multiple Pages	General, MNA Monitoring	Per our discussion in the April 27, 2009 meeting, please revise the groundwater monitoring program to reflect the increase in groundwater monitoring as recommended by EPA (quarterly for the first two year and semi-annual for the following years).	C	The MNA sampling frequency will be revised to quarterly for first two years, semiannual for until 5-year review, then every five years thereafter until cleanup levels are met.	D	We do not completely agreed with the following statement: " the MNA sampling frequency will be.....until the 5-year review, then every five year thereafter until cleanup level are met." It is our understanding that the monitoring frequency for the MNA evaluation agreed to in the April 27 FS meeting is 2 years of quarterly monitoring, follow by semi-annual monitoring until the 5-year review and future frequency be evaluated at the 5 year review. Please correct.	C	Text will be revised per the comment.
3	2-3	Section 2.2	Bottom of Page 2-3. The texts describe the exercise that was performed on LHAAP-17 samples to determine which sample location would require remediation. It states that the outcome of the exercise is included in Table 2-6 and indicated on Figure 2-1. Please verify that Table 2-6 is the correct reference.	C	The table reference will be corrected to Table 2-5.	A			

Comments on Draft Final Feasibility Study, LHAAP-17 (published April 2009)
Longhorn Army Ammunition Plant, Karnack, Texas

Comments Received: May and December 2009, and February 2010

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4	2-4	Section 2.3.1	It states that no tabular results or analytical reports are available from the perchlorate treatability study conducted on the one-acre area. However, figures indicate perchlorate levels greater than 100 mg/kg may remain in soil. The reference figures were not included. The locations of these samples that may contain perchlorate concentrations greater than GWP-Ind were also not included in Figure 2-1. In Section 5, it states that soil samplings will be conducted in the remedial design phase to further delineate areas of excavation for design purposes. We recommend that these suspected area be identify in Figure 5-1.	E	The figure referred to is in the format of a chart and does not indicate locations. Thus, it is not possible to use the figure to show suspected areas. However, we expect that sampling to be conducted during the RD phase would address the reviewer's concern.	A			
5	3-10	Section 3.2.4.1.2	It states that requirements for managing, storing and disposal will be conducted in accordance with ARAR listed in Table 3-3. However, we believe that the action specific ARARs discussion and requirements listed in Table 3-3 is incomplete. The discussion in this section is focus on the AOC concept, which applies mainly to on-site disposal. Please note the waste management and disposal requirements under RCRA are usually "appropriate and relevant" requirements for on-site disposal but these requirements are typically "applicable" for off-site disposal. Additionally, certain requirements such as procedures for planning and implementing off-site response action (40 CFR 300.440) are applicable to CERCLA response action waste. Please revise.	C	40 CFR 300.440 will be added as an ARAR, applicable for hazardous waste.	D	The response does not completely address our concern. The two paragraphs on page 3-10 discusses applicable ARARs associated with soil excavation and disposition for a on-site remedy. However, it does not discuss the fact that even though a requirement may not be applicable, it can still be appropriate and relevant. For example, if hazardous soil is to be disposed of on-site, than the landfill closure requirements maybe relevant and appropriate. Additionally, requirement associated with the transportation of hazardous wastes are not listed. Please revise the FS report to capture all potential applicable, appropriate and relevant requirements.	E	CERCLA section 121(d) requires on-site Superfund remedial actions to comply with Federal, and more stringent State, environmental requirements that are determined to be applicable or relevant and appropriate requirements (ARARs); thus, even though requirements for off-site actions are not ARARs, they must be complied with. The following will be added to the second paragraph of Section 3.2.4.1.2: "Other requirements for hazardous waste such as manifesting for off-site disposal (40 CFR 262.20) and planning/implementing off-site response action (40 CFR 300.440) will be complied with even though they are not considered an ARAR." Additionally - the ARAR discussion will be revised to address only environmental laws, and the potential location-specific Table 3-2 will be deleted; and the USEPA MCLs/TCEQ MSCs will be used for groundwater cleanup and the Texas Safe Drinking Water Act will be removed from the chemical-specific ARAR discussion. ----- Additional Note: April 16, 2010 ----- The Army and USEPA are currently discussing the location-specific ARARs. At this time, the USEPA and Army have agreed to retain the location-specific ARARs in the FS as "potential" ARARs. Based on the outcome of the discussions between Army and USEPA, the final ARARs will be identified in a later document (e.g., ROD). The discussions between Army and USEPA are considering the Army's interpretation of the location-specific ARARs presented in Table 3-2, which is as follows: – The National and Historic Preservation Act is not an ARAR. It is not based on an environmental law and is not, by definition, an ARAR.

Comments on Draft Final Feasibility Study, LHAAP-17 (published April 2009)
Longhorn Army Ammunition Plant, Karnack, Texas

Comments Received: **May and December 2009, and February 2010**

Reviewer: Texas Commission on Environmental Quality
Respondents: Shaw Environmental, Inc.

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5 *(cont.)*									– The Native American Graves Act Protection and Repatriation Act is not an ARAR. It is not based on an environmental law and is not, by definition, an ARAR. – The Endangered Species Act, while based on an environmental law, does not contain substantive requirements. It contains administrative requirements which are not, by definition, ARARs. – The Fish and Wildlife Coordination Act, while based on an environmental law, does not contain substantive requirements. It contains administrative requirements which are not, by definition, ARARs. – The National Wildlife Refuge System Act is an ARAR only if substantive requirements therein are identified. [Note: Shaw has examined the requirements under 50 CFR 35 and determined that they are administrative in nature (are authorizations, permits, or usage limitations/prohibitions that will apply after each site is transferred to the refuge.) There are no substantive requirements pertinent to an active CERCLA site. – Protection of Wetlands and Section 404 are all administrative in nature and therefore are not ARARs. – EO 11988 is not an ARAR as it is not promulgated. When identifying ARARs, keep in mind that the site is not devoid of all laws and standards. The purpose of ARAR identification is not to identify all laws and standards that must be complied with at the site, but to identify those laws, regulations and standards that meet the ARAR definition. Should archaeological or cultural items be encountered, they will be managed in accordance with their associated laws, but these laws are not ARARs. The same would apply to the Endangered Species Act. Should endangered species be encountered, work would proceed in such a manner as to ensure they are not harmed
6	5-8	Section 5.2.4	We noted that conceptual design is included in the report for cost estimation purposes. Please note that our concurrence of the preferred remedy does not include the concurrence to the conceptual design.	C	The design will be submitted for regulatory review during the RD phase.	A			

Comments on Draft Final Feasibility Study, LHAAP-17 (published April 2009)
Longhorn Army Ammunition Plant, Karnack, Texas

Comments Received: **May and December 2009, and February 2010**

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7		Appendix A, MNA Evaluation	Based on our review of the MNA evaluation, we believe that some part of the aquifer may be conducive to the natural degradation of perchlorate. However, due to high concentrations of perchlorate contamination, there exist uncertainties in determining whether MNA would be effective in reducing the TCE to MCL. However, we believe that with groundwater extraction and appropriate monitoring after the groundwater extraction, the uncertainties can be evaluated and managed.	C	Noted.	A			

Comments on Draft Final Feasibility Study, LHAAP-17 (published April 2009)
Burning Ground No. 2/Flashing Area, Group 2
Longhorn Army Ammunition Plant, Karnack, Texas

Comments Received: May 2009

Reviewer: U.S. Environmental Protection Agency
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]
1			Please summarize the agreed upon FS approach from the 4/27-28 meeting.	C	Summary of Agreed Remedy: • Soil removal • Shallow groundwater extraction until the trigger level of 20,000 μg/L of perchlorate is reached. • MNA to follow shallow groundwater extraction (schedule per response to Comment 3) • MNA for the intermediate zone groundwater • LUCs This will be described in Section 5.2.4.2 of the FS.	A
2			Please provide kinetics for this approach. Also, does the Army still expect 117 years for cleanup?	C	The 117 years for cleanup were calculated with a half-life of 23 years for TCE attenuation, which is likely inhibited by the presence of perchlorate. Extraction of contaminated groundwater for approximately 1.5 years is expected to reduce the cleanup time significantly. The perchlorate trigger level of 20,000 μg/L was estimated by comparison to other wells with both perchlorate and TCE that showed a TCE half-life of less than 5 years (see response to TCEQ Comment 1 for details). The projected kinetics of TCE degradation at 17WW06 can be estimated by assuming approximately 10% of the TCE is removed during the 1.5 year groundwater extraction period, and that an estimated attenuation half-life of 5 years can be applied to the remaining TCE. This would lead to an expected 27 year cleanup time (2 + 25) at 17WW06 for attenuation of TCE to the MCL. Similarly, for the maximum recent (3/2009) TCE concentration of 6,090 μg/L at 17WW01, a 10% reduction of TCE during groundwater extraction, followed by attenuation with a half life of 5 years leads to an expected 55 year cleanup time at 17WW01. Actual cleanup time could be higher than this estimate.	A

Comments on Draft Final Feasibility Study, LHAAP-17 (published April 2009)
Burning Ground No. 2/Flashing Area, Group 2
Longhorn Army Ammunition Plant, Karnack, Texas

Comments Received: May 2009

Reviewer: U.S. Environmental Protection Agency
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]
3			Please revise groundwater monitoring schedules to align with this new approach.	C	Groundwater monitoring for Alternative 2 will be revised to reflect the schedule as outlined in response to TCEQ's comment 2. For Alternative 4, the monitoring schedule for shallow groundwater is projected as follows: • Monthly for 6 months during extraction system startup. • Quarterly during extraction • MNA quarterly for 2 years post extraction • Semiannual until 5-year review • Every five years thereafter until cleanup levels are met. The Remedial Design will propose the actual sampling plan, and sampling locations and frequency will likely be adjusted during the 5-year reviews.	A
4			Are the only deep wells 100 feet away from LHAAP-17? If so, what is the level of comfort that no deep contamination exists?	C	Deep wells at LHAAP-17 include 17WW05 and 17WW16. Both are to the west of the site boundary by roughly 100 feet as noted. Intermediate zone well 17WW17 is essentially co-located with 17WW01, the shallow zone well with the highest VOC concentrations. The intermediate well, 17WW17, had TCE concentrations of 112 μg/L in the past, which fell to the most recent concentration of 10.0 μg/L. This apparent attenuation in the intermediate zone, coupled with no detections of VOCs in the two deep wells, lead us to believe that deep contamination does not exist. Shaw believes the available information is sufficient to support the determination that the deep zone is not contaminated.	A

Comments on Draft Final Feasibility Study, LHAAP-17 (published April 2009)
Burning Ground No. 2/Flashing Area, Group 2
Longhorn Army Ammunition Plant, Karnack, Texas

Comments Received: May 2009

Reviewer: U.S. Environmental Protection Agency
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]
5		Section 3.2.2.2	Section 3.2.2.2 states that proposed actions are unlikely to cause airborne emissions. Given the buoyancy of particulate matter and the potential travel distances, EPA is likely to require dust suppression measures during excavation and transit activities.	C	Noted. The last sentence of this section will be removed. Emission controls will be included in the remedial design/work plan.	A
6			EPA expresses concern that decreasing levels of TCE are not consistently mirrored by increases in DCE and VC. For some wells, the carbon mass balance is not reflecting remediation, but rather a "loss".	C	Noted. Natural attenuation of TCE is not the single process of reductive dechlorination. Other processes, some destructive, some not destructive, also serve to reduce the concentrations of TCE dissolved in groundwater. The mentioned “loss” is an indication of all these processes working together.	A
7		Appendix A	Please include the MNA screening analyses and graphs showing a clear trend of stable or decreasing COC concentrations in Appendix A.	E	The requested information is already present in Appendix A. The results of the MNA screening analysis for anaerobic biodegradation are noted in Appendix A, Section 3.0, page 3-1. Figures A-7 through A-11 contain graphs depicting COCs with decreasing COC concentrations at particular wells over time or with distance. Shaw will revise these figures as more data become available during the RA(O) phase and provide for regulatory review to support occurrence of MNA.	A

FINAL

FEASIBILITY STUDY
LHAAP-17, BURNING GROUND NO. 2/FLASHING AREA, GROUP 2
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared for

U.S. Army Corps of Engineers
Tulsa District
1645 South 101st Avenue
Tulsa, Oklahoma

Prepared by

Shaw Environmental, Inc.
1401 Enclave Parkway, Suite 250
Houston, Texas 77077

Contract Number W912QR-04-D-0027
Task Order No. DS02

April 2010

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Acronyms and Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
µg/L	micrograms per liter
AOC	area of contamination
ARARs	applicable or relevant and appropriate requirements
Army	U.S. Department of the Army
BERA	baseline ecological risk assessment
bgs	below ground surface
BHHRA	baseline human health risk assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	code of federal regulations
CLI	Caddo Lake Institute
COCs	contaminants of concern
COPECs	contaminants of potential environmental concern
CWA	Clean Water Act of 1972
DCA	dichloroethane
DCE	dichloroethene
DNT	dinitrotoluene
DPT	direct-push technology
EcoPRG	ecological preliminary remediation goal
EEQ	ecological effects quotient
EPC	exposure point concentration
ESA	environmental site assessment
FFA	federal facility agreement
FR	federal register
FS	reasibility study
GAC	granulated activated carbon
GRA	general response action
GW-Ind	groundwater MSC for industrial use
GWP-Ind	soil MSC for industrial use based on groundwater protection
HDPE	high density polyethylene
HI	hazard index
HMX	octahydro-1,3,5,7-tetranitro-1,3,5-triazine
HQ	hazard quotient
HRC®	Hydrogen Release Compound®
Jacobs	Jacobs Engineering Group, Inc.
LHAAP	Longhorn Army Ammunition Plant
LTM	long-term monitoring
LUCs	land use controls
MARC	multiple award remediation contract
MCLG	maximum contaminant level goal

Acronyms and Abbreviations (continued)

MCLs	maximum contaminant levels
mg/kg	milligrams per kilogram
MNA	monitored natural attenuation
MSC	medium-specific concentration
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NOAEL	no-observed adverse effect level
NPDES	national pollutant discharge elimination system
NPL	national priorities list
O&M	operation and maintenance
OSHA	Occupational Safety and Health Administration
PEC	Planteco Environmental Consultants
pH	hydrogen ion concentration
PP	proposed plan
PPE	personal protective equipment
RAOs	remedial action objectives
RCRA	Resource Conservation and Recovery Act
RDX	hexahydro-1,3,5-trinitro-1,3,5-triazine
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
ROD	record of decision
SAI-Ind	soil MSC for industrial use based on inhalation, ingestion, and dermal contact
Shaw	Shaw Environmental, Inc.
STEP	Solutions to Environmental Problems, Inc.
TAC	Texas Administrative Code
TBC	to-be-considered
TCDD	tetrachlorodibenzo-p-dioxin
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TEQ	toxicity equivalent quotient
TNRCC	Texas Natural Resources Conservation Commission
TNT	trinitrotoluene
TRV	toxicity reference value
TSD	treatment, storage, disposal
UCL	upper confidence limit
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

Executive Summary

This Feasibility Study (FS) was prepared by Shaw Environmental, Inc. (Shaw), for the U.S. Army Corps of Engineers, Tulsa District, under the Louisville District's Multiple Award Remediation Contract (MARC) Contract No. W912QR-04-D-0027, for remediation activities at the former Longhorn Army Ammunition Plant (LHAAP) in Karnack, Texas. This FS presents the analysis of remediation alternatives for the Burning Ground No. 2/Flashing Area designated as LHAAP-17, 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 is an inactive, government-owned, formerly contractor-operated and maintained Department of Defense facility located in central-east Texas. LHAAP-17 is a 3.9 acre area formerly used for waste burning and burial during World War II until the 1980s. The site has two 185 feet by 305 feet cleared areas, separated by a gravel access road. The site has been graded above the surrounding terrain, is relatively flat, and is covered with grass and scattered brush.

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 (Army), and the Texas Natural Resources Conservation Commission (TNRCC), now the Texas Commission on Environmental Quality (TCEQ). LHAAP-17 was one of the originally identified NPL sites due to the threatened released of hazardous substances or pollutants or contaminants.

The entire installation was under the control of the 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. The U.S. Army Environmental Command provides funding for the environmental remedial activities through restoration funding from the Defense Environmental Restoration Account. The Base Realignment and Closure Office is responsible for all aspects of LHAAP including the environmental programs, operations, and land transfer.

Harrison Bayou flows approximately 1,200 feet northwest of the site. Surface runoff flows to ditches along the eastern and western boundaries of the site and then to Harrison Bayou. The entire site is within the 100-year floodplain of the bayou. There are no surface water bodies located at the site. Surface runoff from the site travels approximately 1.5 miles in Harrison Bayou before reaching Caddo Lake.

There are three groundwater zones at LHAAP-17: shallow, intermediate, and deep. Clay or silty clay layers separate the three groundwater zones. The depth of the shallow groundwater zone generally ranges from 18 to 35 feet below ground surface (bgs). The intermediate zone is less defined, but its depth has been measured to approximately 55 feet bgs. The deep groundwater zone extends to a depth of approximately 152 feet bgs. The predominant flow of the shallow and intermediate zones is to the northwest toward Harrison Bayou.

Explosive compound releases resulting from the burning of explosive type materials removed from the trinitrotoluene (TNT) Production Area and the TNT Waste Disposal Plant are the suspected contamination sources at LHAAP-17.

Sampling specific to LHAAP-17 media was conducted during several investigations prior to and after the baseline human health risk assessment (BHHRA) (Jacobs Engineering Group, Inc. [Jacobs], 2002). The BHHRA (Jacobs, 2002) indicates an unacceptable total carcinogenic risk of 1.4×10^{-3} and an unacceptable hazard index (HI) of 37 from soil for a hypothetical future maintenance worker under an industrial scenario. The total carcinogenic risk from groundwater for a hypothetical future maintenance worker is $1.6 \times 10^{-3,}$ while the total HI is 3,500. The cancer risk and non-cancer hazard from both soil and groundwater exceed the USEPA target risk range of 1×10^{-6} to 1×10^{-4} for the excess lifetime cancer risk and HI criterion of 1.0 for non-cancer hazard.

Additional investigations were conducted after the BHHRA was completed. The additional data do not change the overall outcome of the risk assessment, but did change some of the contaminants of concern (COCs). Although COCs have been detected in the shallow and intermediate groundwater zones beneath LHAAP-17, the horizontal extent of contamination is limited and has been defined. The COCs identified for soil are 2,4,6-TNT, 2,4-dinitrotoluene (DNT), and 2,6-DNT. The COCs identified for the shallow groundwater zone are trichloroethene (TCE), 1,2-dichloroethane (DCA), 1,1-dichloroethene (DCE), and perchlorate. The COC in the intermediate zone is TCE.

An ecological conceptual exposure model was developed for various “sub-areas” throughout the LHAAP as part of the *Final Facility-Wide Baseline Ecological Risk Assessment* (Shaw, 2007b). The contribution of ecological hazard at LHAAP-17 was evaluated as part of the Waste Sub-Area. For the Waste Sub-Area, explosive compounds (2,4-DNT, 2,6-DNT, and 2,4,6-TNT), barium, and dioxins in soil are the contaminants of primary concern for the environment. This residual contamination poses a potential risk to ecological receptors due to the direct contact with soil and indirect (i.e., dietary) exposure routes.

Remedial action objectives (RAOs) have been established within this FS to address the soil and groundwater contamination associated with LHAAP-17. The Army recognizes USEPA's policy

to return usable water to its potential beneficial use, based upon the non-binding programmatic expectation in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The RAOs for LHAAP-17, which take into account the future use of the site as a wildlife refuge are as follows:

- Protect human health for the hypothetical future maintenance worker by preventing exposure to contaminants in the soil and groundwater
- Prevent migration of contaminants from potential sources in the soil to the groundwater
- Protect ecological receptors by preventing exposure to the contaminated soil
- Return groundwater to its potential beneficial use, wherever practicable, within a reasonable time period given the particular site circumstances.

The FS identifies and screens remedial technologies and associated process options that may be appropriate for satisfying the RAOs for LHAAP-17 with respect to effectiveness, implementability, and cost. Selected remedial technologies and process options were carried forward after the initial screening and were combined to develop the following remedial alternatives for LHAAP-17:

- **Alternative 1 – No action.** Leaves the contaminated soil and groundwater in place with no remedial action or additional measures to prevent exposure to the COCs, and serves as a baseline for comparison with the other alternatives. A No Action alternative is required under CERCLA.
- **Alternative 2 – Excavation and off-site disposal of soil; monitored natural attenuation (MNA) and land use controls (LUCs) for groundwater.** Alternative 2 excavates the contaminated soil from LHAAP-17. MNA in both the shallow and intermediate zones would ensure that groundwater contamination remains localized and degrades over time. Groundwater monitoring would continue until cleanup levels are met. LUCs will be implemented to prevent exposure to the contaminated groundwater until cleanup levels are achieved.
- **Alternative 3 – Excavation and off-site disposal of soil; in situ bioremediation; MNA and LUCs for groundwater.** As with Alternative 2, contaminated soil is removed. Groundwater contamination is reduced in the groundwater via in situ bioremediation in the shallow zone. This alternative implements MNA in the intermediate zone and after in situ bioremediation in the shallow zone to ensure that groundwater contamination remains localized and degrades over time. Similar to Alternative 2, LUCs will be implemented to prevent exposure to the contaminated groundwater until cleanup levels are achieved.
- **Alternative 4 – Excavation and off-site disposal of soil; groundwater extraction; MNA and LUCs for groundwater.** As with Alternatives 2 and 3, contaminated soil is removed. Groundwater contamination is reduced throughout the shallow zone

groundwater contaminant plume via groundwater extraction, followed by MNA until cleanup levels are met. As in Alternatives 2 and 3, this alternative utilizes MNA to treat the intermediate zone. Similar to Alternative 3, LUCs will be implemented to prevent exposure to the contaminated groundwater until cleanup levels are achieved.

Each of the alternatives was evaluated against CERCLA criteria to provide a basis for selecting a preferred alternative in the follow-on Proposed Plan and Record of Decision documents.

Table ES-1 summarizes the comparative analysis of the alternatives presented in this study.

Table ES-1
Comparative Analysis of Alternatives

Criteria	Alternative 1 No Action	Alternative 2 excavation and off-site disposal of soil; MNA and LUCs for groundwater	Alternative 3 excavation and off-site disposal of soil; In situ bioremediation; MNA and LUCs for groundwater	Alternative 4 excavation and off-site disposal of soil; groundwater extraction; MNA and LUCs for groundwater
Overall protection of human health and the environment	No protection. Does not achieve RAO.	Achieves RAO. Protection of human health and environment provided by soil removal, MNA and maintenance of LUCs. Groundwater monitoring activities verify contaminants remain localized and that natural attenuation is occurring.	Achieves RAO. Protection of human health and environment provided by soil removal and remediation of groundwater in areas of highest contamination, MNA and maintenance of LUCs. Groundwater monitoring activities verify contaminants remain localized and that natural attenuation is occurring.	Achieves RAO. Protection of human health and environment provided by soil removal and remediation of groundwater, MNA and maintenance of LUCs. Groundwater monitoring activities verify contaminants remain localized and that natural attenuation is occurring.
Compliance with ARARs	No compliance with chemical-specific ARARs.	Complies with all ARARs.	Complies with all ARARs.	Complies with all ARARs.
Long-term effectiveness and permanence	Is not effective at protection of human health and the environment and does not provide permanence.	Excavation of soil is effective long-term and permanent as contamination would be removed from the site and placed in a permitted landfill. Evaluation of natural attenuation suggests that contaminants are degrading naturally. MNA sampling will be conducted to confirm its effectiveness. Land use controls would be effective and reliable so long as they are maintained until RAOs are met.	Excavation of soil is effective long-term and permanent as contamination would be removed from the site and placed in a permitted landfill. In situ bioremediation for groundwater should be effective and permanent; however, uncertainty exists concerning its effectiveness for reducing groundwater contaminant concentrations to target levels. Bench scale studies would be required to further assess the effectiveness of this treatment method. Evaluation of natural attenuation suggests that contaminants are degrading naturally. MNA sampling will be conducted to confirm its effectiveness. Land use controls would be effective and reliable so long as they are maintained.	Excavation of soil is effective long-term and permanent as contamination would be removed from the site and placed in a permitted landfill. Groundwater extraction should be effective and permanent based on the efficiency exhibited by the current groundwater treatment system. A pre-design study may be required to determine the optimum extraction technique/ configuration. Bench scale studies may be required to assess the effectiveness of bioremediation. Evaluation of natural attenuation suggests that contaminants are degrading naturally. MNA sampling will be conducted to confirm its effectiveness. Land use controls would be effective and reliable so long as they are maintained until RAOs are met.

Table ES-1 *(continued)*
Comparative Analysis of Alternatives

Criteria	Alternative 1 No Action	Alternative 2 excavation and off-site disposal of soil; MNA and LUCs for groundwater	Alternative 3 excavation and off-site disposal of soil; In situ bioremediation; MNA and LUCs for groundwater	Alternative 4 excavation and off-site disposal of soil; groundwater extraction; MNA and LUCs for groundwater
Reduction of toxicity, mobility, or volume through treatment	No reduction.	Provide permanent and irreversible reduction of contaminants in soil via excavation and disposal. Provides active reduction of toxicity and volume of groundwater contaminants through MNA.	Provide permanent and irreversible reduction of contaminants in soil via excavation and disposal. Provides active reduction of toxicity and volume of groundwater contaminants through in-situ bioremediation and MNA.	Provide permanent and irreversible reduction of contaminants in soil via excavation and disposal. Extraction and treatment of contaminated groundwater reduces toxicity, mobility, and volume of groundwater contaminants in this area outside of natural processes. Provides active reduction of toxicity and volume of groundwater contaminants through in-situ bioremediation and MNA.
Short-term effectiveness	No short-term impacts.	Greater potential for impacts to the community or hypothetical future maintenance workers through off-site transportation of contaminated soil. Release to environment can be controlled during excavation.	Greater potential for impacts to the community or hypothetical future maintenance workers through off-site transportation of contaminated soil. Release to environment can be controlled during excavation.	Greater potential for impacts to the community or hypothetical future maintenance workers through off-site transportation of contaminated soil. Release to environment can be controlled during excavation.
Implementability	Inherently implementable.	Easiest to implement. Much of action is standard construction (soil removal) and groundwater monitoring.	Implementable, but uncertainty exists whether in-situ bioremediation would sufficiently lower contaminant concentrations to target levels. Further studies would be required. Specialized knowledge required for implementation.	Implementable. A groundwater treatment system is already operating at LHAAP. Potential exists for limited groundwater recovery which may affect ability of system to remove contaminants to target levels. A pre-design study would be required.
Cost*				
• Capital	$0	$1.4 million	$2.0 million	$1.6 million
• O&M	$0	$0.5 million	$0.6 million	$0.5 million
• Total	$0	$1.9 million	$2.6 million	$2.1 million
State Acceptance	This criterion will be evaluated in the Proposed Plan after state agency comments are provided			
Community Acceptance	This criterion will be evaluated in the Proposed Plan after community comments are provided			

Table ES-1 *(continued)*
Comparative Analysis of Alternatives

Notes and Abbreviations:

* *Costs have been rounded.*

ARAR	*applicable or relevant and appropriate requirement*
COC	*contaminant of concern*
LUC	*land use controls*
MCL	*maximum contaminant level*
MNA	*monitored natural attenuation*
O&M	*operation and maintenance*
RAO	*remedial action objective*
VOC	*volatile organic compound*

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 at the former Longhorn Army Ammunition Plant (LHAAP) in Karnack, Texas. This FS presents an analysis of remediation alternatives for the Burning Ground No. 2/Flashing Area designated as LHAAP-17, 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 Office is responsible for all aspects of Longhorn 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, determining the nature and extent of the contamination, and assessing risks to human health and the environment from this contamination. This investigatory element of decision making for LHAAP-17 has been completed and documented in an RI report (Jacobs Engineering Group, Inc. [Jacobs], 2001), the data gaps investigation (Shaw 2007a), and monitored natural attenuation (MNA) evaluation (**Appendix A**). Results of additional data collected since 2004 are discussed in this FS, and data are included in **Appendix B**. The human health risk was evaluated in the Baseline Human Health and Screening Ecological Risk Assessment for the Group 2 Sites (Jacobs, 2002). Unacceptable human health carcinogenic risk and non-carcinogenic hazard from the groundwater and soil were identified for the hypothetical future maintenance worker. The ecological risk was evaluated in the Installation-Wide Baseline Ecological Risk Assessment (BERA) (Shaw, 2007b). Potential risk to ecological receptors from the soil (0 to 3 feet below ground surface [bgs]) was identified.

The FS takes the next step of identifying and evaluating remedial solutions. The environmental problems identified for LHAAP-17 are primarily volatile organic compounds (VOCs) and perchlorate in the groundwater, and explosives, barium and dioxins in the soil. The formulation of viable alternatives involves defining remedial action objectives (RAOs), general response actions (GRAs), volumes or areas 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 media and contaminants of concern (COCs) at LHAAP-17 through combinations of source control and groundwater/soil actions.

The preferred alternative for LHAAP-17 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, the U.S. Environmental Protection Agency (USEPA), Texas Commission on Environmental Quality (TCEQ), and then the public for review. After this review, the 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 Location

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 installation occupies 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.

1.2.2 History

LHAAP was established in December 1941, near the beginning of World War II, when the 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 (TCE) 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 soil, surface water, and groundwater, 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 Army, and the Texas Natural Resources Conservation Commission (TNRCC), now the TCEQ, became effective December 30, 1991. LHAAP became inactive in July 1997, and a year later the Army issued a contract to remove salvageable property. On May 5, 2004, the Army transferred approximately 5,032 acres to the U. S. Fish and Wildlife Service (USFWS) for management as the Caddo Lake National Wildlife Refuge. Nearly 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 Army's control. The Army intends to transfer this land to the USFWS after the environmental response is completed.

1.2.3 LHAAP-17 Site Summary

1.2.3.1 Location

LHAAP-17 is a 3.9 acre site located within a heavily wooded section in the southeastern portion of the LHAAP installation (**Figure 1-2**). The site has two 185- by 305-foot cleared areas, separated by a gravel access road. The site is covered with grass and scattered brush and has been graded above the surrounding terrain, and is relatively flat (**Figure 1-3**).

1.2.3.2 Operational History

LHAAP-17 was originally listed as an NPL site in the FFA due to threatened releases of hazardous substances, pollutants or contaminants. LHAAP-17 was used as a burning ground from 1959 through 1980 (Plexus, 2005). Bulk TNT, photo flash powder, and reject material from Universal Match Corporation operational processes were burned at LHAAP-17. In 1959, all of the materials removed from the TNT Production Area (LHAAP-29) and the TNT Waste Disposal Plant (LHAAP-32) during razing were burned and/or flashed at LHAAP-17. The site is currently inactive but was used until 1980 as a flashing area to decontaminate recoverable metal byproducts. Burning trenches were located around the inside perimeter of the previously fenced area and within the open area on the western boundary of the site. As each trench filled with ash, it was covered and a new trench was dug. The waste residues were reportedly removed from the trenches in 1984, and the site was allowed to revegetate (Jacobs, 2002).

1.2.3.3 Surface Water Hydrology

Harrison Bayou is located to the west of LHAAP-17 flowing approximately 1,200 feet northwest of the site towards Caddo Lake. Surface runoff flows to ditches along the eastern and western boundaries of the site and then to Harrison Bayou. The entire site is within the 100-year floodplain of the bayou. There are no surface water bodies located on the site. Surface water runoff from the site travels approximately 1.5 miles in Harrison Bayou before reaching Caddo Lake (a drinking water source for several communities).

1.2.3.4 Geology and Hydrogeology

The local geology at LHAAP-17 consists of silty, clayey and sandy units of the Wilcox Group. The uppermost unit consists predominantly of silty clay to clay extending to depths ranging from 5 to 30 feet. Underlying this layer is a gray to light brown, fine grained silty sandy unit interbedded with silty clay to clay lenses. The clay layers act as an aquitard separating the shallow zone from the intermediate zone. A thick, fine to medium grained sand layer was encountered in boring 17WW05 from 50 to 151 feet in depth without encountering the silty clay lenses. The sand layer was underlain by a dense, dark gray clayey shale.

With the exception of monitoring wells 17WW05 and 17WW16 that were completed in the deep zone, the remainder of the monitoring wells at the site have been completed in the shallow and intermediate saturated zones. The depth of the shallow groundwater zone generally ranges from 18 to 35 feet bgs. The intermediate zone is less defined, but its depth has been measured to approximately 55 feet bgs. The deep groundwater zone extends to a depth of approximately 151 feet bgs. The predominant groundwater flow in the shallow and intermediate zones is generally to the northwest towards Harrison Bayou. Based on historical groundwater flows, LHAAP-17, direction can vary more to the west or more to the north. The groundwater elevation differences between the shallow and intermediate zones vary from 0.23 to 0.38 feet, with the shallow zone showing higher elevations, indicating a slight downward vertical gradient.

Groundwater in the deep aquifer under and near LHAAP is currently used as a drinking water source. There are currently five active water supply wells near LHAAP. Known depths of these wells range from 313 to 430 feet bgs. The wells are at least 4,000 feet away from LHAAP. Water removal from these wells is not expected to affect groundwater flow at the site because of the remote locations of these wells from LHAAP and their depth of completion. In addition, there are several livestock and domestic wells located in the vicinity of LHAAP with depths averaging 250 feet. There are three water supply wells located within LHAAP, and they supply water to the buildings currently in use at the installation. None of these wells are used for drinking water. Two additional wells previously supplied water to the installation, but these have been plugged and abandoned. None of the potable water supply wells are associated with

or are in imminent danger from the localized contaminated groundwater at LHAAP, including LHAAP-17.

1.3 Sampling Investigations at LHAAP-17

The environmental media (soil, groundwater, surface water, and sediment) at LHAAP-17 have been the subject of numerous investigations to identify potential contamination, as summarized in **Table 1-1**. These include the Pre-RI investigations by Environmental Protection Systems in 1982 and 1987; the Phase I, Phase II, and Phase III RIs conducted by Jacobs in 1993, 1995, and 1998, respectively; investigations by USACE in 1998; the site-wide perchlorate investigation conducted by Solutions To Environmental Problems, Inc. (STEP) in 2002 and the Environmental Site Assessment (ESA) activities performed by Plexus in 2003. No sampling activities were conducted at the site during the ESA (Plexus, 2005). Reports mentioned above are included in the Administrative Record for LHAAP.

Between 2004 and 2008, several follow-up investigations at LHAAP-17 were performed by Shaw to further delineate the extent of contamination identified during the previous sampling events. These sampling events included the data gaps investigation by Shaw in the spring and summer of 2004 (Shaw, 2007a), sampling for attenuation evaluation in February 2007, and additional sampling of VOCs by Shaw in February, March, and October 2008. Data reports for the February 2007 data are included in **Appendix B**. Additional intermediate zone wells were installed in 2008. The well logs and cross-sections including the new wells are included in **Appendix B**. A summary of activities and analytical results for the 2008 Shaw sampling events is presented in **Appendix B**.

The sample locations from all phases of investigations performed at LHAAP-17 are presented on **Figures 1-4** through **1-7** for soil, surface water and sediment, and groundwater, respectively.

1.4 Additional Evaluations at LHAAP-17

Between 2003 and 2004, Planteco Environmental Consultants (PEC) performed a perchlorate treatability demonstration study by soil composting a one-acre area in the western portion of LHAAP-17. Organic amendments were added to the soil over the one-acre area, where the highest concentrations of perchlorate-contaminated soil was located. The study reported reductions in perchlorate concentrations in the soil. In addition, reduction in concentrations of TNT and other explosive compounds in soil was reported as well as a general decreasing trend of perchlorate concentrations in groundwater (PEC, 2004).

The BERA was completed in February 2007 (Shaw, 2007b). The BERA made no specific conclusions about LHAAP-17, but identified final contaminants of potential environmental concern (COPECs) for the Waste Sub-Area, which includes LHAAP-17.

In February and December 2007, a preliminary natural attenuation evaluation was conducted by Shaw for LHAAP-17. The results and conclusions of the assessment are included in the *Natural Attenuation Evaluation* presented in **Appendix A**.

Table 1-1
Summary of Investigations at LHAAP-17

Pre-Phase I Remedial Investigation (Jacobs, 2001)
LHAAP Plant Contamination Survey, Environmental Protection System, 1982
• One monitoring well was installed and sampled (Well 130) • One surface water and one sediment samples were collected from a freshwater wetland meadow
Environmental Protection System Investigation, 1987
• One groundwater sample was collected from the existing monitoring well 130 • Six soil boreholes were completed and sampled at the 0-0.5', and 0.5-5' intervals (BH-1 through BH-6) • One background soil sample was collected
Phase I – Phase III RI (Jacobs, 2001)
Jacobs, Phase I RI, 1993
• Three surface water and three sediment samples were collected (17SW01-17SW03 and 17SD01-17SD03) • Twenty four soil samples were collected from borings seven borings (179SB01-17SB07) • One monitoring well was installed (17WW01) and groundwater samples were collected from the newly installed well and the existing wells (130 and C-7)
Jacobs, Phase II RI, 1995
• Nine surface water and eight sediment samples were collected with re-sampling conducted at three surface water and two sediment sample locations (17SW01-17SW09 and 17SD01, 17SD02, and 17SD04-17SD09) • One deep soil boring was completed for stratigraphic information (boring 17SB08) • Seventeen soil borings were completed and sampled at 0-0.5' depth interval (17SS01 through 17SS05, 17SS08 through 17SS10, and 17SS12 through 17SS20) • Five monitoring wells were installed (17WW02 – 17WW06) and groundwater was collected from each newly installed well and from the two existing wells (130 and 17WW01)
Jacobs, Phase III RI, 1998
• Five surface water and five sediment samples were collected (17SW10-17SW14 and 17SD10-17SD14) • Twenty five soil samples were collected from eleven borings (17SS21 - 17SS31) • Eight monitoring wells were installed (17WW07-17WW14) and groundwater was collected from each newly installed well and from the nine existing wells (130, MW-18, MW-19 and 17WW01-17WW06)
Additional Investigations
• Sixteen soil samples were collected by the U.S. Army Corps of Engineers for explosives analysis (COE-01 through COE-16) • Fifty-one soil samples and 78 groundwater samples were collected for perchlorate analysis between 2000 and 2002 (STEP17SS01 through STEP17SS47, 17SB09 and 17SB10)(STEP, 2005) • A perchlorate treatability study was performed by PLANTECO to identify suitable carbon sources for the cleanup of perchlorate contaminated soils at the site. Based on the results of the initial treatability studies, a field demonstration study was conducted to demonstrate the simultaneous biostimulation of perchlorate biodegradation to chloride in the vadose zone and groundwater (PEC, 2004) • Two monitoring wells were installed (17WW15 and 17WW16) and 12 groundwater samples were collected to address data gaps identified in previous investigations and to define the horizontal and vertical extent of groundwater contamination in 2004 (Shaw, 2007a). • Groundwater samples were collected from eight wells (130, 17WW01, 17WW02, 17WW05, 17WW06, 17WW10, 17WW12, and 17WW16) for natural attenuation evaluation (biological, volatile organic compounds (VOCs), explosives, gases, general chemistry) in February 2007 (Appendix A and Appendix B) • Groundwater samples were collected from five wells (130, 17WW04, 17WW05, 17WW06, and 17WW10) for natural attenuation evaluation (biological, VOCs, and perchlorate) in December 2007 (Appendix B) • One monitoring well was installed (17WW17) in the intermediate groundwater bearing zone and one groundwater sample was collected to define the vertical extent of VOCs groundwater contamination in February 2008 (Appendix B) • One groundwater sample was collected from monitoring well 17WW17 for confirmation of delineation of the vertical extent of VOC groundwater contamination in March 2008 (Appendix B). • One monitoring well was installed (17WW18) in the intermediate groundwater bearing zone and one groundwater sample was collected to define the vertical extent of VOC groundwater contamination in September 2008 (Appendix B) • Groundwater samples were collected from several wells in both the shallow and intermediate zones in February/March 2009 and were analyzed for various parameters (Appendix B).

00089127

PLOT DATE: 1/23/06
FORMAT REVISION 5/13/02

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
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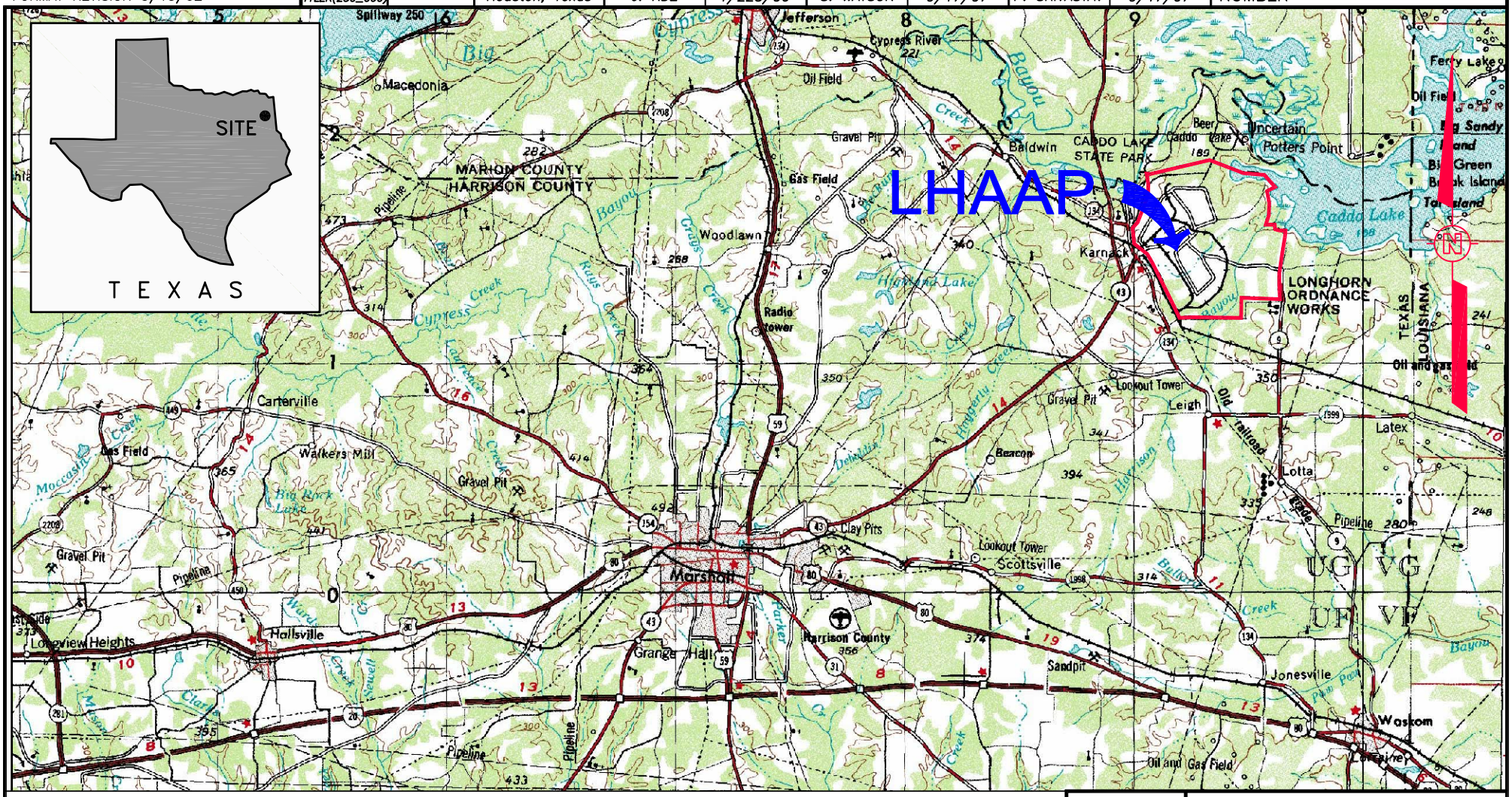

MILES
0 5 10

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SCALE 1:250,000

Shaw

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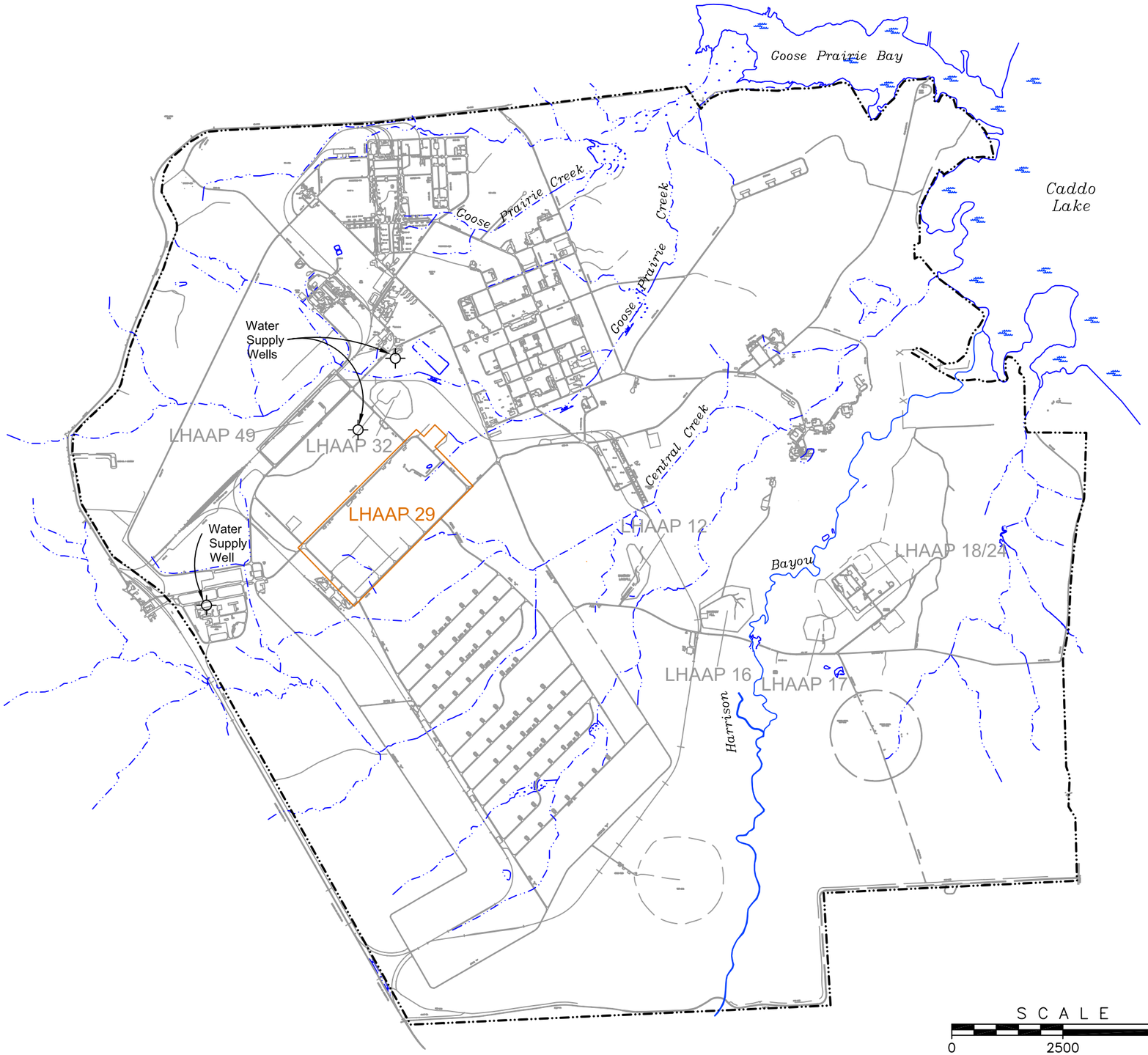
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-1

LHAAP LOCATION MAP
LHAAP-17 FEASIBILITY STUDY
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00089128



LEGEND:

- WATER SUPPLY WELLS
- STREAMS

LHAAP GROUP 2 SITES

SITE 12	LANDFILL 12
SITE 16	LANDFILL 16
SITE 17	BURNING GROUND No. 2 AND FLASHING AREA
SITE 18/24	BURNING GROUND No. 3/ UNLINED EVAPORATION POND
SITE 29	FORMER TNT PRODUCTION AREA
SITE 32	FORMER TNT WASTE DISPOSAL AREA
SITE 49	ACID STORAGE AREA

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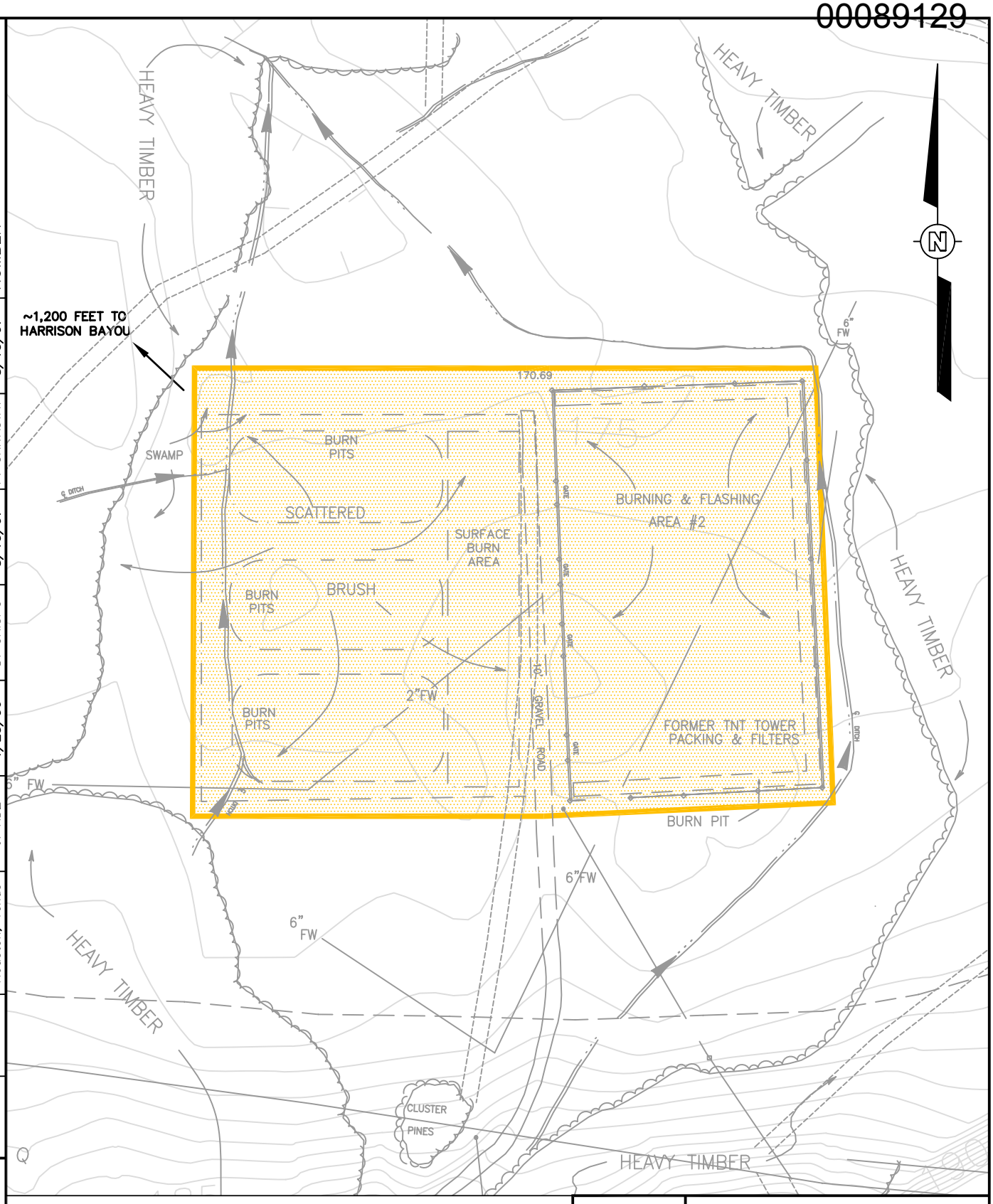
FIGURE 1–2
SITE LOCATION MAP–GROUP 2 SITES
LHAAP–17 FEASIBILITY STUDY
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

IMAGE	---	X–REF	BASE	OFFICE	Houston, Texas	DRAWN BY	J. RDZ	1/23/06	
						CHECKED BY	D.CRISPO	8/13/07	
							P. SRIVASTAV	8/13/07	
						APPROVED BY			
						DRAWING NUMBER	117591–B1		

PLOT DATE: 1/30/06
FORMAT REVISION 3/25/99

00089129



Legend

Estimated Site Boundary

SCALE

0 100 200 FEET

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TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1–3
LHAAP–17 SITE MAP
LHAAP–17 FEASIBILITY STUDY
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

IMAGE	X–REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	---	Houston, Texas	J. RDZ	1/23/06	D. CRISPO	8/13/07	P. SRIVASTAV	8/13/07	117591–A3

PLOT DATE: 1/30/06
FORMAT REVISION 3/25/99

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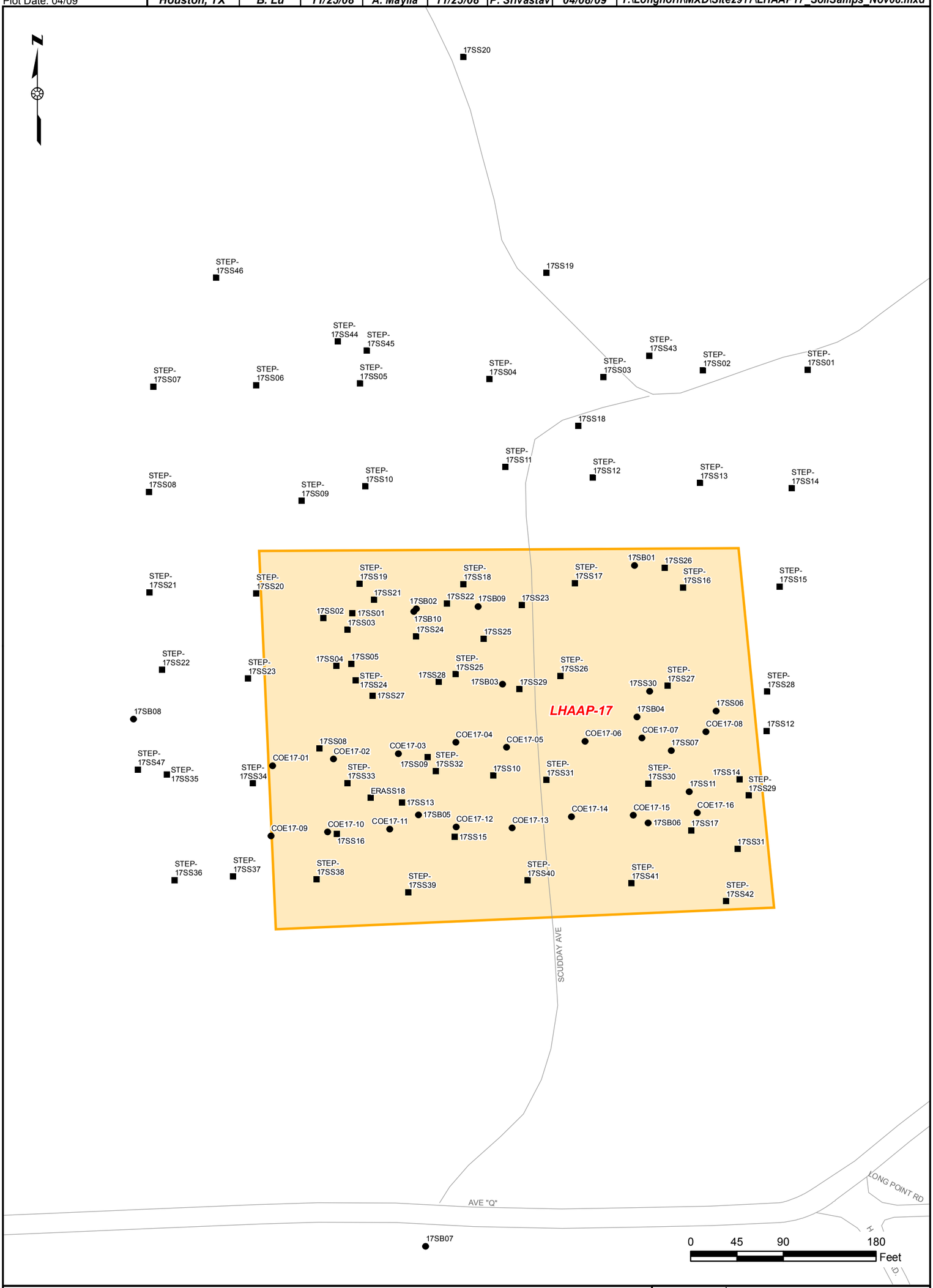
Plot Date: 04/09



LEGEND

- Surface Soil Sample
- Soil Boring
- Road
- Stream
- Site

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TULSA, OKLAHOMA

FIGURE 1-4

LHAAP-17 SOIL SAMPLE LOCATIONS
LHAAP-17 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00089130

OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		FILE PATH
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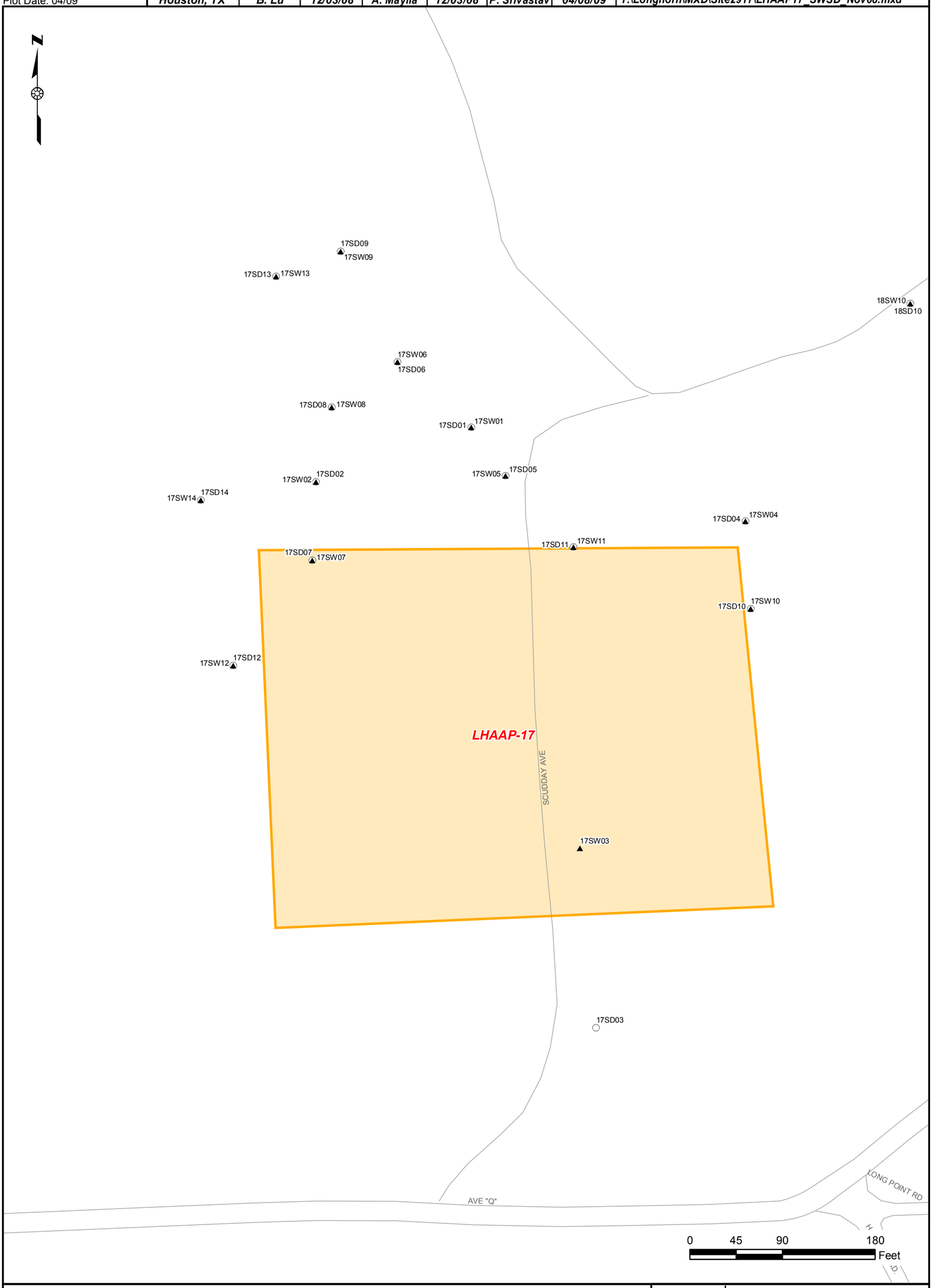
Plot Date: 04/09



LEGEND

- ▲ SWTR
- Stream
- ○ SED
- Site
- Road

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FIGURE 1-5

LHAAP-17 SURFACE WATER
AND SEDIMENT SAMPLE LOCATIONS
LHAAP-17 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00089131

Plot Date: 02/09

OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		FILE PATH
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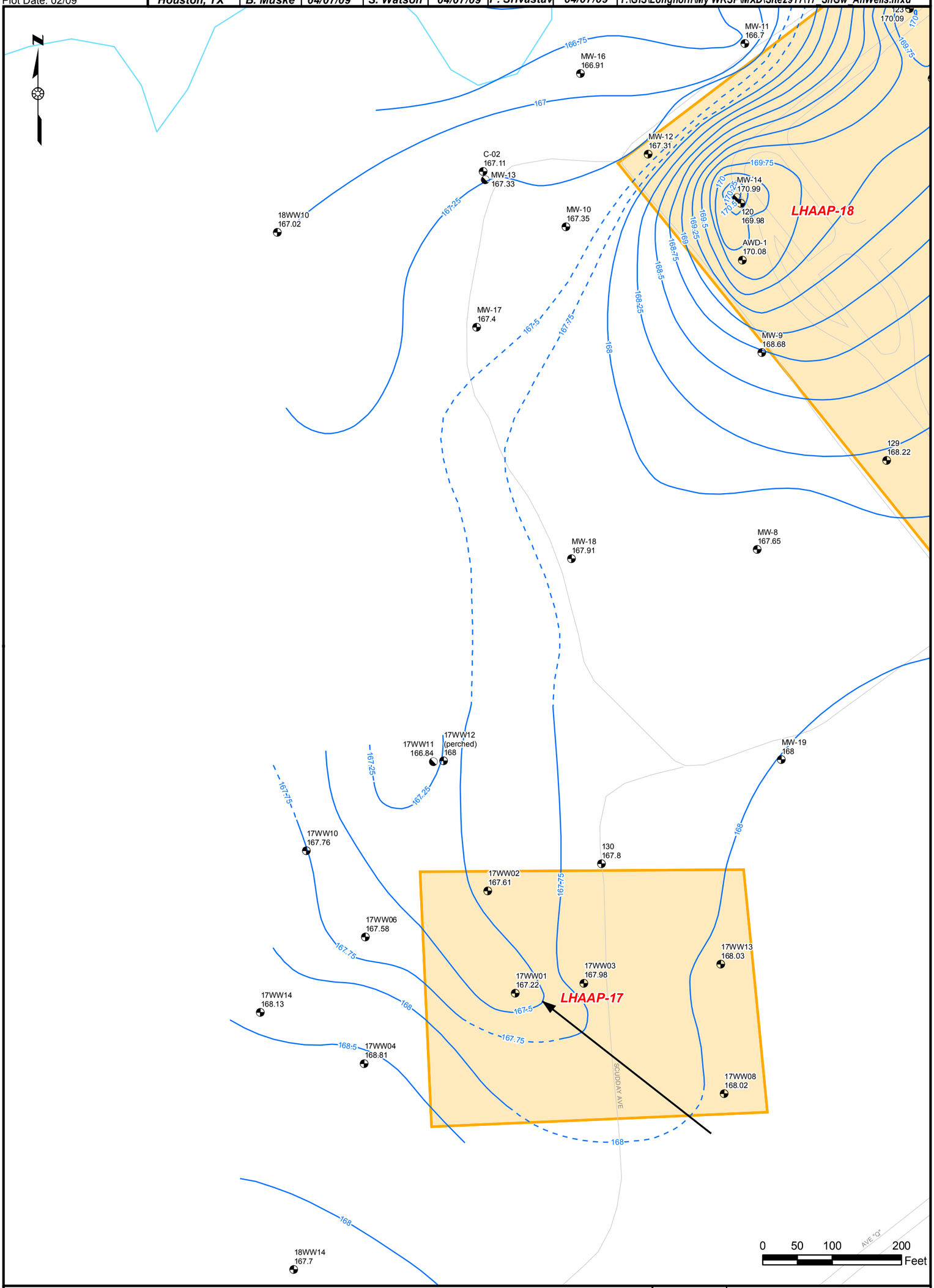

- Shallow Monitoring Well
- Shallow/Intermediate Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- Road
- Site
- Shallow Groundwater Flow Direction
- Shallow Groundwater Elevation Contour
- Inferred Shallow Groundwater Elevation Contour
- Stream
- Lake

NOTE:

1. Groundwater elevation contours based on water levels measured in November 2007 at LHAAP-17 and LHAAP-18/24.

2. 17WW12 is considered to be screened in a perched zone.

3. LHAAP-18/24 and associated wells are not depicted on this map.

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TULSA, OKLAHOMA

FIGURE 1-6

GROUNDWATER ELEVATION MAP
(SHALLOW ZONE)
LHAAP-17

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00089132

00089133

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
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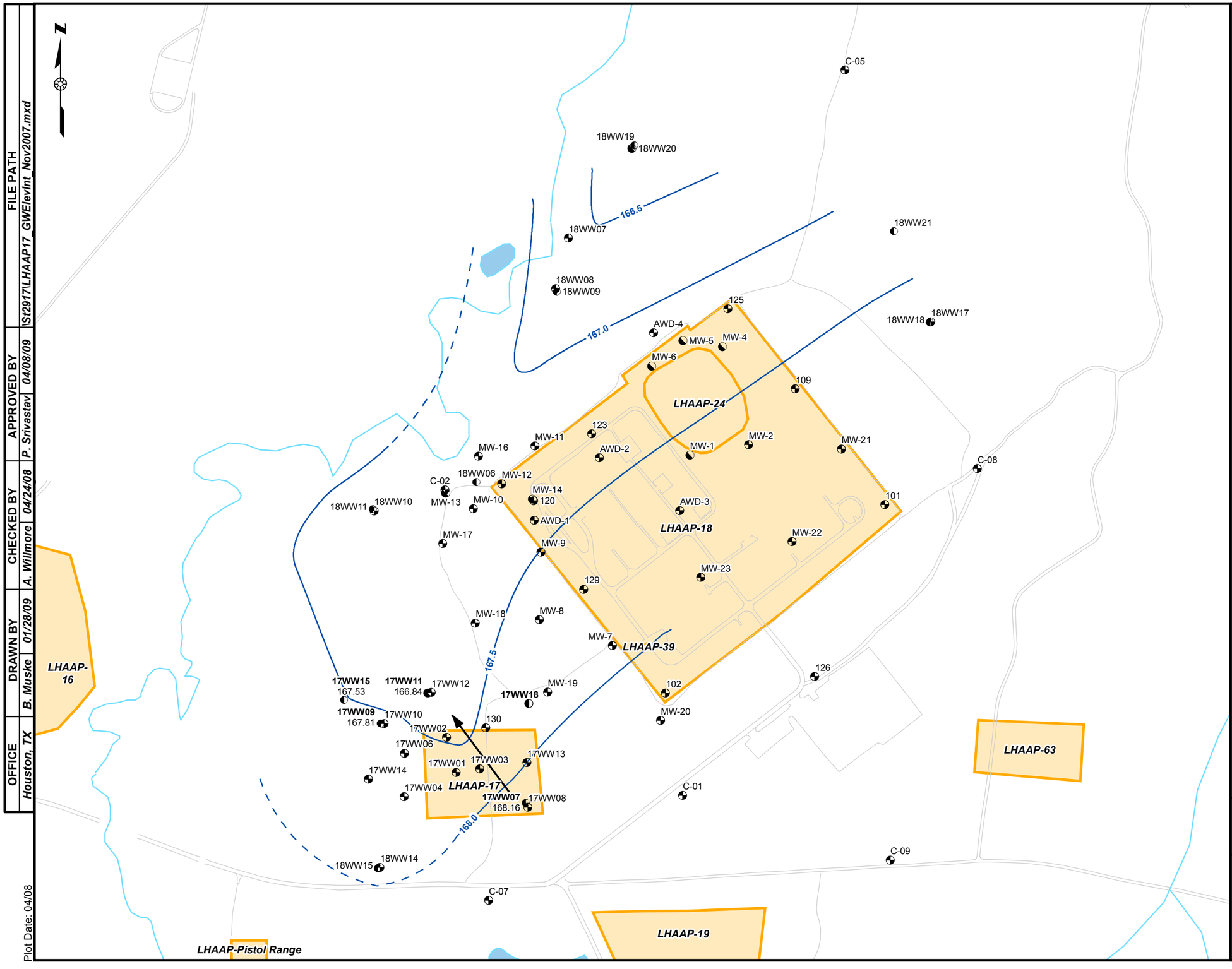

LEGEND

- Shallow Monitoring Well
- Shallow/Intermediate Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- Intermediate Groundwater Flow Direction
- Int. Groundwater Elevation Contour
- Int. Inferred Groundwater Elevation Contour
- Stream
- Road
- Site

NOTES:

1. Groundwater elevation contours based on water levels measured in November 2007 at LHAAP-17 and LHAAP-18/24.

0 200 400 800 Feet

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FIGURE 1-7

GROUNDWATER ELEVATION MAP
(INTERMEDIATE ZONE)

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

2.0 Risk Assessment

This section summarizes the risk assessment approach, risk conclusions, media contamination evaluation, and the conceptual site model for LHAAP-17. Information in this section is based on data obtained from the following references:

- Group 2 Sites RI (Jacobs, 2001)
- Group 2 Sites Baseline Human Health Risk Assessment (BHHRA) Report (Jacobs, 2002)
- Plant-wide Perchlorate Investigation (STEP, 2005)
- Groups 2 and 4 Groundwater Data Gaps Investigation (Shaw, 2007a)
- Installation-Wide Baseline Ecological Risk Assessment (Shaw, 2007b)
- Environmental Site Assessment (Plexus, 2005)

2.1 Human Health Risk Assessment

This summary is based on the conclusions presented in the *Final Baseline Human Health and Screening Ecological Risk Assessment for the Group 2 Sites* (Jacobs, 2002). 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. 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's exposure to soil from 0 to 2 feet bgs at LHAAP-17, the carcinogenic risk and non-carcinogenic hazard exceed the acceptable limits. The total carcinogenic risk from soil is 1.4×10^{-3} and the total non-carcinogenic HI is 37. Chemicals with a risk greater than 1×10^{-6}, and a hazard quotient (HQ) greater than 0.1 are listed in **Table 2-1** and **Table 2-2,** respectively. The data were evaluated to determine if the chemical should be retained as a COC as shown in **Table 2-1** and **Table 2-2**.

2.1.2 Groundwater

For the hypothetical future maintenance worker's exposure to the groundwater at LHAAP-17, the carcinogenic risk and non-carcinogenic hazard exceed the acceptable limits. Groundwater chemicals with unacceptable risk were also compared to their associated Safe Drinking Water maximum contaminant levels (MCLs), if applicable. These criteria are used as cleanup levels in this FS. TCEQ groundwater medium-specific concentrations (MSC) for industrial use (GW-Ind)

were used when an MCL is not available. The total carcinogenic risk from groundwater for a hypothetical future maintenance worker is 1.6×10^{-3}. The total HI is 3,500. Chemicals with a risk greater than 1×10^{-6}, and a HQ greater than 0.1 are listed in **Table 2-3** and **Table 2-4**, respectively. The data were evaluated to determine if the chemical should be retained as a COC as shown in **Table 2-3** and **Table 2-4**.

2.2 Ecological Risk Assessment

The *Final Installation-Wide Baseline Ecological Risk Assessment* (Shaw, 2007b) evaluated potential hazards to ecological resources at LHAAP by conducting a screening evaluation to identify initial COPECs in the individual sub-areas and watersheds. The potential of these COPECs to adversely affect communities was evaluated for (1) organisms that have direct contact with the COPECs (e.g., plants and earthworms growing and living in contaminated soil); and (2) organisms that may be exposed to the chemicals via food chain pathways (e.g., ingestion of an earthworm living in the contaminated soil by a shrew). Potential impacts to invertebrate and plant communities were evaluated by comparing COPEC concentrations to benchmark values available from multiple literature sources. For the food chain exposure assessment, a number of measurement receptors were selected as representative species for the various trophic levels in the food web that could be at risk from contaminants in site media. The measurement receptors that were selected and used in the food chain evaluation included the following:

- Deer Mouse
- Raccoon
- Modified Raccoon (as a surrogate for the Louisiana Black Bear)
- Short-Tailed Shrew
- Red Fox
- Muskrat
- River Otter
- Townsend's Big-Eared Bat
- Common Snapping Turtle
- Bank Swallow
- American Woodcock
- Belted Kingfisher
- Red-Tailed Hawk

A food chain model was developed and used to estimate the total dose for each measurement receptor based on species-specific considerations such as diet, body weight, ingestion rates, etc., using conservative exposure estimates. Ecological hazard estimates were developed based on exposure to all media including soil in a particular sub-area and surface water and sediment from any watersheds present in the sub-areas. Two different soil depths were used for modeling exposure to ecological receptors: surface soil (0 to 0.5 foot) and total soil (0 to 3 feet). Each

receptor was assumed to be exposed to one of the two depths based on its life history characteristics (e.g., burrowing animals were assumed to be exposed to total soil). Bioaccumulation of chemicals up the food chain was initially estimated using uptake factors obtained from available literature, and then refined using site-specific data obtained during the BERA.

Ecological effects quotients (EEQ) were developed for each of the measurement receptors. EEQs are similar to HQs for human health, and are calculated by dividing the total dose that the receptor is exposed to by the toxicity reference value (TRV), which is based on a no-observed adverse effect level (NOAEL) or the lowest-observed adverse effect level concentration. If the EEQ exceeds 1 for a receptor (based on the NOAEL TRV), then that chemical is considered to have a realistic potential to cause adverse ecological impacts, and is identified as a final COPEC that should be addressed either through remediation or further investigation. As discussed in the BERA, there are several important uncertainties associated with the assumptions used in the EEQ process, and it should be noted that EEQs greater than 1 do not necessarily mean that ecological impacts have occurred, or are occurring.

Several sub-areas were established within LHAAP for the BERA and LHAAP-17 falls in the Waste Sub-Area. The final COPECs in soil that require remedial action in the waste sub-area are barium, 2,4-dinitrotoluene (DNT), 2,6-DNT, 2,4,6-TNT, and dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin [TCDD] toxicity equivalent quotient [TEQ]) because of their potential to cause adverse impacts to one or more ecological receptors. These COPECs pose a potential risk to ecological receptors due to the direct contact with soil and indirect (i.e., dietary) exposure routes. In support of the LHAAP-17 FS, an exercise was performed to determine what sample locations require remediation to meet the ecological preliminary remediation goals (EcoPRGs) developed in the BERA for the final COPECs (Shaw, 2007b) as shown on **Table 2-5**. An excel spreadsheet exercise was performed by ranking the detected concentrations of each final COPEC in the Waste Sub-Area and iteratively re-calculating the 95% upper confidence limit (UCL) on the mean after removing concentrations until the 95% UCL for the Waste Sub-Area was lower than the EcoPRG. (Note: as discussed in the BERA, the EcoPRG is not a "not to exceed" value for all concentrations; rather, it is a conservative estimate of the average concentration that results in no adverse effects, and as such is equivalent to the 95% UCL of chemical concentrations, rather than to individual sample concentrations.) The order of chemical concentrations was altered to preferentially remove LHAAP-17 samples in order to reduce the ecological risk in the Waste-Sub Area. It is assumed that the locations associated with these concentrations will be remediated. The outcome of the exercise is included on **Table 2-5** and indicated on **Figure 2-1**.

2.3 Evaluation of Data Collected Since the Baseline Human Health Risk Assessment

The human health risk assessment was completed using data from the samples through February 2001 for groundwater and through 1998 for soil samples. Since that time, additional groundwater and soil samples have been collected and analyzed.

2.3.1 Soil

Additional soil samples were collected for perchlorate analysis between 2001 and 2002 (STEP, 2005). The maximum perchlorate concentration detected in soil was 7.11 milligrams per kilogram (mg/kg) in sample 17SS33 (STEP, 2005). This is greater than the exposure point concentration (EPC) for perchlorate of 0.616 mg/kg used in the risk assessment, with an associated HQ of 7.1×10^{-4} (Jacobs, 2002). Using ratios of the HQ to the perchlorate concentrations, the HQ for the maximum concentration of perchlorate detected since the risk assessment would yield a HQ of 0.0082. Although, perchlorate is a contaminant in groundwater with an HQ of 3,500, perchlorate in soil does not pose a hazard to human health. In addition, the most recent soil sample with a perchlorate concentration of 7.11 mg/kg is below the soil MSC for industrial use based on groundwater protection (GWP-Ind) (TCEQ, 2006) of 7.2 mg/kg for perchlorate. The perchlorate treatability study was performed in a one-acre area of LHAAP-17 (**Figure 2-1**). No tabular results or analytical reports are available from this study, but figures indicate perchlorate levels may be remaining in the soil with concentrations greater than 100 mg/kg (PEC, 2004), which is above the GWP-Ind.

Therefore, there is no change to the risk assessment conclusion that soil at the site poses an unacceptable risk to the human health.

2.3.2 Groundwater

Additional groundwater samples were collected since the BHHRA and analyzed for metals, explosives, perchlorate, VOCs, and attenuation parameters (**Appendices A** and **B**). The post risk assessment data was used to determine the COCs indicated on **Tables 2-3** and **2-4**. The results obtained from the post risk assessment groundwater samples do not alter the risk assessment conclusion that groundwater poses an unacceptable risk and hazard.

Evaluation of the post risk assessment results remove some of the potential COCs listed in the risk assessment (2,4-DNT and 2,6-DNT) and confirm that the TCE plume is stable. Methylene chloride was detected in the intermediate well 17WW17 during the February and March 2008 sampling efforts above its MCL, but was not detected in March 2009 and is not considered a COC.

During historic sampling events, arsenic was detected above its MCL very sporadically in only two wells (well 130 and 17WW04). Well 130 had the highest arsenic concentration and was

resampled in 2008. Arsenic was detected at 4.27 micrograms per liter (µg/L), which is below its MCL of 10 µg/L, thus, arsenic is not considered a COC.

In 1998, 17WW02 and 17WW06 had detected concentrations of chromium above the MCL. In March 2009, samples were analyzed for chromium from these wells. At 17WW02, the 2009 chromium result was below the MCL. At 17WW06, the March 2009 concentration of chromium at 0.129 mg/L was less than the previous detection of 0.180 mg/L, but was still slightly above the MCL of 0.1 mg/L. Since this detection of chromium is isolated and near the MCL, chromium is not considered a COC.

2.4 Media Contamination Assessment

Chemicals in the soil and groundwater at LHAAP-17 pose an unacceptable risk and hazard to human health. Chemicals in soil may also have the potential to leach into groundwater, or have an unacceptable risk to ecological receptors. Evaluation of the groundwater data generated after the risk assessment did not identify any additional COCs with risks exceeding the USEPA target risk level of 1×10^{-4} or an HQ greater than 0.1 as shown on **Table 2-3** and **Table 2-4**.

2.4.1 Soil

Based on the human health risk assessment, soil at LHAAP-17 poses an unacceptable carcinogenic risk and non-carcinogenic hazard to a hypothetical future maintenance worker at LHAAP under an industrial scenario.

There is potential for chemicals in the soil to leach into the groundwater. The EPCs of COCs identified in the Risk Assessment (Jacobs, 2002), were compared to the TCEQ GWP-Ind to identify chemicals that may leach into groundwater. Explosive compounds were detected at maximum concentrations greater than their respective GWP-Ind values. Although none of the explosives were identified as posing an unacceptable risk in the groundwater, their presence in the groundwater indicates that there is a potential for soil to act as a residual source to groundwater contamination. Therefore, assessment of alternatives will include removal of soil contamination in the areas where explosives concentrations exceed GWP-Ind (**Figure 2-1**).

Soil contaminants identified to have a risk greater than 1×10^{-6} are listed in **Table 2-1**. Soil contaminants with a HQ greater than 0.1 are listed in **Table 2-2**. The COCs listed in **Table 2-2** for the LHAAP-17 soil are 2,4-DNT, 2,4,6-TNT, and 2,6-DNT, due to their contribution to carcinogenic risk and non-carcinogenic hazard. Soil contaminants identified as posing ecological risks are listed in **Table 2-5** and include barium, 2,4,6-TNT, 2,4-DNT, 2,6-DNT, and 2,3,7,8-TCDD. Thus, the COCs and COPECs for the LHAAP-17 soil are three explosives (2,4,6-TNT, 2,4-DNT, and 2,6-DNT), 2,3,7,8-TCDD, and barium.

Soil contaminants that pose human health risks (2,4,6-TNT, 2,4-DNT, and 2,6-DNT) at LHAAP-17 are across the site as indicated on **Figure 2-1**. The GWP-Ind was used to compare the concentrations of the explosives to assess any potential for a soil to groundwater pathway. Soil contaminants that pose ecological risks (2,4,6-TNT, 2,4-DNT, 2,6-DNT, and barium) may be co-located with soil that poses human health risk as shown on **Figure 2-1**. Additional, isolated surface soil areas around the site exceed EcoPRGs (**Figure 2-1**). The affected soil depth for the ecological receptors is up to 3 feet bgs, and the soil contamination that may leach into the groundwater is 9-10 feet bgs in some areas. Additionally, soil contaminated with perchlorate may be remaining within the boundaries of the treatability demonstration study that exceed the GWP-Ind.

2.4.2 Groundwater

Based on the human health risk assessment, groundwater at LHAAP-17 poses an unacceptable carcinogenic risk and non-carcinogenic hazard to a hypothetical future maintenance worker at LHAAP under an industrial scenario.

Groundwater contaminants identified to have a risk greater than 1×10^{-6} are listed in **Table 2-3**. The COCs listed in **Table 2-3** for the LHAAP-17 groundwater are TCE, 1,1-dichloroethene (DCE), and 1,2-dichloroethane (DCA), due to their contribution to risk and exceedance of their respective MCLs. Other contaminants listed on **Table 2-3** are not considered COCs since the EPC and/or more recent data indicate lower concentrations that are below their MCL or GW-Ind.

Groundwater contaminants with a HQ greater than 0.1 are listed in **Table 2-4**. For the chemicals without MCLs, the groundwater MSC for industrial use GW-Ind was used for evaluation. These criteria are proposed as cleanup levels in this FS. The COCs identified in **Table 2-4** for the LHAAP-17 groundwater are TCE, 1,2-DCA, 1,1-DCE, and perchlorate due to the contribution to HI and exceedance of their respective MCLs. Other contaminants listed on **Table 2-4** i.e., manganese, thallium and antimony, are not considered COCs for various reasons including: the EPC for manganese is below the cleanup goal, and antimony and thallium were not detected in recent sampling rounds. In addition, thallium detections are either attributed to interference with manganese or elevated turbidity due to the previous sampling methods.

Thus, the COCs for groundwater at LHAAP-17 are TCE, 1,2-DCA, 1,1-DCE, and perchlorate. **Table 2-6** lists the COCs in each groundwater zone and indicates their most recent maximum concentration in the shallow and intermediate zones.

In the shallow zone, TCE, 1,1-DCE, and 1,2-DCA are the COCs with their maximum concentration located at 17WW01. The associated plumes are shown on **Figure 2-2**. Perchlorate is also a COC in the shallow zone; with a maximum concentration located near 17WW02 as shown on **Figure 2-2**. The TCE plume is within the perchlorate plume. The

estimated area of the perchlorate plume is approximately 160,000 square feet. Using a porosity of 25% and an average vertical extent of approximately 15 feet, the volume of the shallow zone plume is approximately 4.5 million gallons.

In the intermediate groundwater zone, the COC is TCE. The VOC groundwater plume in the intermediate zone has the maximum concentrations at 17WW17 as shown on **Figure 2-3**. The TCE plume occupies an area of approximately 1,094 square feet. The estimated volume of the VOC plume is approximately 55,000 gallons using a porosity of 25 percent and an average vertical extent of 27 feet.

2.4.3 Conceptual Site Model

Figure 2-4 illustrates the overall conceptual site model for LHAAP-17. The model presents the human health pathways that may impact a hypothetical future maintenance worker and are being considered for remediation. Those pathways that are likely to be incomplete or have negligible impact are not being considered for remediation as discussed below. The ecological conceptual model for LHAAP-17 (**Figure 2-5**) is similar to the one presented for human health in terms of the origin and fate and transport mechanisms of the contaminants present at the site. However, only exposure pathways and routes associated with soil are relevant for ecological risk assessment.

Explosive compound releases resulting from the burning of explosive type materials removed from the TNT Production Area and the TNT Waste Disposal Plant are the suspected contamination sources at LHAAP-17. Residual contamination as a result of deposition, spills, and runoff of contamination on the surface poses potential risk to the hypothetical future maintenance worker.

Contamination in the form of VOCs and perchlorate is present in groundwater at LHAAP-17 and poses potential risk to the hypothetical future maintenance worker. Perchlorate and VOC concentrations have been detected consistently throughout the shallow groundwater zone. Two VOCs; 1,1-DCE and 1,2-DCA are restricted to the shallow groundwater zone. TCE has been detected in both the shallow and intermediate zones. The horizontal extent of contamination in the shallow and intermediate groundwater zones has been defined as presented in **Figures 2-2** and **2-3**.

The soil and groundwater at LHAAP-17 may pose a risk for the hypothetical future maintenance workers, thus the pathways considered for remediation include soil, soil to groundwater, and future industrial groundwater use.

Table 2-1
Chemicals Contributing to Carcinogenic Risk in Soil

Chemical	Baseline Risk Assessment			Retained as COC ?
	Cancer Risk Soil [a]	EPC (mg/kg)	Soil Sample Location (Depth)	
2,4-Dinitrotuluene	1.1×10^{-3}	2602[b]	*	Yes, 1
2,4,6-Trinitrotoluene	1.8×10^{-4}	8400	17SS22 [c] (0-2 ft)	Yes, 1
2,6-Dinitrotoluene	1.3×10^{-4}	318 [b]	*	Yes, 1
2,3,7,8-TCDD	1.6×10^{-5}	2.14×10^{-4}[d]	17SD12[e] (0.00 ft)	No, 2

Notes and Abbreviations:

1. Identified as contaminant of concern (COC) since carcinogenic risk is above the acceptable range

2 Excluded since risk is within the acceptable range and the chemical is not a COC for groundwater

[a] Cancer risk from Baseline Risk Assessment Table C-29 (Jacobs, 2002)

[b] 95 percent upper confidence limit (UCL) used as EPC.

[c] From Baseline Risk Assessment Table 3-64.

[d] Toxicity equivalents used in developing the EPC.

[e] From Baseline Risk Assessment Table 3-19.

** No specific location, EPC calculated as 95 percent UCL as noted in the Baseline Risk Assessment Report Table 3-64*

COC chemical of concern
EPC Exposure Point Concentration from Baseline Risk Assessment (Jacobs, 2002)
HQ hazard quotient
mg/kg milligrams per kilogram.

Table 2-2
Chemicals with Hazard Quotient Greater than 0.1 in Soil

Chemical	Baseline Risk Assessment			Retained as COC ?
	Soil Hazard Quotient [a]	EPC (mg/kg)	Soil Sample Location (Depth)	
2,4,6-Trinitrotoluene	34	8400	17SS22 [b] (0-0.5 ft)	Yes, 1
2,4-Dinitrotoluene	2.2	2602[c]	*	Yes, 1
2,6-Dinitrotoluene	0.55	318 [c]	*	No, 2
2-Amino-4,6-dinitrotoluene	0.21	16	17SB03 (0-2 ft)	No, 2

Notes and Abbreviations:

1. *Identified as COC since Hazard Quotient is greater than 1.0.*
2. *Not identified as COC since HQ is less than 1.0*

[a] *HQ from Baseline Risk Assessment Table C-26 (Jacobs, 2002)*

[b] *From Baseline Risk Assessment Table 3-64*

[c] *95 percent upper confidence limit (UCL) used as the EPC*

* *No specific location, EPC calculated as 95 percent UCL as noted in the Baseline Risk Assessment Report Table 3-64 (Jacobs, 2002)*

COC *contaminant of concern*
EPC *Exposure Point Concentration from Baseline Risk Assessment (Jacobs, 2002)*
HQ *hazard quotient*
mg/kg *milligrams per kilogram.*

Table 2-3
Chemicals Contributing to Carcinogenic Risk in Groundwater

Chemical	Baseline Risk Assessment			Data Since Risk Assessment			Comparison Levels		Retained as COC?
	Cancer Risk Groundwater [a]	EPC (µg/L)	Well	Maximum [b] (µg/L)	Well	Adjusted Risk	MCL (µg/L)	TCEQ GW-Ind (µg/L)	
Trichloroethene	1×10^{-3}	5,320	17WW01	6090	17WW01	1.1×10^{-3}	5	5	Yes, 1
1,1-Dichloroethene	4.1×10^{-4}	51	17WW01	70	17WW01	5.6×10^{-4}	7	7	Yes, 1
1,2-Dichloroethane	1.3×10^{-4}	63	17WW01	35.8 J	17WW01	7.4×10^{-5}	5	5	Yes, 1
2,3,7,8-TCDD	1.7×10^{-5}	3.5×10^{-6}[c]	17WW13	–	–	–	3×10^{-5}	–	No, 2
2,4-Dinitrotuluene	9×10^{-6}	3.8	17WW02	ND	17WW02	–	–	0.42	No, 3
2,6-Dinitrotoluene	9×10^{-6}	3.8	17WW02	ND	17WW02	–	–	0.42	No, 3

Notes and Abbreviations:

1. *Identified as COC because most recent maximum concentration is above the MCL*
2. *Excluded because the EPC and more recent results are below the MCL*
3. *Excluded because more recent results are below the TCEQ GW-Ind*

[a] *From Baseline Risk Assessment Table C-29 (Jacobs, 2002)*

[b] *Maximum data from the latest sampling event*

[c] *Toxicity equivalents were used in developing the EPC*

µg/L	*micrograms per liter*
COC	*contaminant of concern*
EPC	*exposure point concentration*
MCL	*Safe Drinking Water Act maximum contaminant level*
MSC	*medium specific concentration from Updated Examples of Risk Reduction Standard No. 2, Appendix II*
NA	*not applicable*
TCEQ GW-Ind	*Texas Commission of Environmental Quality Groundwater MSC for Industrial Use*

Table 2-4
Chemicals with Hazard Quotient Greater than 0.1 in Groundwater

Chemical	Baseline Risk Assessment			Data Since Risk Assessment			Comparison Levels		Retained as COC ?
	Hazard Quotient Groundwater [a]	EPC (µg/L)	Well	Maximum [b] (µg/L)	Well	Adjusted Hazard Quotient	MCL (µg/L)	TCEQ GW-Ind (µg/L)	
Perchlorate	3500	320,000	17WW06	74,000 160,000	17WW06 17WW02	809 1750	–	72	Yes, 1
Trichloroethene	20	5,320	17WW01	5,970	17WW01	22.9	5	5	Yes, 2
1,2-Dichloroethane	2.2	63	17WW01	44.9	17WW01	1.3	5	5	Yes, 2
Manganese	0.73	3490	17WW01	–	–	–	–	14,000	No, 3
Thallium	0.59	4.3	17WW13	ND (0.05)	17WW13	–	–	2	No, 4
Antimony	0.32	13	17WW02	ND (0.25)	17WW02	–	–	6	No, 4
1,1-Dichloroethene	0.13	51	17WW01	70	17WW01	0.2	7		Yes, 2

Notes and Abbreviations:

1. *Identified as a COC because HQ >1*
2. *Identified as COC because EPC is above the MCL.*
3. *Excluded because EPC is below the TCEQ GW-Ind MSC and HQ is <1.0*
4. *Excluded because more recent data results are below the TCEQ GW-Ind*

[a] *From Baseline Risk Assessment Table C-29 (Jacobs, 2002)*

[b] *Maximum data from the latest sampling event*

COC	*contaminant of concern*
EPC	*exposure point concentration*
HQ	*hazard quotient*
MSC	*medium specific concentration from Updated Examples of Risk Reduction Standard No. 2, Appendix II*
TCEQ GW-Ind	*Texas Commission of Environmental Quality Groundwater MSC for Industrial Use*
MCL	*Safe Drinking Water Act maximum contaminant level*
µg/L	*micrograms per liter*

Table 2-5
EcoPRGs for Soil and Ecological Remedial Action Locations

Chemical	SS EcoPRG [a] (mg/kg)	TS EcoPRG [a] (mg/kg)	Depth [b]	Sample Location
Barium	222	—	0 - 0.5'	17SS22, 17SD04, 17SD07, 17SD08, 17SD11
	—	520	0 - 3'	17SD07
2,4-Dinitrotoluene	—	12	0 - 3'	17SB02
2,6-Dinitrotoluene	2.7	6.8	0 - 3'	17SB02
2,4,6-Trinitrotoluene	—	4.7	0 - 3'	17SS22, 17SS23, 17SB06
Dioxin	4×10^{-6}	4×10^{-6}	0 - 3'	17SD12

Notes and Abbreviations:

[a] *From Baseline Ecological Risk Assessment Table 16-1 (Shaw, 2007b)*

[b] *Depth and locations of remedial action for Waste Sub-Area*

EcoPRG ecological preliminary remediation goal
mg/kg milligrams per kilogram
SS surface soil from 0-0.5 feet (applicable to deer mouse)
TS total soil form 0-3 feet (applicable to short-tailed shrew)

Table 2-6
COCs by Groundwater Zone

COCs	MCL (µg/L)	Shallow Zone			Intermediate Zone		
		Max (µg/L)	Well ID of Max	COC?	Max (µg/L)	Well ID of Max	COC?
Trichloroethene	5	6090	17WW01	Yes	10.8	17WW17	Yes
1,1-Dichloroethene	7	70	17WW01	Yes	1.92	17WW17	No
1,2-Dichloroethane	5	35.8 J	17WW01	Yes	0.274 J	17WW17	No
	GW-Ind (µg/L)						
Perchlorate	72	160,000	17WW02	Yes	ND	17WW09	No

Notes and Abbreviations:

Max is the maximum concentration of that COC from the most recent sample round

COC contaminant of concern
GW-Ind Texas Commission on Environmental Quality groundwater medium specific concentration for industrial use
MCL Safe Drinking Water Act maximum contaminant level
µg/L micrograms per liter

00089147

CoC	0 - 0.5'	1' - 3'	3' - 5'	
2,4 DNT	16	< 0.1	< 0.1	
2,6 DNT	16	< 0.1	< 0.1	
2,4,6 TNT	10,000	< 0.1	16	

CoC	0 - 0.5'	2.5' - 3'		
2,4 DNT	0.75	< 0.1		
2,6 DNT	0.75	< 0.1		

CoC	0 - 0.5'	2.5' - 3		
2,4,6 TNT	110	13		

CoC	0 - 2'	2.5' - 4.5'	5' - 7'	7.5' - 9'
2,4 DNT	4,000	25	8	1.8
2,6 DNT	500	1.2	0.57	< 0.31

CoC	0 - 2'	5' - 7'	7.5' - 9.5'	
2,4 DNT	1.2	7.1	0.65	
2,6 DNT	1.4	1.9	< 0.31	

CoC	0 - 2'	2.5' - 4.5'	5' - 7'	
2,4 DNT	93	3	1.3	
2,6 DNT	23	0.99	0.49	
2,4,6 TNT	60J	3.6J	2.1J	

CoC	0 - 0.05 (FD)	2.5' - 3		
2,4 DNT	840J	< 100		
2,6 DNT	840J	< 100		

CoC	0 - 0.5'	2.5' - 3'		
2,4 DNT	3.4	< 0.1		
2,6 DNT	3.4	< 0.1		

CoC	0 - 0.5'	2.5' - 3'		
2,4,6 TNT	13J	< 0.1		
2,4 DNT	0.62	< 0.1		
2,6 DNT	0.62	< 0.1		

CoC	0 - 2'	2.5' - 4.5'	5' - 7'	7.5' - 9.5'
2,4 DNT	15	1.9	< 0.31	< 0.31
2,6 DNT	3.8	0.43	< 0.32	< 0.32
2,4,6 TNT	33J	< 0.3	< 0.31	< 0.31

CoC	0 - 2'	2.5' - 4.5'	5' - 7'	
2,4 DNT	0.96	1.4	< 0.31	
2,6 DNT	0.75	0.45	< 0.32	

CoC	0 - 0.5'	4' - 5'		
2,4,6 TNT	6.6	< 0.25		

CoC	0 - 0.5'	4' - 5'	
2,6 DNT	27D	< 0.25	

CoC	0 - 0.5'	
2,6 DNT	6.8	

CoC	0-2'	2.5' - 4.5'	5' - 7'	7.5' - 9.5'
2,4 DNT	< 28	0.51	0.95	< 0.30
2,6 DNT	< 29	1.8	< 0.34	< 0.31
2,4,6 TNT	82J	30J	< 0.33	< 0.30

CoC	0 - 0.5'			
2,4,6 DNT	6.6			

17SD01, 17SD02, 17SD04, 17SD05, 17SD06, 17SD07, 17SD08, 17SD10, 17SD11, 17SD12, 17SS01, 17SS02, 17SS03, 17SS04, 17SS05, 17SS08, 17SS09, 17SS10, 17SS12, 17SS13, 17SS14, 17SS15, 17SS16, 17SS17, 17SS18, 17SS21, 17SS22, 17SS23, 17SS24, 17SS25, 17SS26, 17SS27, 17SS28, 17SS29, 17SS31, 17SB01, 17SB02, 17SB03, 17SB04, 17SB05, 17SB06, 17WW01, COE17-02, COE17-03, COE17-04, COE17-05, COE17-06, COE17-07, COE17-08, COE17-09, COE17-10, COE17-11, COE17-12, COE17-13, COE17-14, COE17-15, COE17-16

LHAAP-17

SCUDDAY AVE

AVE "Q"

LEGEND

- Sample location with contamination that poses Ecological Risk. See Table 2-5 for additional information.
- Sample location with contamination that poses Human Health Risk (for soil to groundwater).
- Soil sample location not posing risk.
- Soil sample deemed unusable by EPA for environmental decisions (Jacobs, 2002).
- Road
- Approximate boundary of treatability demonstration study (PEC, 2004).
- Site

TNT Trinitrotoluene
DNT Dinitrotoluene
CoC Contaminant of Concern

1. Depths are reported in feet below ground surface.

2. Soil sample concentrations in milligrams/kilograms (mg/kg).

GWP-IND

2,4,6 TNT	5.1 mg/kg
2,4 DNT	0.042 mg/kg
2,6 DNT	0.042 mg/kg

0 40 80 160 Feet

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TULSA, OKLAHOMA

FIGURE 2-1

SOIL CONTAMINATION
LHAAP-17 FEASIBILITY STUDY

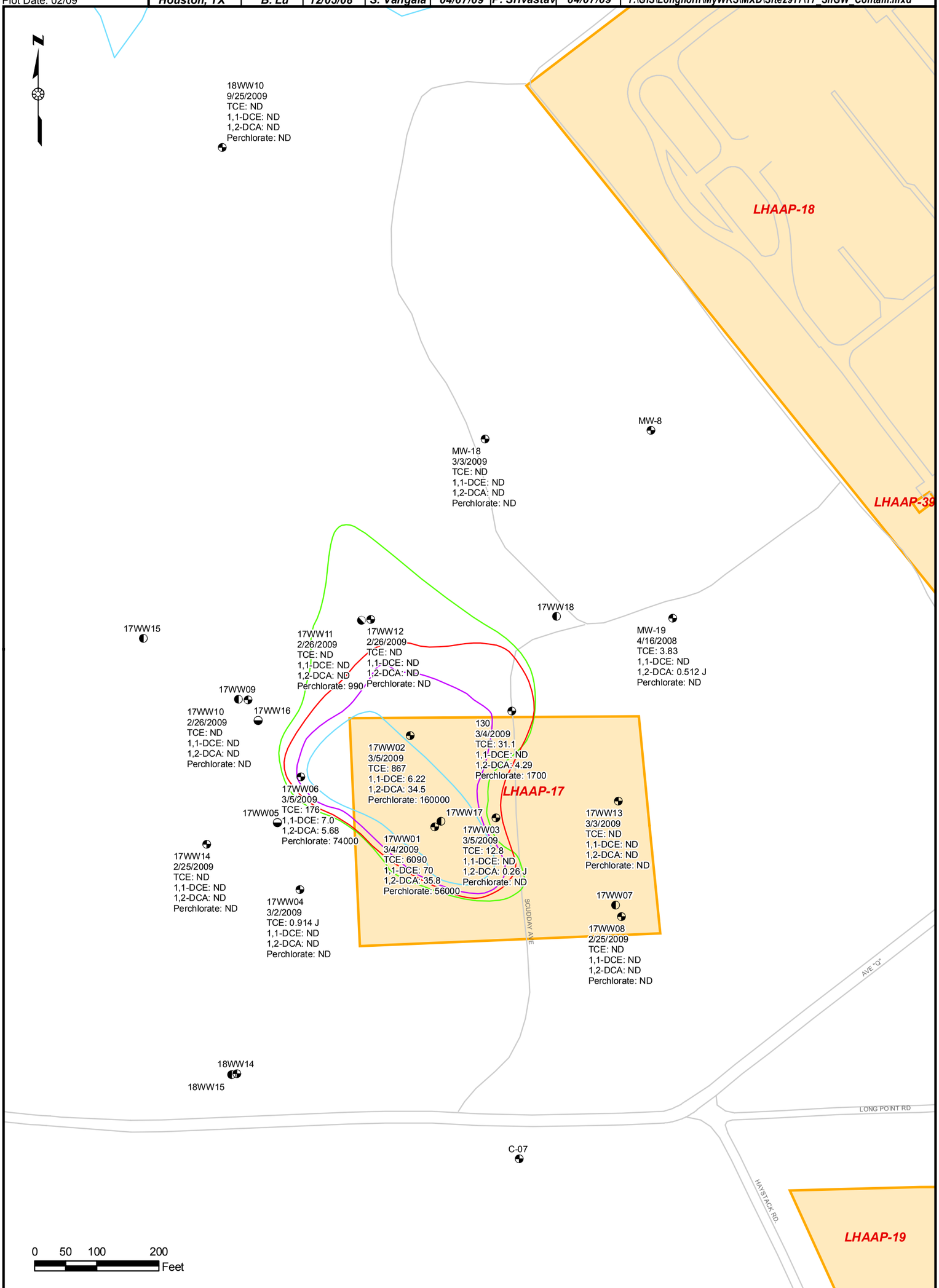
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

OFFICE	DRAWN BY	CHECKED BY	FILE PATH
Houston, TX	B. Muske 02/03/09	S. Watson 02/27/09	T:\Longhorn\MXD\ST2917\LHAAP17_SoilContamination.mxd
		APPROVED BY	
		P. Srivastav 04/09/09	

Plot Date: 02/27

Plot Date: 02/09

OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		FILE PATH
Houston, TX	B. Lu	12/05/08	S. Vangala	04/07/09	P. Srivastav	04/07/09	T:\GIS\Longhorn\MyWKS\MXD\Site2917\17_ShGW_Contam.mxd



- Shallow Monitoring Well
- Shallow/Intermediate
- Intermediate Monitoring
- Deep Monitoring Well
- Stream
- Road
- Site
- TCE Plume (MCL = 5 Mg/L)
- 1,1-DCE Plume (MCL = 7 Mg/L)
- 1,2-DCA Plume (MCL = 5 Mg/L)
- Perchlorate Plume (GW - Ind = 72 Mg/L)

NOTES:

1. All concentrations are reported in microgram per liter (µg/L).
2. ND - non detect
3. GW-Ind - groundwater TCEQ MSC for industrial use
4. MCL - maximum contaminant level
5. TCE - trichloroethene
6. 1,1-DCE - 1,1-dichloroethene
7. 1,2-DCA - 1,2-dichloroethane

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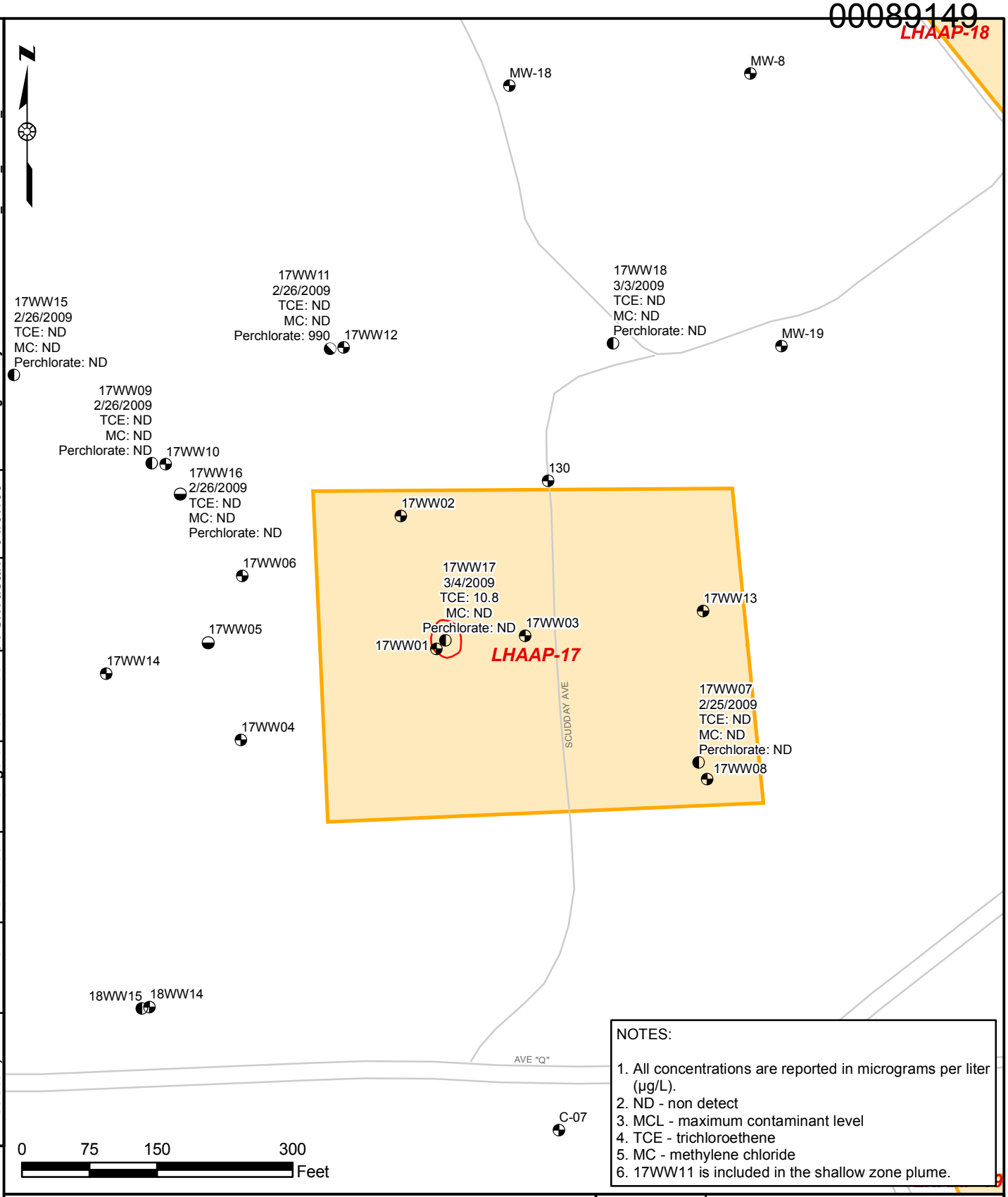
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-2

VOCs AND PERCHLORATE
IN SHALLOW GROUNDWATER
LHAAP-17 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00089148



NOTES:

1. All concentrations are reported in micrograms per liter (µg/L).
2. ND - non detect
3. MCL - maximum contaminant level
4. TCE - trichloroethene
5. MC - methylene chloride
6. 17WW11 is included in the shallow zone plume.

LEGEND

- Shallow Monitoring Well
- Shallow/Intermediate Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- Stream
- Road
- Site
- TCE Plume (MCL = 5 µg/L)

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TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-3
VOCs AND PERCHLORATE
IN INTERMEDIATE GROUNDWATER
LHAAP-17 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

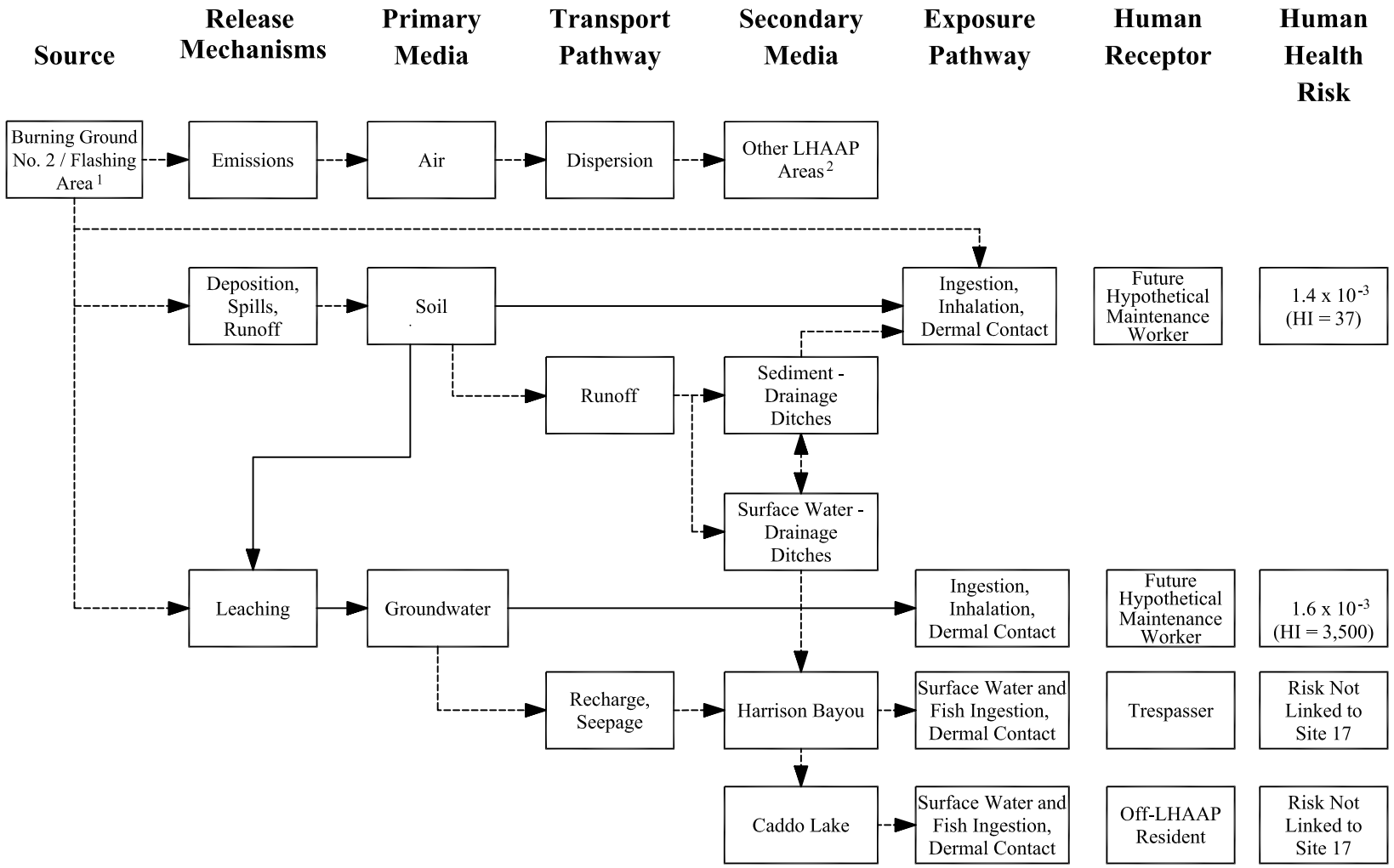
OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
Houston, TX	B. Lu 04/07/09	V. Vangala 03/24/09	P. Srivastav 04/07/09	T:\GIS\Longhorn\MyWKS\MXD\Site2917\17_InGW_Contam_Mar2009.mxd

Plot Date: 03/09

00089150

PLOT DATE: 12/09/08
FORMAT REVISION 5/13/02

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	---	Houston, Texas	L. JONES	02/17/09	D. CRISPO	02/17/09	P. SRIVASTAV	02/17/09	117591-A48



Pathway considered for remediation

Pathway *not* considered for remediation

Notes:

1. The waste residues were reportedly removed in 1984. Site characterization occurred after removal.

2. Contaminants (e.g., dioxins) dispersed via air emissions to other LHAAP sites are addressed in the CERCLA documentation for those sites. No gross contamination by dioxins has been encountered at Longhorn AAP.

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TULSA, OKLAHOMA

FIGURE 2-4
HUMAN HEALTH CONCEPTUAL SITE MODEL
LHAAP-17 FEASIBILITY STUDY
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00089151

PLOT DATE: 12/09/08
FORMAT REVISION

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
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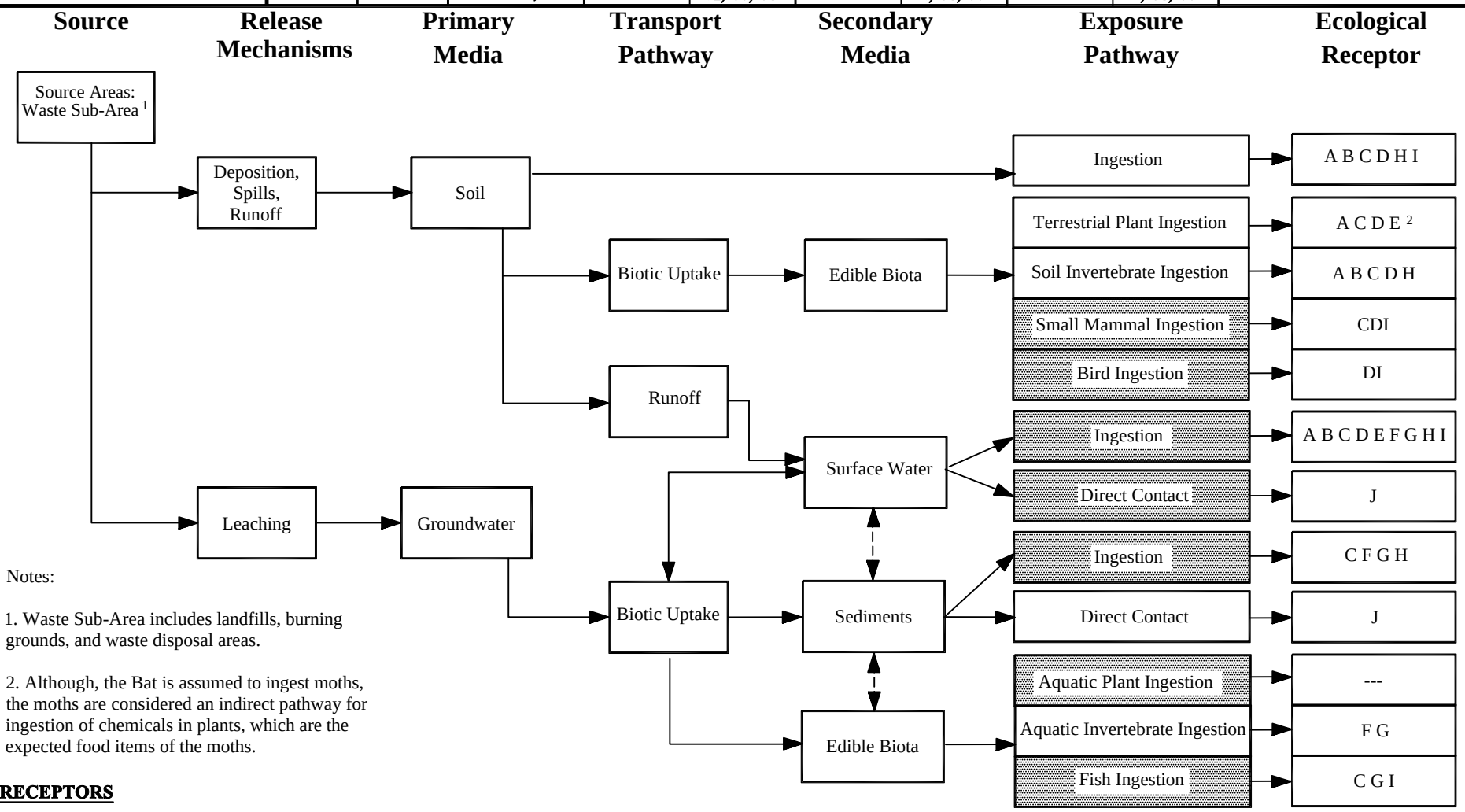

Notes:

1. Waste Sub-Area includes landfills, burning grounds, and waste disposal areas.

2. Although, the Bat is assumed to ingest moths, the moths are considered an indirect pathway for ingestion of chemicals in plants, which are the expected food items of the moths.

RECEPTORS

A. Deer Mouse
B. Short-Tailed Shrew
C. Racoon (& Racoon [Louisiana Black Bear])
D. Red Fox
E. Townsend's Big-Eared Bat
F. Bank Swallow
G. Belted Kingfisher
H. American Woodcock
I. Red-Tailed Hawk
J. Aquatic Life (benthic invertebrates)

--- = All receptors exposed to this pathway were determined not to be of concern.

Shaded cells indicate pathways that were not identified as significant, are background related, or were refined via site-specific investigations.

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U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

Figure 2-5

Ecological Conceptual Exposure Model LHAAP-17 Feasibility Study

Longhorn Army Ammunition Plant
Karnack, Texas

3.0 Remedial Action Objective and Remediation Goals

This section identifies the LHAAP-17 RAOs **(Section 3.1)**, potential chemical-, location- and action-specific ARARs **(Section 3.2)**, and preliminary remediation goals (cleanup levels) **(Section 3.3)**. The RAOs identify the general goals or end points that the remediation will accomplish, while the cleanup levels identify specific cleanup standards for each medium of concern based on risk or ARARs. The preliminary cleanup levels may be applied to individual contaminants.

3.1 Remedial Action Objective

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 models (**Section 2.4.3**), the primary environmental issues at LHAAP-17 are:

- Soil that poses an unacceptable risk or hazard to the hypothetical future maintenance worker from explosive compounds 2,4,6-TNT, 2,4-DNT and 2,6- DNT and has the potential to impact the groundwater.
- Groundwater that poses an unacceptable risk or hazard to the hypothetical future maintenance worker from contamination by VOCs (TCE, 1,1-DCE, and 1,2-DCA) and perchlorate has the potential to adversely impact human health.
- Surface soil that poses a risk to ecological receptors from concentrations of explosives and barium (near 17SS22 and 17SD07), barium (17SD04, 17SD08 and 17SD11), and dioxins (17SD12).

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, and ecological risk is also a concern at LHAAP-17.

RAOs have been established within this FS to address the soil and groundwater contamination associated with LHAAP-17. The Army recognizes USEPA's policy to return usable water to its potential beneficial use, based upon the non-binding programmatic expectation in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Based on these considerations and the affected areas discussed above, the RAOs for LHAAP-17 are as follows:

- Protect human health for the hypothetical future maintenance worker by preventing exposure to contaminants in the soil and groundwater.
- Prevent migration of contaminants to groundwater from potential sources in the soil.
- Protect ecological receptors by preventing exposure to the contaminated soil.

- Return groundwater to potential beneficial use, wherever practicable, within a reasonable time period given the particular site circumstances.

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-17 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, 1989a), 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 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.

In addition to ARARs, 40 CFR 300.400(g)(3) states that federal or state nonpromulgated advisories or guidance may be identified as to-be-considered (TBC) guidance for contaminants, conditions, and/or actions at the site. TBCs include non-promulgated criteria, advisories, guidance, and proposed standards. TBCs are not ARARs because they are neither promulgated nor enforceable. TBCs may be used to interpret ARARs and to determine preliminary remediation goals when ARARs do not exist for particular contaminants or are not sufficiently protective to develop cleanup levels. TBCs, such as guidance or policy documents, developed to implement regulations may be considered and used where necessary to ensure protectiveness.

Potential TBCs evaluated as part of this investigation are listed in **Tables 3-1**, **3-2**, and **3-3** and are discussed herein.

Chemical-specific requirements are discussed in **Section 3.2.2**; **Table 3-1** includes a narrative listing of chemical-specific ARARs/TBCs for LHAAP-17. Location-specific ARARs/TBCs for the sensitive resources potentially identified at LHAAP are discussed in **Section 3.2.3** and listed in **Table 3-2**. Action-specific ARARs/TBCs are discussed in **Section 3.2.4** and are listed and grouped by component action in **Table 3-3**.

3.2.2 Chemical-Specific ARARs

This section identifies the chemical-specific ARARs that apply to soil and groundwater at LHAAP-17. These ARARs are summarized in **Table 3-1**.

3.2.2.1 Chemical-Specific ARARs for Soil

There are no federally promulgated chemical-specific ARARs for soil. For LHAAP, the TCEQ Texas Risk Reduction Rules are promulgated state standards and include soil MSCs for industrial use based on inhalation, ingestion, and dermal contact (SAI-Ind). The MSCs are relevant and appropriate to use as preliminary remediation levels to minimize the carcinogenic risk and non-carcinogenic hazard posed by the contaminated soil to the hypothetical future maintenance worker. The chemical-specific ARARS for soils, where applicable, are listed in **Table 3-1**.

3.2.2.2 Chemical-Specific ARARs for Air

Contaminants emitted into the air during remediation must meet certain chemical-specific requirements for fugitive particulate matter and opacity. Since the emissions would be a result of a proposed action, they are addressed as action-specific ARARs in **Section 3.2.4**.

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.

3.2.2.4 Chemical-Specific ARARs for Groundwater

The human health risk assessment (Jacobs, 2002) indicated that the contaminated groundwater at LHAAP-17 presented an unacceptable risk and hazard to a hypothetical future maintenance worker. 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 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)]. LHAAP is being addressed using the Risk Reduction Standards (RRSs) (30 Texas Administrative Code [TAC] 335.551 through 335.569). The RRSs 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 RRSs that provide cleanup levels 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-17 which identified COCs in groundwater that potentially pose carcinogenic risk and non-cancer hazard to the hypothetical future maintenance worker. These identified COCs, with the exception of perchlorate, have MCLs. Thus, the cleanup goal for groundwater will be the MCLs which meet health-based standards and criteria. For perchlorate, the medium-specific concentration provided under Texas Risk Reduction Rules (30 TAC 335.551 through 335.569) is used since an MCL is not available.

3.2.3 Potential Location-Specific ARARs

This section identifies the potential location-specific ARARs that may apply to LHAAP-17. These ARARs are summarized in **Table 3-2**.

3.2.3.1 Prehistoric and Historic Archaeological Sites and Paleontological Resources

Although unlikely, in the event that significant archaeological or paleontological resources are discovered during remedial action activities at LHAAP-17, the federal National Historic Preservation Act (16 United States Code [USC] 470 et seq.) and Texas regulations for the protection of archaeological and cultural resources (13 TAC 15 and 13 TAC 25) would provide location-specific ARARs. These ARARs are included in **Table 3-2** to address this contingency. Texas regulations require that such discovered resources be surveyed, designated, and protected in accordance with relevant federal rules, regulations, standards, and guidelines.

Although highly unlikely, in the event that any historic cemeteries are discovered at LHAAP-17, certain provisions of Title 8, Texas Health and Safety Code, Chapters 711–715, may provide location-specific ARARs. For example, if an unknown or abandoned cemetery is discovered, Chapter 711.010 prohibits further construction or activity until the disturbed human remains are removed.

3.2.3.2 Traditional Resources

A preliminary survey for significant Native American resources within the boundary of LHAAP has been conducted and indicates the presence of Native American resources on the property. Members of the Caddo Lake Indian Tribe have visited LHAAP, attended meetings, and expressed interest in and concern for the Native American resources on the site. In addition, discussions were held about establishing Native American educational displays covering the historical aspects of LHAAP property. The federal Native American Graves Protection and

Repatriation Act (25 USC Section 3001) and its implementing regulations (43 CFR 10.4[c]) are location-specific ARARs for the protection of such resources. These regulations require that activities in any area where such resources are discovered be stopped and reasonable effort be taken to secure and protect the objects discovered.

3.2.3.3 Historic Structures

A cultural resources survey conducted in 1992 identified 16 archeological sites and three historic cemeteries at LHAAP, seven of which were determined ineligible for inclusion on the National Register of Historic Places (the remaining nine determinations are pending). Although there is a high probability that additional historic properties are present, it is considered unlikely that any of these properties would be located at LHAAP-17.

3.2.3.4 Threatened and Endangered Species

No endangered species are known to occur on the installation. There are 22 animal species that could potentially be present on or near LHAAP that appear on federal or state threatened and endangered species lists. The historic details regarding the number and date of species sightings are presented in the Caddo Lake Institute (CLI) report (CLI, 1995). Of the 22 animal species that could potentially be present, information received from USFWS (USFWS, 2003) and Texas Department of Parks and Wildlife (Texas Department of Parks and Wildlife, 2003) identified the following list of threatened species that are known or suspected and/or have been confirmed (shown in italics) in the vicinity of the LHAAP (Shaw 2007b):

Federal Listed Threatened Species:

- *Bald Eagle*
- Louisiana Black Bear

State Listed Threatened Species:

- Louisiana Black Bear
- *Rafinesque's Big-Eared Bat*
- *Alligator Snapping Turtle*
- Timber Rattlesnake (see text below)
- Bluehead Shiner

State Species of Concern:

- Southern Lady's Slipper

State Special Features/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.

Some conflicting 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, but there is no recent documented evidence of this species being present on site (Shaw, 2007b).

Therefore, it is assumed for the ARAR evaluation that the Timber Rattlesnake is potentially present, along with the Alligator Snapping Turtle as well as the Bald Eagle and the Rafinesque's Big-Eared Bat. Timber rattlesnakes prefer moist lowland forests and hilly woodlands or thickets near permanent water sources such as rivers, lakes, ponds, streams and swamps where tree stumps, logs and branches provide refuge. Alligator snapping turtles prefer deep waters of ponds, canals, lakes, streams, or swamps where they spend most of their time concealed by mud. Bald eagles in Texas may either represent breeding populations or wintering populations, and tend to roost on large lakes and rivers with tall trees for nesting and unobstructed flight paths to food sources (typically fish). Although Rafinesque's big-eared bats roost in cave entrances, abandoned buildings and under bridges, the preferred roosting sites for these bats are large, dead, hollow trees. Timber Rattlesnakes have not been observed at the Installation by resident wildlife experts, and large water bodies with deep pools required by alligator snapping turtles are not present at this site. Common bat roosting locations, such as dead tree snags and abandoned buildings are not features at this site, and no bald eagle nests are documented as being present in this area. Furthermore, although the site may be used occasionally by bald eagles or Rafinesque's big-eared bats during migration or as part of a foraging territory, this site is too small (85 acres) for regular exposure to occur for these species, which have home ranges of hundreds of acres. The potential for these threatened species to be present at LHAAP-17 is low.

Thus, based on current information, potential remedial action alternatives are not expected to harm any federal- or state-listed threatened or endangered species or their critical habitat. The requirements of the federal Endangered Species Act (16 USC 1531 et seq.), the federal Bald Eagle Protection Act (16 USC 668 et seq.), and the Texas Resource Protection Act (31 TAC 69, Subchapters A and B, and 31 TAC 65, Subchapter G) would be location-specific ARARs in the event that such species or habitats could be impacted by any proposed remedial alternatives. These ARARs are included in **Table 3-2** in the event that such threatened species/habitats are identified at LHAAP-17 in the future.

3.2.3.5 Sensitive Habitats

A sensitive habitat is defined within the CERCLA hazard ranking system (40 CFR 300, **Appendix A**) as one that contains an important biological resource or a particularly fragile resource. Wetlands are specifically included as a type of sensitive habitat. Other sensitive

habitats include plant communities of unusual or limited distribution and important seasonal-use areas for wildlife (e.g., migration routes, breeding areas, or crucial winter habitat).

Although there are low-lying wetland areas associated with Goose Prairie Creek, Central Creek, Saunder's Branch, and Harrison Bayou, no formal wetlands survey has been conducted at the LHAAP specifically (USACE, 1992; Jacobs, 2001). Nearby Caddo Lake, however, into which LHAAP surface waters flow is part of the Big Cypress Bayou, which is considered a wetland of international significance. Adverse impacts to any identified wetlands located at LHAAP or to the Caddo Lake/Big Cypress Bayou wetland system from remedial actions at LHAAP-17 must be avoided to the extent practicable. If identified wetlands will be impacted and wetland mitigation is required, Title 12, Chapter 221 (*Wetlands Mitigation*) of the Texas Code, as well as the federal standards for wetland mitigation, may provide location-specific ARARs. These requirements will be evaluated during the final ROD stage as further site-specific data are collected and the preferred alternative is proposed and evaluated.

The Fish and Wildlife Coordination Act (16 USC 661 et seq.) requires that the effects of water-related projects that modify, divert, or control waters, including drainage activities, be considered with a view to preventing loss of and damage to such resources. This act may provide ARARs if groundwater diversion or treatment activities will impact groundwater-to-surface-water drainage patterns such that fish or wildlife may be adversely affected.

3.2.3.6 Floodplains

Executive Order 11988 *(Floodplain Management*, May 24, 1997) requires evaluation of potential effects of actions in floodplains, consideration of flood hazards, and that floodplain management is ensured. If action is taken in floodplains, the order requires consideration of alternatives that avoid adverse effects and incompatible development and minimize potential harm. This order, as summarized in **Table 3-2**, is TBC guidance for LHAAP-17 remedial activities since the site is within the 100-year flood plain.

3.2.4 Potential Action-Specific ARARs

Potential 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-17.

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-17 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-17 will involve several of the following activities: waste generation, characterization, management, storage, and disposal activities; land use controls (LUCs) and long-term monitoring (LTM). Action-specific ARARs are discussed here for the activities common to the remedial activities to be proposed for LHAAP-17.

3.2.4.1.1 Site Preparation, Construction, and Excavation Activities

Certain on-site preparation, construction, and/or excavation activities will be necessary under all remediation actions to prepare the site for remediation, including the soil-moving or site-grading activities. Control of fugitive emissions and storm water runoff during implementation of these activities will be required.

Airborne particulate matter resulting from construction or excavation activities is subject to the fugitive dust and opacity limits listed in 30 TAC 111, Subchapter A. No person may cause, suffer, allow, or permit visible emissions from any source to exceed an opacity of 30 percent for any 6-minute period (30 TAC 111.111[a]). Reasonable precautions must also be taken to achieve maximum control of dust to the extent practicable, including the application of water or suitable chemicals or the complete covering of materials (30 TAC 111.143 and 30 TAC 111.145).

Texas has also promulgated general nuisance rules for air contaminants mandating that no person shall discharge from any source whatsoever one or more air contaminants, or combinations thereof, in such concentration and of such duration as are or may tend to be injurious to or to adversely affect human health or welfare, animal life, vegetation, or property, or as to interfere with the normal use and enjoyment of animal life, vegetation, or property (30 TAC 101.4).

Storm water discharges from construction activities that disturb equal to or greater than one acre of land must comply with the substantive requirements of a USEPA National Pollutant Discharge Elimination System (NPDES) general permit (40 CFR 122.26; 30 TAC 205, Subchapter A; and 30 TAC 308.121), depending on the amount of acreage disturbed. Substantive requirements include implementation of good construction management techniques; phasing of large construction projects; minimal clearing; and sediment, erosion, structural, and vegetative controls to mitigate runoff and ensure that discharges meet required parameters.

3.2.4.1.2 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 [PPE], 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 Resource Conservation and Recovery Act (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 of 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.

Excavated environmental media including soil excavated during the installation of monitoring wells would be sent off site for disposal or, in the case of non-hazardous trenching or well construction soil, redeposited within the area of contamination (AOC). The USEPA defines "onsite" as the lateral extent of contamination and all suitable areas in close proximity to the contamination necessary for the implementation of the CERCLA response action and notes that such contamination may contain varying types and concentrations of hazardous substances (53 Federal Register (FR) 51444; 55 FR 8758). The soil generated from remedial activities at LHAAP-17 is expected to be hazardous. ARARs for the management of such media at the site of generation (i.e., within the AOC) are listed in **Table 3-3**. Other requirements for hazardous waste such as manifesting for off-site disposal (40 CFR 262.20) and planning/implementing off-site response action (40 CFR 300.440) will be complied with even though they are not considered an ARAR.

The USEPA has stated that excavation and redeposition of contaminated soil within an AOC does not constitute "generation"; therefore, the requirements of 40 CFR 262.11 and 268.7 to characterize generated wastes are not applicable (Office of Solid Waste and Emergency Response Directive 9441.1992[16], June 11, 1992). Consolidation of waste between AOCs for treatment or disposal, however, or excavation and treatment with subsequent disposal in the same AOC or off-site disposal constitute "placement." In these situations, RCRA Subtitle C requirements for the generation, handling, treatment, and disposal of such wastes are applicable if the waste/media is determined to contain RCRA hazardous waste (Volume 55, FR, page 8758).

3.2.4.1.3 Land Use Controls and Long-Term Monitoring

Some combination of restrictive covenants, administrative controls, physical barriers, physical surveillance or other controls, in combination with LTM of groundwater, would be necessary under all remedial alternatives to restrict access to contamination and protect human health and the environment because none of the actions will completely remove all of the groundwater contamination to levels that would allow unrestricted access and use of the groundwater.

When engineering or LUC measures are required to protect human health and the environment, 30 TAC 335.565 requires compliance with the identified post-closure care requirements and deed recordation of the facility in accordance with Sections 335.566(b) through (e). The deed

recordation must include a description of post-closure measures required and any LUCs placed on the future use of the property, as well as a metes and bounds description of the tract of land. Since there is no deed for federal land, when the Army transfers the land to USFWS, a recordation of the LUC, as required by the State of Texas, will accompany the transfer. If the land is transferred from a federal entity to a non-federal entity, it is transferred by deed. Some or all of these requirements may be ARARs for this remedial action; the specific combination of controls negotiated for this action would be listed in a signed ROD.

3.2.4.1.4 Well Construction

All of the proposed alternatives, other than the no action alternative, 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.

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-17 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.

3.2.4.1.5 Water Treatment

Contaminated groundwater and wastewaters collected during well drilling, groundwater extraction or decontamination activities could be transported to the on-site water treatment facility constructed as a component of the previous interim remedial action at other LHAAP sites (LHAAP-18/24) and would subsequently be discharged in compliance with the CWA outfall limits for the facility as listed in the ROD. 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 water 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 (53 FR 34079, September 2, 1988).

3.3 Preliminary Remediation Goals

The RAO for LHAAP-17 listed in **Section 3.1** allow for a range of response action. For a response action that leaves contamination in place, LUCs would be needed in combination with the response action in order to prevent exposure. For a response action that removes the contamination, preliminary remediation goals would be needed to determine when sufficient contamination has been removed. Preliminary remediation goals or cleanup levels are the concentrations for individual chemicals in soil and groundwater above which some remediation or control measures would be required. The preliminary remediation goals for soil and groundwater at LHAAP-17 are determined with consideration of the risk to human health, the risk to ecological receptors, and the ARARs identified for the site in **Section 3.2.2**.

3.3.1 Soil

The locations of soil contamination that poses a human health hazard or risk or an ecological hazard, is presented in **Figure 2-1**. **Table 3-4** presents the preliminary cleanup level for the target contaminants.

3.3.2 Groundwater

The cleanup levels for groundwater at LHAAP-17 are the MCLs (when available) and the TCEQ GW-Ind (TCEQ, 2006) for chemicals without MCLs. Groundwater with an unacceptable risk or hazard is present at LHAAP-17 primarily due to TCE and perchlorate. Some of the chemicals (e.g., TCE) have degradation products with MCLs, and those degradation products have also been identified as COCs. **Table 3-5** summarizes the COCs and the preliminary cleanup levels for groundwater.

Table 3-1
Potential Chemical-Specific ARARs/TBCs

Citation	Activity or Prerequisite/Status	Requirement
Surface/Subsurface Soils		
TCEQ Texas Risk Reduction Rules 30 TAC 335.558 and 335.559(d)(2)	Ensures adequate protection of human health and the environment from potential exposure to contaminants associated with releases – **relevant and appropriate** for remediation of contaminated soil for cross-media contamination pathways such as soil to groundwater and for hypothetical future maintenance workers.	Near surface (i.e., 0-2 feet bgs) non-residential (industrial) soils shall conform to the non-residential soil MSCs (SAI-Ind) based upon worker ingestion of soil, inhalation of particulates and volatiles and the non-residential soil-to-groundwater cross media protection concentration. The concentration of contamination in soil shall not exceed the non-residential soil-to-groundwater cross media (GWP-Ind). See **Table 3-4** for specific numeric criteria.
Groundwater		
Federal Safe Drinking Water Act MCLs/Non-Zero MCLGs 40 CFR 141	Applicable to drinking water at the tap—**relevant and appropriate** for water that could potentially be used for human consumption.	Must not exceed MCLs/non-zero MCLGs for water designated as a current or potential source of drinking water. See **Table 3-5** for specific numeric criteria.
TCEQ Texas Risk Reduction Rules 30 TAC 335	Applicable to industrial groundwater—**relevant and appropriate** for 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 3-5** for specific numeric criteria.

Abbreviations

ARAR applicable or relevant and appropriate requirement
bgs below ground surface
GWP-Ind soil MSC for industrial use base on groundwater protection
MCL maximum contaminant level
MCLG maximum contaminant level goal
MSC medium-specific concentration
SAI-Ind soil MSC for industrial use based on inhalation, ingestion, and dermal contact
TAC Texas Administrative Code
TBC to-be-considered [guidance]
TCEQ Texas Commission on Environmental Quality

Table 3-2
Potential Location-Specific ARARs/TBCs

Resource/Citation	Activity or Prerequisite Status	Requirement
Preservation of Archaeological and Paleontological Artifacts National Historic Preservation Act (16 USC 470 et seq.); 43 CFR 7.5(b)(1); 36 CFR 800; 13 TAC 15; 13 TAC 25	Excavation activities that inadvertently discover such archaeological or paleontological resources—applicable if such resources are discovered. No known archaeological or paleontological resources are located at LHAAP-17.	Action must avoid irreparable harm, loss, or destruction of such resources if discovered. Such resources must be surveyed, designated, and protected in accordance with relevant federal rules and regulations, standards, and guidelines, as these are adopted by the Texas Historical Commission.
Preservation of Native American Artifacts Native American Graves Protection and Repatriation Act (25 USC Section 3001); 43 CFR 10.4(c) and (d)	Excavation activities that inadvertently discover such Native American resources—applicable if such resources are discovered. No known Native American resources are located at LHAAP-17.	Activities in the area of the discovery must be stopped and reasonable effort taken to secure and protect the objects discovered.
Protection of Threatened and Endangered Species Endangered Species Act (16 USC 1531 et seq.); 50 CFR 402; Bald Eagle Protection Act (16 USC 668 et seq.); Texas Resource Protection Act, 31 TAC 69 Subchapters A and B, and 31 TAC 65 Subchapter G	Activities that may adversely impact any state- or federally-listed, threatened or endangered species or their habitat—applicable if such species and/or habitats are impacted.	Actions that jeopardize the existence of a listed species or result in the destruction or adverse modification of critical habitat must be avoided, or reasonable and prudent mitigation measures must be taken. No person may take, possess, propagate, transport, export, sell or offer for sale, or ship any species of fish, wildlife, or native plant listed by the Texas Parks and Wildlife Department as endangered or threatened. The Department shall actively seek full restitution for and/or restoration of such a native plant, fish, or wildlife, or habitat loss occurring as a result of human activities.
Protection of Fish and Wildlife Resources Fish and Wildlife Coordination Act (16 USC 661 et seq.)	Action that impounds, modifies, diverts, or controls waters, including navigation and drainage activities—applicable.	The effects of water-related projects on fish and wildlife resources and their habitat should be considered with a view to the conservation of fish and wildlife resources by preventing loss of and damage to such resources.
Protection of Caddo Lake National Wildlife Refuge System National Wildlife Refuge System Act (16 USC 668dd-668ee); 50 CFR 35; 31 TAC 69.19	Activities that may adversely impact or cause harm/loss of protected fish, wildlife and/or habitat in such protected areas—relevant and appropriate to impacted areas that will become part of the designated national wildlife refuge system.	The taking, disturbance, injury, or damage to any protected plant or animal on a national wildlife refuge is prohibited. The disposal of waste except at designated/approved points or locations or the polluting of any waters, streams, or other areas within any national wildlife refuge is prohibited. Restitution for and/or restoration of fish, wildlife, and habitat loss occurring as a result of human activities is required; appropriate measures include, but are not limited to, direct replacement of fish, wildlife, and/or habitat destroyed.
Protection of Wetlands Section 404 of the Clean Water Act (33 USC 1344); 40 CFR 230.10(a) and (d); Swampbuster Provision of the Food Security Act; Executive Order 11990, "Protection of Wetlands"	Actions that involve the discharge of dredged or fill material into jurisdictional wetlands or actions that have a potential adverse impact to, or take place within, wetlands—applicable if delineated wetlands are present at the site and will be adversely impacted by the action. No delineated wetlands are present at LHAAP-17.	No discharge of dredged or fill material into an aquatic ecosystem is permitted if there is a practicable alternative that would have less adverse impact. No discharge of dredged or fill material shall be permitted unless appropriate and practicable steps per 40 CFR 230.70 et seq have been taken, which will minimize potential impacts of the discharge on the aquatic ecosystem.

Table 3-2 *(continued)*
Potential Location-Specific ARARs/TBCs

Resource/Citation	Activity or Prerequisite Status	Requirement
Protection of Floodplains Executive Order 11988 (*Floodplain Management*, May 24, 1997)	Activities which involve federally undertaken, financed, or assisted construction and improvements or which involve conducting federal activities and programs affecting land use—**applicable** if floodplains will be impacted by the remedial action.	Action shall be taken to reduce the risk of flood loss, minimize the impact of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values of floodplains. The potential effects of actions in floodplains shall be evaluated, and consideration of flood hazards and floodplain management ensured. Since LHAAP-17 is within the 100-year floodplain, alternatives that avoid adverse effects and incompatible development and minimize potential harm shall be considered.
Texas Cemetery Laws Title 8 Texas Health and Safety Code, Chapters 711-715; Chapter 711.010	Activities that may uncover or disturb human remains—**applicable** if human remains are discovered.	Prohibits further construction or activity until the disturbed human remains are removed.
Historic Structures Law National Historic Preservation Act (16USC47D et seq.); 43CFR7.5(b)(1); 36CFR800; 13TAC15; 13TAC25	Activities that may inadvertently discover or disturb historic structures—**applicable** if historic properties are found to be present.	Such resources must be surveyed, designated, and protected in accordance with relevant federal rule and regulations, standards, and guidelines.
Requirements for Hazardous Waste Facilities in Floodplains Resource Conservation and Recovery Act (RCRA) 40 CFR 264.18(b)	If excavated soil is found to constitute RCRA hazardous waste, these requirements are **relevant and appropriate** since LHAAP-17 is located within a 100-year floodplain. However, it is not anticipated that the excavated soil will be classified as hazardous.	A hazardous waste treatment, storage, or disposal facility used for remediation waste and located in the 100-year floodplain must be designed, constructed operated, and maintained to prevent washout of such waste by a 100-year flood unless owner/operator show that procedures are in effect to remove waste safely before flood water can reach the facility.

Abbreviations:

ARAR applicable or relevant and appropriate requirement
CFR Code of Federal Regulations
FS feasibility study
LHAAP Longhorn Army Ammunition Plant
TAC Texas Administrative Code
TBC to-be-considered (guidance)
USC United States Code

Table 3-3
Potential Action-Specific ARARs/TBCs

Citation	Activity or Prerequisite/Status	Requirement
General Site Preparation, Construction, and Excavation Activities		
Air Contaminants – General Nuisance Rules 30 TAC 101.4	Emissions of air contaminants—applicable.	No person shall discharge from any source whatsoever one or more air contaminants or combinations thereof, in such concentration and of such duration as are or may tend to be injurious to or to adversely affect human health or welfare, animal life, vegetation, or property, or as to interfere with the normal use and enjoyment of animal life, vegetation, or property.
Opacity Standard 30 TAC 111.111(a)(8)(A)	Fugitive emissions from land-disturbing activities (e.g., excavation, construction)—applicable.	Visible emissions shall not be permitted to exceed opacity of 30% for any 6-minute period from any source.
Fugitive Particulate Matter Standard 30 TAC 111.145	Fugitive emissions from land-disturbing activities (e.g., excavation, construction)—applicable.	No person may cause, suffer, allow, or permit a structure, road, street, alley or parking area to be constructed, altered, repaired, or demolished, or land to be cleared without taking at least the following precautions to achieve control of dust emissions: • Use of water or of suitable oil or chemicals for control of dust in the demolition of structures, in construction operations, in work performed on a road, street, alley, or parking area, or in the clearing of land; and • Use of adequate methods to prevent airborne particulate matter during sandblasting of structures or similar operations.
Storm water Runoff Controls 40 CFR 122.26; 30 TAC 205, Subchapter A; 30 TAC 308.121	Storm water discharges associated with construction activities—applicable to disturbances of equal to or greater than 1 acre of land.	Good construction management techniques, phasing of construction projects, minimal clearing, and sediment, erosion, structural, and vegetative controls shall be implemented to mitigate storm water run-on/runoff.
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.	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.

Table 3-3*(continued)*
Potential Action-Specific ARARs/TBCs

Citation	Activity or Prerequisite/Status	Requirement
Management of RCRA Hazardous Waters—Wastewater Treatment Unit Exclusion 40 CFR 264.1(g)(6) 40 CFR 270.1(c)(2) 30 TAC 335.41(d)(1)	Treatment/disposal of wastewater containing RCRA hazardous waste—**applicable** to management of contaminated groundwater if it is determined to contain RCRA characteristically hazardous waste.	On-site wastewater treatment units, as defined in 40 CFR 260.10, that are part of a wastewater treatment facility subject to regulation under Section 402 or Section 307(b) of the CWA are excluded from the requirements of RCRA Subtitle C (Note: USEPA has clarified that this exemption applies to all tank systems, conveyance systems, and ancillary equipment, including transfer trucks, associated with the wastewater treatment unit [53 FR 34079, September 2, 1988]).
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.
Requirements for the Use and Management of Containers 40 CFR 264.171–264.173 30 TAC 335.69(e) 30 TAC 335.152(a)(7)	On-site storage/treatment of RCRA hazardous waste in containers for greater than 90 days—**applicable** if hazardous waste is generated (e.g., PPE) and is stored in containers.	Design and operating standards of 40 CFR 264.175(c) and 40 CFR 264.171, 264.172, and 264.173(a) and (b) must be met for the use and management of hazardous waste in containers.
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.
Injection Wells		
Underground Injection Control, Standards for Class V Wells 30 TAC 331.131 to 133 Subchapter H	Installation, operation, and closure of injection wells for in situ chemical oxidation 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.
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 parts per million (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.

Table 3-3*(continued)*
Potential Action-Specific ARARs/TBCs

Citation	Activity or Prerequisite/Status	Requirement
		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		
Requirements for Closure of a RCRA Container Storage Area 40 CFR 264.111 40 CFR 264.178 30 TAC 335.152(a)(5) 30 TAC 335.152(a)(7)	Closure of a RCRA-permitted container storage area—**applicable** if hazardous waste is generated (e.g., PPE) and is stored in containers.	Must close unit in a manner that • Minimizes the need for further maintenance; • Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to ground or surface waters or to the atmosphere; and • Complies with closure requirements of 40 CFR 178. All hazardous waste and residues must be removed from containment system. Remaining containers, liners, bases, and soil containing or contaminated with hazardous waste or residues must be decontaminated or removed.
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.
Post-Closure Care and Land Use Controls		
Land Use Controls when Hazardous Substances are Left in Place 30 TAC 335.565 30 TAC 335.566	Hazardous substances left in place on contaminated property—**relevant and appropriate**.	Where engineering or land use control measures are required to protect human health and the environment, they must comply with the identified post-closure care requirements and deed recordation of the facility in accordance with Section 335.566. Must record in the deed records of the county or counties in which the activities take place the information specified in Sections 335.566(b) through (e): • Description of post-closure measures required, • Description of any land use or legal controls placed on the future use of the property, • Metes and bounds description of the tract of land, and • Statement that pertinent information and documents are available for inspection.

Table 3-3*(continued)*
Potential Action-Specific ARARs/TBCs

Notes and Abbreviations:

ARAR	*applicable or relevant and appropriate requirement*
CFR	*Code of Federal Regulations*
CWA	*Clean Water Act of 1972*
USEPA	*U.S. Environmental Protection Agency*
FR	*Federal Register*
FS	*feasibility study*
lb/gal	*pound per gallon*
LHAAP	*Longhorn Army Ammunition Plant*
%	*percent*
PPE	*personal protective equipment*
ppm	*part per million*
RCRA	*Resource Conservation and Recovery Act of 1976*
TBC	*to-be-considered*
TAC	*Texas Administrative Code*

Table 3-4
Preliminary Cleanup Levels for Target COCs/COPECs in Soil at LHAAP-17

Targeted for Remediation	SAI-Ind (mg/kg)	GWP-Ind (mg/kg)	SS Eco PRG (mg/kg)	TS Eco-PRGs (mg/kg)	Preliminary Cleanup Level[a] (mg/kg)
COCs / COPECs	0-2 feet	Vadose Zone	0 -0.5 feet	0-3 feet	
2,4,6-Trinitrotoluene	510	5.1	–	4.7	4.7[b] 5.1[c]
2,4-Dinitrotoluene	4.2	0.042	–	12	0.042
2,6-Dinitrotoluene	4.2	0.042	2.7	6.8	0.042
Perchlorate (potential COC based on groundwater concentrations)	–	7.2	–	–	7.2
COPEC only					
2,3,7,8-TCDD[d]	–	–	4×10^{-6}	4×10^{-6}	4×10^{-6}
Barium	–	–	222	520	222[e] 520[c]

Notes and Abbreviations:

[a] *Unless otherwise noted, cleanup level applies to soil from surface to groundwater interface*

[b] *Applies from 0 to 3 feet below ground surface*

[c] *Applies from 3 feet below ground surface to groundwater interface*

[d] *Dioxin is evaluated based on 2,3,7,8-TCDD toxicity equivalent (TEQ) concentration. The EcoPRG for dioxin in soil is the background concentration, because the hazard-based EcoPRG was below background*

[e] *Applies from 0 to 0.5 feet below ground surface*

COC *contaminant of concern*
COPEC *contaminant of potential ecological concern*
EcoPRG *ecological preliminary remediation goal*
SS *surface soil*
TS *total soil*
GWP-Ind *soil medium specific concentration for industrial use based on groundwater protection*
mg/kg *milligrams per kilogram*
SAI-Ind *soil medium specific concentration for industrial use based on inhalation, ingestion, and dermal contact*

Table 3-5
Preliminary Cleanup Levels for Target COCs in Groundwater

COCs Targeted for Remediation	MCL (µg/L)	TCEQ RRS2 MSC GW-Ind (µg/L)
Anions		
Perchlorate	–	72
1,2-Dichloroethane	5	5
Volatile Organic Compounds		
1,1-Dichloroethene	7	7
Trichloroethene (TCE)	5	5
Cis-1,2-Dichloroethene (TCE degradation product)	70	70
Vinyl Chloride (TCE degradation product)	2	2

Notes and Abbreviations:

GW-Ind *groundwater MSC for industrial use*
MCL *Safe Drinking Water Act maximum contaminant level*
µg/L *micrograms per liter*
MSC *medium specific concentration*
RRS2 *Risk Reduction Rule Standard No. 2*
TCEQ *Texas Commission on Environmental Quality*

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-17 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 associated COCs **(Section 4.1)**
- Identify 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 remedial investigation/feasibility study (RI/FS) guidance (USEPA, 1988b) and the NCP.

4.1 Contaminants and Media Volumes of Concern

Section 2.0 presents a detailed description of site conditions at LHAAP-17. Based on available sampling data, soil and groundwater at LHAAP-17 have been identified as the media of concern because these media pose an unacceptable carcinogenic risk and non-carcinogenic hazard to a hypothetical future maintenance worker. The soil also poses an unacceptable hazard to ecological receptors. These contaminated media include:

- Explosives in soils at LHAAP-17 contribute an unacceptable human health risk and hazard and unacceptable ecological risk, as well as posing a potential for migration into groundwater. Contamination is primarily present from the surface to the groundwater interface with an estimated total volume of 7,900 cubic yards.
- Barium and dioxin in soil contribute an unacceptable ecological risk at LHAAP-17. The contamination is located within the areas of explosives contamination as well as several isolated areas. Maximum depth of excavation at the isolated areas will be 0.5 feet bgs for locations 17SD04, 17SD08 and 17SD11 for barium and 3 feet bgs for locations 17SD07 and 17SD12 for barium and dioxin respectively. The estimated volume for these areas is approximately 100 cubic yards.
- Dissolved plumes of VOC and perchlorate contamination exist in groundwater at LHAAP-17 that pose an unacceptable carcinogenic risk and non-carcinogenic hazard. The extent of contamination has been defined. VOC contamination exists in both the shallow and intermediate groundwater zones. Perchlorate contamination exists in the shallow groundwater zone only. The perchlorate plume in the shallow groundwater zone is approximately 4.5 million gallons and is collocated with the VOC plume. The VOC plume in the intermediate zone is approximately 55,000 gallons.

4.2 General Response Actions

GRAs are large groups of remedial actions that typically satisfy the RAO. The GRAs include no action, LUCs, containment, removal, treatment, and disposal. These GRAs may be combined to form remediation alternatives that meet the RAO. The following are descriptions of the GRAs:

- **No Action**—The no action GRA is retained throughout the FS process as required by the NCP. The no action alternative provides a comparative baseline against which other alternatives can be evaluated. Under this alternative no remedial action will be taken. The site is considered to be left "as is," with no LUCs, containment, removal, treatment, or other mitigating actions.
- **Land Use Controls**—LUCs include institutional and administrative controls that would reduce or eliminate access to the site. The volume, mobility, and toxicity of the contaminants are not reduced through the application of LUCs. LUCs are generally combined with other GRAs to meet the RAO.
- **Containment**—Another method of reducing risk to receptors is through containment, which reduces access to the contaminated medium or the migration potential of the contaminated medium. The contaminated medium must be isolated from the primary transport mechanisms such as precipitation migration through the soil column and groundwater flow. This isolation may be accomplished through capping of contaminated soils or the installation of subsurface barriers to prevent groundwater migration.
- **Removal**—Removal GRAs extract the contaminated medium from its present location and move it to an alternative location for treatment and/or disposal. These removal technologies can be selected to reduce exposure to receptors and can be used in conjunction with treatment processes.
- **In Situ Treatment**—In situ treatment GRAs or process options reduce the toxicity, mobility, or volume of the contaminated medium. Chemicals are added, physical properties of the medium are changed, or biological activity of the medium is modified without removal.
- **Ex Situ Treatment**—Ex situ treatment GRAs involve the reduction of toxicity, mobility, or volume of contaminated medium. Ex situ treatment processes are typically coupled with removal and disposal process options.
- **Disposal**—Disposal GRAs involve the discharge of the contaminated medium. Disposal process options are typically coupled with removal and treatment process options.

4.3 Screening of Technologies

This section presents the approach to technology and process option screening. In the technology screening process, GRAs are identified that, by themselves or in combination with other GRAs, could be implemented to meet the RAO established for LHAAP-17. Technologies associated with each GRA and process options associated with each technology are identified.

Process options that are not technically feasible for the site are eliminated (screened out) from further consideration. If all of the process options under a given technology are screened out, the entire technology is eliminated.

The technologies and process options are initially screened for technical applicability to identify those to be carried forward for further evaluation. The screening process reduces the number of possible process options for a given technology to a number that is appropriate for consideration at LHAAP-17. The following are the two general criteria used to determine if a technology or process option should be retained for further evaluation:

- Applicability to the type and combination of contaminants
- Applicability to the site's physical conditions

Figures 4-1 and **4-2** present the technologies and process options considered for LHAAP-17 soil and groundwater, respectively. Process options not considered technically applicable were not retained for further evaluation; the rationale for their elimination is shown in these figures.

4.4 Screening of Process Options

In this section, each of the process options retained from the initial screening in **Section 4.3 (Figures 4-1** and **4-2)** are further evaluated and screened. The process options that are remaining after evaluation will be selected and used in the development of the alternatives. Process options are evaluated using three criteria: effectiveness, implementability, and cost. Based on these criteria, representative process options are selected for each technology. The representative process options provide a basis for developing alternatives in the FS.

The general descriptions of the process options retained from the screening, along with the relevant aspects of effectiveness, implementability, and cost, are discussed. The effectiveness evaluation considers the following: (1) the potential effectiveness of process options in handling the estimated areas or volumes of the medium; (2) the contribution toward meeting any of the goals identified in the RAOs; (3) the potential impacts to humans and the environment during the construction and implementation phase; and (4) demonstration of the reliability of the process with respect to the contaminants and conditions at the site (USEPA, 1988).

The implementability evaluation considers both the technical and administrative feasibility of implementing a process option. Implementability concentrates on the difficulty of implementing the option, including the number of treatability studies required, the extent of innovative design required, and the extent of site preparation needed. Unusual equipment or unusual conditions for standard equipment may decrease the ease of implementation. The institutional aspects of implementability such as permitting and availability of services are also considered.

The cost plays a limited role in the screening of process options. The last evaluation focuses on the relative capital and operation and maintenance (O&M) costs required and is considered a deciding factor only when two alternatives are found to be equally protective. A ranking of high, medium, or low relative to other similar process options is given, each ranking considering both capital and O&M costs.

4.5 Evaluation and Selection of Representative Process Options

The process options within each technology type are evaluated using three criteria: effectiveness, implementability, and cost. Based on this evaluation, one or more representative process options are selected for each response action to be carried forward into the development of alternatives. The selection of representative process options for the development of alternatives does not eliminate the remaining process options from future consideration. Those process options not carried forward may be reconsidered during the development of the PP, ROD, or remedial design.

4.5.1 Soil

The soil process options will be evaluated to address explosives, dioxin and barium in the soil. The risks and hazards posed to hypothetical future maintenance workers and ecological receptors as well as the potential migration of contaminants to groundwater from residual contamination will be addressed.

4.5.1.1 No Action

The "no action" process option does not provide additional remediation, maintenance, or security activities at contaminated soil or sediment areas at LHAAP-17. The lack of LUCs can lead to receptor exposure to the contaminated soil or sediment. This process option is retained as a baseline with which other remediation alternatives are compared.

- **Effectiveness –** This response action could have negative long-term impacts on human health and the environment. Industrial use at LHAAP-17 would result in risks to humans from exposure to contaminated soil.
- **Implementability** – No implementation is required.
- **Cost** – None.

4.5.1.2 Land Use Controls

LUCs would be implemented to regulate access to soil and groundwater and include covenants/deed restrictions, administrative controls, and physical mechanisms. This process option controls exposure by restricting access and use of the contaminated soil and groundwater and also provides information needed to assess future conditions at the site. The LUC process option is applicable to the soil and groundwater at LHAAP-17. Notification of

industrial/recreational use will accompany all transfer documents and will be recorded in the County Courthouse. 5-year reviews will be performed to document that the land use remains consistent with the industrial/recreational exposure scenario evaluated in the risk assessment.

4.5.1.2.1 Access Controls

Access controls would be implemented to regulate access to the contaminated soil areas. The process options for access controls include covenants, administrative controls, and physical barriers/security.

Covenants. Future land use as industrial can be accomplished through modifications to the property deed or transfer documents. Restrictions can be placed on the use of the contaminated site to protect human health. Deed restrictions would be needed only if the Army releases the property to a non-federal entity. These restrictions are only effective as long as they are enforced by the property owners and local authorities. The Army is ultimately responsible for the enforcement of LUCs.

- **Effectiveness –** Covenants are effective, if enforced, in controlling human activities such as construction activities. These actions can limit or prevent exposure to contaminants remaining on the site after remediation and can be implemented on a temporary basis.
- **Implementability –** These options can be readily implemented.
- **Cost –** Low.

Administrative Controls. Administrative controls consist of the use of training or procedures to limit access to sites to control access to both surface and subsurface contamination. Permits for subsurface penetration or excavation can be used. Notices can be filed with local authorities defining the presence of hazardous waste. These are controls the Army can use while they maintain control of the site.

- **Effectiveness –** Administrative controls are effective in controlling human intrusion into contaminated areas during and after remediation. The training required for access to the site limits exposure as do procedures that limit certain activities in the vicinity of the wastes. Administrative controls can be used in conjunction with barriers and deed restrictions. This option is effective only while institutional controls are maintained. However, it is not effective for ecological receptors.
- **Implementability –** Training and procedures are readily available and implemented. They may need to be modified for LHAAP-17.
- **Cost –** Low.

Physical Mechanisms. Physical mechanisms include physical barriers intended to limit access to property, such as fences or signs. However, the future use of the site is to be a part of a national wildlife refuge under the USFWS. It is anticipated that restrictions and administrative controls will be adequate to control access to the contaminated groundwater and physical mechanisms will not be required.

- **Effectiveness –** Physical mechanisms are effective in controlling human intrusion into contaminated areas during and after remediation. This option is only effective as long as the mechanisms are maintained. However, it is not effective for ecological receptors.
- **Implementability –** This option is readily implemented with available equipment and personnel.
- **Cost –** Low.

4.5.1.2.2 Monitoring

Monitoring is used to assess the performance of remedial actions and verify compliance with the established RAOs. Process options for monitoring are physical surveillance.

Physical Surveillance. Visual and physical inspections of engineered remedial action components can detect physical changes (e.g., cracks in caps, erosion, unwanted vegetation, holes in fences, etc.) that may ultimately lead to the failure or unsatisfactory performance of that component. Repairs and/or revised maintenance activities can be implemented as a result of these inspections.

- **Effectiveness –** Physical surveillance is effective in determining the continued integrity of engineered systems and the need for repairs and/or replacement. Physical surveillance needs to be used with contaminant monitoring to assess the impact of integrity failure.
- **Implementability –** Physical surveillance is easily implemented. It requires experienced, but readily available personnel to make regular visits to the site for inspections. Existing engineered controls are currently being inspected.
- **Cost –** Low.

4.5.1.2.3 Summary of Land Use Control Process Options

Since LUCs will not protect the ecological receptors, they are not retained as a process option.

4.5.1.3 Containment

The containment GRA consists of technologies that limit the migration of contaminants and the associated potential for exposure, but they do not reduce contaminant mobility, toxicity, or

volume. The technology considered is capping and the process options include soil, asphalt or multilayer capping.

4.5.1.3.1 Capping

The capping technology is intended to minimize (1) infiltration of surface water/precipitation and subsequent leachate generation caused by percolation of water through the waste, (2) mobilization of contaminants through wind or water erosion, or (3) direct contact with surface or subsurface contamination by intruders or biota. The capping process options considered are soil covers, asphalt caps, and multilayer caps.

Soil Cover. Soil covers consist of a layer of soil placed over contamination. Vegetation is generally encouraged to limit erosion. The purpose of the cover is to prevent access or exposure to the contamination, but the cover does not control infiltration of water through the contamination. It is best used on contamination that is relatively insoluble or in combination with a treatment technology that renders the contamination insoluble.

- **Effectiveness –** A soil cover can be very effective at preventing access to explosives in surface soil. It is not applicable to deeper soil that already has a layer of clean soil between the contamination and the receptor.
- **Implementability –** Soil covers are very easy to implement. Standard earthmoving equipment can move local soil over the contaminated areas. Portions of LHAAP-17 may require some initial clearing. Soil cover maintenance to limit large vegetative growth that could disrupt the cover and to control erosion would be needed. Frequent maintenance (mowing) would be required.
- **Cost** – Low.

Asphalt Cap. Asphalt caps control infiltration of rainwater or run-on water through the installation of impermeable asphalt. This process option is particularly useful if the site is to be used as a parking lot or other light industrial use.

- **Effectiveness –** Asphalt caps can be effective at reducing infiltration if sufficient maintenance occurs. Asphalt can quickly develop cracks and holes that need to be filled, and maintenance will be needed to repair them as they occur. These caps are most effective if the area needs to be asphalted for another use such as a parking lot that will promote its long-term maintenance.
- **Implementability –** Asphalt caps are easy to install. As with other caps to control infiltration, they need to be sloped to encourage runoff during rain events. Frequent maintenance is less necessary than with multilayer caps as the asphalt does not require mowing. However, asphalt cracks easily and this must be controlled to maintain effectiveness.
- **Cost** – Low.

Multilayer Cap. A multilayer cap is an engineered cover that can consist of various layers of soil, clay, membranes and other materials. Multilayer caps control infiltration of rainwater or run-on water through the installation of impermeable layer materials and can prevent access or exposure to the contamination.

- **Effectiveness –** Multilayer caps can be effective at reducing infiltration if sufficient maintenance occurs. Long-term maintenance would be required to ensure cracks and holes do not develop. Maintenance will be needed to repair them as they occur.
- **Implementability –** A multilayer cap is more difficult to implement than a soil or asphalt cap due to the design and installation requirements. As with other caps to control infiltration, they need to be sloped to encourage runoff during rain events. More maintenance is necessary with multilayer cap than the asphalt cap as frequent mowing is required. The multilayer cap must be inspected and maintained to ensure its long-term effectiveness.
- **Cost** – High.

4.5.1.3.2 Summary of Containment Process Options

The soil cover alternative is a representative process option for addressing the relatively insoluble explosive contamination in the surface soil. It provides the least expensive option that meets the needs of a containment option. However, the capping options may not prevent the contaminated soil from continuing to impact groundwater and thus would be less protective of human health and the environment than other alternatives. Therefore, the containment process option for soil is removed from further consideration.

4.5.1.4 Removal

The removal GRA consists of technologies that remove contaminated media or waste material to either relocate it or prepare it for treatment and/or disposal. The removal technology considered is excavation with a process option of conventional excavation.

4.5.1.4.1 Excavation

Conventional Excavation Equipment. This excavation method uses a variety of conventional excavation equipment to remove debris, soil, and other buried waste. The equipment can include excavators, track loaders, bulldozers, and tool carriers of differing sizes with attachments or manipulators suitable for dealing with a varied waste profile. This equipment can be used individually or together as circumstances dictate. It is considered applicable to all source contamination at LHAAP-17. It can be used for both shallow and deep soil.

- **Effectiveness –** Conventional excavation equipment is applicable to the LHAAP-17 soils. The equipment has consistently proven reliable and effective for soil and other media in hazardous and non-hazardous applications for decades. Various attachments can increase the versatility of the equipment, allowing their use with a wide range of

wastes. Ancillary equipment for screening, sorting, and segregation can be effectively integrated with conventional excavation equipment.

The hazards to operators, in addition to the normal excavation hazards, come from exposure to contaminated media. PPE can reduce or eliminate exposure from inhalation/ingestion or dermal contact. Misting or fixative agents can reduce fugitive dust emissions during excavation.

- **Implementability** – Conventional excavation is readily implementable, and the equipment, attachments, and operators are widely available. The equipment can be readily adapted to the material and conditions at the site.
- **Cost** – Moderate.

4.5.1.4.2 Summary of the Removal Process Option

Conventional excavation equipment is carried forward as the representative process option for soil removal because of its effective application for a wide range of wastes, its equipment availability, and its widespread use in environmental restoration activities.

4.5.1.5 Ex Situ Treatment

Ex situ treatment technologies provide varying levels of waste treatment following removal of the waste. These technologies are applied to reduce the volume, mobility, or toxicity of the waste. The ex situ treatment technologies considered are physical/chemical, thermal, and biological treatment. Ex situ treatment could be considered if excavated material requires treatment before disposal to meet waste acceptance criteria or if complete treatment could be achieved so remaining material is clean.

4.5.1.5.1 Thermal Treatment

Thermal treatment destroys and/or removes organic and inorganic contaminants. The process option considered is incineration.

Incineration. Incineration is an ex situ thermal destruction process in which explosive compounds is destroyed by exposure to extremely high temperatures. It is considered applicable to the source problems at LHAAP-17. Many different systems are available: rotary dryer systems, indirect-fired systems, direct-fired systems, screw-type systems, and asphalt plant aggregate driers. Each system uses the same basic principle of operation, which is a furnace to remove and destroy organic compounds in the waste feed. One of the more common systems, a rotary kiln incinerator, feeds the waste material into the upper end of a sloped rotating kiln. The slope and the rotating action conveys the waste to the low end of the kiln, exposing the waste to the heated gases (up to 1,800 degrees Fahrenheit [°F]) in the kiln and vaporizing and destroying the contaminants. The combustion gases are then drawn through an afterburner (2200°F) and scrubbing system before discharge to the atmosphere.

- **Effectiveness** – Incinerators have been effectively used for years on organic-contaminated media and are the Best Demonstrated Available Technology for many RCRA organics. It is applicable to most if not all of the organic- and explosives-contaminated wastes at LHAAP-17. The destruction capabilities of an incinerator allow the achievement of relatively low cleanup levels. Incineration is a robust technology that can handle a wide variety of organic compounds and concentrations because of its high temperatures. The disadvantages of incineration are that some organics generate toxic products of incomplete combustion, some materials are not incinerable, the capital and operating costs are high, and supplemental fuel is often required. If the ash contains heavy metals, the ash may have to be stabilized before disposal as a RCRA waste.
- **Implementability** – Incineration systems are available for both on- and off-site use. The off-gas stream may require additional treatment and may produce a residue that requires disposal. Thermal treatment systems are generally not well received by the public because of concerns with air emissions.
- **Cost** – High.

4.5.1.5.2 Biological Treatment

Biological treatment process options use biological processes to degrade or destroy contaminants. The ex situ processes evaluated was composting.

Composting. Composting is a controlled biological process by which organic contaminants are converted by microorganisms (under aerobic and anaerobic conditions) to innocuous, stabilized byproducts. Typically, thermophilic conditions (54–65 degrees Celsius [°C]) must be maintained to properly compost soil contaminated with hazardous organic contaminants. The increased temperatures result from heat produced by microorganisms during the degradation of the organic material in the waste. In most cases, this is achieved by the use of indigenous microorganisms. Soil is excavated and mixed with bulking agents and organic amendments, such as wood chips, and animal and vegetative wastes, to enhance the porosity of the mixture to be decomposed. Maximum degradation efficiency is achieved through maintaining oxygenation (e.g., daily windrow turning), irrigation as necessary, and closely monitoring moisture content and temperature. There are three process designs used in composting: aerated static pile composting (compost is formed into piles and aerated with blowers or vacuum pumps), mechanically agitated in-vessel composting (compost is placed in a reactor vessel where it is mixed and aerated), and windrow composting (compost is placed in long piles known as windrows and periodically mixed with mobile equipment). Windrow composting is usually considered to be the most cost-effective composting alternative. Meanwhile, it may also have the highest fugitive emissions. If VOC or semivolatile organic compound contaminants are present in soil, off-gas control may be required.

A treatability study conducted at LHAAP-17 to evaluate the effectiveness of soil composting concluded that the application of nutrient amendments to soil resulted in removal of perchlorate from the soil and reduced explosives contamination in soil.

- **Effectiveness** – The composting process may be applied to soil contaminated with biodegradable organic compounds. Pilot and full-scale projects have demonstrated that aerobic, thermophilic composting is able to reduce the concentration of VOCs, polyaromatic hydrocarbons, and explosives (TNT, hexahydro-1,3,5-trinitro-1,3,5-triazine [RDX], and octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine [HMX]). The addition of amendments will increase the volume of the waste. Windrow composting has been demonstrated as an effective technology for treatment of explosives-contaminated soil.
- **Implementability** – All materials and equipment used for composting are commercially available. Substantial space may be required for composting.
- **Cost** – Low.

4.5.1.5.3 Summary of Ex Situ Treatment Process Options

Currently the chemicals at LHAAP-17 that are considered to potentially require treatment are the explosives in soil. The thermal treatment option is effective for permanent destruction of explosives in the soil and is carried forward for consideration. Biological treatment by composting has been shown to reduce explosives in soil. However, there are other chemicals in the soil that will not be reduced by treatment; therefore, it is not carried forward as a representative process option.

4.5.1.6 Disposal

The disposal GRA consists of those technologies that provide for the disposal of removed wastes at new or existing, permitted disposal facilities. Both on-site and off-site facilities are evaluated. A selection of on-site facilities versus off-site facilities is made for developing alternatives.

4.5.1.6.1 Off-Site Disposal

Off-site disposal options include off-site treatment and disposal facilities, a RCRA disposal facility, or an industrial landfill. The selection of the disposal facility depends on the waste characteristics and although all are evaluated here, none are selected to represent other off-site options.

Treatment, Storage, Disposal Facility. A Treatment, Storage, Disposal (TSD) facility is a commercial, permitted, off-site facility that is licensed to treat, store, and/or dispose of a variety of waste streams. There are numerous such facilities all over the country offering broad ranges of treatment options, many of which could effectively treat and dispose of the LHAAP-17 waste and soil. This option would be used if treatment before disposal is needed to meet ARARs.

- **Effectiveness** – A TSD facility is effective at treating and disposing of treated wastes in a permitted, off-site disposal facility.
- **Implementability** – Numerous facilities exist that have and are treating wastes similar to those found at LHAAP-17. These facilities are already permitted and licensed to operate. Wastes have to meet the waste acceptance criteria of the receiving TSD facility.
- **Cost** – Moderate.

RCRA Disposal Facility. This process option consists of any number of existing disposal facilities that use engineered features such as multilayer liners and caps, leachate detection and collection systems, run-on/-off controls, and intrusion barriers to isolate wastes from human and environmental receptors.

- **Effectiveness** – Disposal involves permanent disposition of the RCRA-generated contaminated soil in a manner that protects human health and the environment. Off-site disposal would include the transportation of excavated soil to an approved and licensed facility.
- **Implementability** – Implementation is moderate if the waste acceptance criteria can be met.
- **Cost** – Moderate.

Industrial Landfill. An existing industrial landfill can be used to dispose of that debris or refuse that is not a RCRA waste or has been decontaminated to acceptable levels. Such a facility is a Class II lined facility permitted to receive industrial, commercial, institutional, land-clearing, and construction/demolition waste. The facility does not accept RCRA-hazardous waste or free liquids. This option would be used to dispose of waste that is considered hazardous to human health and the environment but is not a RCRA-hazardous waste.

- **Effectiveness** – Industrial landfills are effective in isolating low hazard wastes from the environment and human receptors because the waste acceptance criteria severely restrict the type and concentrations of waste that may be disposed.
- **Implementability** – Disposal of the excavated clean wastes or treated wastes would involve transportation and compliance with waste acceptance criteria.
- **Cost** – Moderate.

4.5.1.6.2 On-Site Disposal

On-site consolidation is considered as the technology process option for on-site disposal.

Consolidation. Consolidation involves placing treated LHAAP-17 waste and soil back into LHAAP areas. The waste is excavated, partially treated on the site if needed, and then placed

elsewhere on LHAAP. The contaminants in the treated waste would have to have been rendered immobile, making the treated waste better suited for placement. This option precludes the need to transport the treated waste to an off-site disposal facility or to a newly constructed on-site disposal facility. A single or multilayer cap would then be placed over the waste. If the waste is fully treated, no special disposal process option is needed.

- **Effectiveness** – Consolidation is effective in isolating the very low hazard wastes from human receptors and the environment. It can limit the area requiring long-term institutional controls.
- **Implementability** – Consolidation is used at other hazardous waste sites around the country where off-site disposal options are unavailable or undesirable and where the continued on-site presence of treated waste is not problematic. Given the potential future land uses at the LHAAP, there may be regulatory and public reluctance to moving the waste around the LHAAP.
- **Cost** – Low compared to off-site disposal.

4.5.1.6.3 Summary of Disposal Process Options

All off-site disposal process options are carried forward for additional consideration until waste streams and volumes are more clearly identified in the alternative development process. The on-site disposal option of consolidation is not retained because of the potential regulatory and public concerns about leaving waste on the site after having already removed it, the potential future land uses, and the widespread availability of off-site treatment and disposal facilities.

4.5.1.7 Summary off Representative Process Options for Soil

Figure 4-3 is presented to illustrate the process options that have been selected for remedial alternative development for soils at LHAAP-17. The following representative GRAs, technologies or process options are retained for development of alternatives:

- No action
- Removal
- Disposal

4.5.2 Groundwater

In the following subsections, process options are evaluated to address shallow groundwater contaminated with VOCs and perchlorate; and intermediate groundwater contaminated with VOCs.

4.5.2.1 No Action

The no action GRA provides no groundwater remedial activities. No monitoring of the groundwater or surface water conditions occurs under this GRA. This GRA is retained as a baseline with which other remediation alternatives are compared.

- **Effectiveness** – Without access controls or remediation of the groundwater from LHAAP-17 could result in a future unacceptable risk to humans if the groundwater is ingested.
- **Implementability** – No implementation is required.
- **Cost** – None.

4.5.2.2 Land Use Controls

This LUC process option would be implemented to regulate access and use of the contaminated groundwater at LHAAP-17. The Army will perform notification of industrial/recreational use which will accompany all transfer documents and will be recorded in the Harrison County Courthouse. Five-Year Reviews will be performed to document that the land use remains consistent with the industrial/recreational exposure scenario evaluated in the risk assessment.

4.5.2.2.1 Access Controls

Access controls would be implemented to regulate access to the groundwater. The process options for access controls include covenants/deed restrictions, administrative controls, and physical mechanisms.

Covenants/Deed Restrictions. Restrictions to the groundwater can be accomplished through modifications to the property deed or agreements about land use. Legal restrictions can be placed on the installation of groundwater extraction wells not only to prevent access to the contamination, but also to minimize the possibility of moving the contamination toward a future user. A recordation of the LUCs (including restriction to groundwater use) will accompany the transfer documentation from the Army to the USFWS. Deed restrictions would be needed only if the Army releases the property to a non-federal entity. These restrictions are effective only as long as the property owners and local authorities enforce them. The Army is ultimately responsible for the enforcement of the LUCs.

- **Effectiveness** – Covenants/deed restrictions are effective, if enforced, in controlling human activities such as potable well construction. These actions can limit or prevent exposure to contaminants remaining on the site after remediation and can be implemented on a temporary basis. The 5-year reviews will ensure that the covenants/deed restrictions are enforced and remain effective.
- **Implementability** – These options can be readily implemented.
- **Cost** – Low.

Administrative Controls. Administrative controls consist of the use of training or procedures to limit access to the site and reduce the risk to human health posed by site contamination at LHAAP-17. These measures may include internal notices and site inspections to serve as a reminder of the existence of LUCs, a site approval process to review land-use changes at LHAAP-17 to ensure the LUCs are followed, training of site personnel regarding the existence and care of the LUCs, and regular inspection and maintenance of the LUCs. These are controls the Army can use while it maintains control of the site.

- **Effectiveness** – Administrative controls are effective in controlling human intrusion into contaminated areas during and after remediation. The training required for access to the site limits potential exposure to the contaminated groundwater. Administrative controls can be used in conjunction with physical mechanisms and deed restrictions. This option is effective only while LUCs are maintained.
- **Implementability** – Training and procedures are readily available and implemented. They may need to be modified for LHAAP.
- **Cost** – Low.

Physical Mechanisms. Physical mechanisms include various engineered remedies to contain or reduce contamination and/or physical barriers intended to limit access to property, such as fences or signs. It is anticipated that covenants and administrative controls will be adequate to control access to the contaminated groundwater and physical mechanisms will not be required.

4.5.2.2.2 Monitoring

Monitoring and surveillance are used to assess the performance of remedial actions and verify compliance with the established RAOs. Process options for monitoring are physical surveillance and long-term media monitoring.

Physical Surveillance. Visual and physical inspections of engineered remedial action components can detect physical changes (e.g., iron deposition and pipeline cracks) that may ultimately lead to the failure or unsatisfactory performance of that component. Repairs and/or revised maintenance activities can be implemented as a result of these inspections.

- **Effectiveness** – Physical surveillance is effective in determining the continued integrity of engineered systems and the need for repairs and/or replacement. Physical surveillance needs to be used with contaminant monitoring to assess the impact of integrity failure.
- **Implementability** – Physical surveillance is easily implemented and requires experienced, but readily available personnel to make regular visits to the site for inspections.
- **Cost** – Low.

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 RAOs. 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.

4.5.2.2.3 Summary of Land Use Controls Process Options

Covenants, administrative controls, physical surveillance, and long-term media monitoring are carried forward as representative process options for the LUCs GRA. Notification of industrial/recreational use will accompany all transfer documents and will be recorded in the Harrison County Courthouse. The covenants would only be used if the Army releases the land to a non-federal entity. All of these process options could be combined with other process options to meet the RAOs.

4.5.2.3 Removal

The removal GRA consists of technologies that remove groundwater to either relocate it or prepare it for treatment. The removal technology considered is groundwater collection/removal.

4.5.2.3.1 Groundwater Collection/Removal

Groundwater collection and removal is accomplished by either extraction wells, interception trenches, or horizontal wells.

Extraction Wells. These are vertically installed wells 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.

- **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 all depths that might be required at LHAAP-17. Existing monitoring wells at LHAAP-17 could be converted to extraction wells.
- **Cost** – Low to moderate.

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.

- **Effectiveness** – Interceptor trenches are very effective at collecting groundwater. The trench functions like a continuous line of extraction wells. The trenches are also only applicable to shallow zone contamination.
- **Implementability** – Interceptor trenches are relatively easy to install with conventional construction equipment. The process requires long-term maintenance to ensure that the permeable media and collection piping do not become clogged. Interceptor trenches are difficult to install at depths to intercept the intermediate zone.
- **Cost** – Moderate.

Horizontal Wells. Horizontal wells are similar to vertical wells with the exception that they are installed horizontally and are typically screened their entire length. They function like drains and offer a water removal capability that exceeds that of a similarly sized vertical well. Horizontal wells could be installed under source areas to remove contaminated groundwater or collect migrating leachate.

- **Effectiveness** – Horizontal wells are very effective at removing large volumes of contaminated groundwater in applications where vertical wells cannot be used. Wells up to 12 inches in diameter and 10–500 feet deep can be installed over 1,000-foot lengths. A single horizontal well is generally equivalent to five vertical wells in sandy soil and ten vertical wells in clayey soil.
- **Implementability** – Although this process is commonly used in the oil industry, it is still in the demonstration phase in environmental restoration. It would likely be used underneath a source area to collect contaminated groundwater or leachate.
- **Cost** – High.

4.5.2.3.2 Summary of Removal Process Options

Horizontal wells are not retained as a representative groundwater removal process option because of their limited use in environmental restoration actions and because of their high costs.

Interceptor trenches are also effective at removing groundwater though typically at a higher cost than extraction wells. Because extraction well systems are flexible, robust, and effective in a wide range of hydrogeologic conditions, the extraction well process option will be retained for remedial alternative development in this FS. This option may be used to extract the localized, contaminated groundwater from the intermediate zone. However, interceptor trenches could be considered during the implementation of the remedial action, should the results of pre-design studies warrant their use.

4.5.2.4 In Situ Treatment

In situ treatment technologies provide varying levels of groundwater treatment without prior removal of the groundwater, and reduce the mobility or toxicity of the contaminants in groundwater. The in situ treatment technologies under consideration are physical/chemical and biological treatments.

4.5.2.4.1 Physical/Chemical Treatment

MNA, air sparging/soil vapor extraction, in situ oxidation, and permeable reactive barriers are process options considered potentially applicable to the groundwater at LHAAP-17.

Monitored Natural Attenuation. MNA is a passive remedial process option that will achieve the cleanup levels over time. Natural subsurface 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. **Appendix A** provides a preliminary evaluation of the ongoing natural attenuation processes at LHAAP-17. The VOCs and perchlorate at LHAAP-17 are amenable to MNA.

- **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. MNA is effective when short-term releases have been mitigated, and that further off-site releases of contaminants at unacceptable levels are not occurring, and a demonstration is made that natural attenuation is occurring. Regular monitoring must be conducted throughout the process to confirm that attenuation is occurring in accordance with cleanup objectives. The evaluation of MNA parameters for LHAAP-17 (see **Appendix A**) indicates that natural attenuation was occurring at localized areas at the site. Perchlorate and TCE are attenuated via biodegradation, dispersion, volatilization and sorption. Following perchlorate reduction, groundwater conditions are expected to become favorable of reductive dechlorination of solvents (e.g., TCE) in the shallow groundwater zone.
- **Implementability** – Significant groundwater sampling and analyses must be performed to confirm that conditions are suitable for natural attenuation and to establish a monitoring network. It must also be confirmed that additional source releases and unacceptable off-site releases are not occurring.

- **Cost** – Low to moderate.

Air Sparging/Soil Vapor Extraction. This process option is designed to remove VOCs from the groundwater by volatilizing these contaminants through the introduction of air. Air is introduced into the groundwater, assisting in the volatilization of those organics in solution in the groundwater. Extraction wells are installed into the vadose zone and a vacuum is drawn on these wells. The extraction system draws off the organic-laden air that was bubbled through the groundwater in addition to any vapors that exist in the soil pore spaces. The volatilized contaminants can then be drawn from these extraction wells and treated. This process can be used in those areas where VOCs exist in the groundwater and the vadose zone above this groundwater is relatively permeable.

- **Effectiveness** – This process is very effective on highly volatile contaminants (e.g., TCE) and highly permeable formations. It is incompatible with certain soil types, and high humic content inhibits volatilization of contaminants. Implementation at LHAAP-17 is complicated by the inhomogeneity of the soil formations found at the site.
- **Implementability** – Vapor extraction and air sparge equipment is readily available and commercial vendors are available to design and operate these systems. This process has been used at many hazardous waste sites in relatively homogeneous media. Organics that are removed from the vapor extraction wells require ex situ treatment. Site characterization and modeling are required to determine the proper location of the injection and extraction wells and extraction rates.
- **Cost** – Low to moderate.

In Situ Oxidation. Contaminated media are treated through the addition of oxidizers, such as potassium permanganate or hydrogen peroxide or activated persulfate, which convert the contaminants to a less mobile or toxic form. This process option is applicable to VOCs such as TCE and 1,1-DCE.

- **Effectiveness** – In situ oxidation is effective on contaminants in a relatively homogeneous and porous medium. Long-term effectiveness is uncertain as a change in chemistry could mobilize or change the chemical behavior of the previously oxidized or reduced constituents. Chemical oxidation is most effective for VOCs (particularly TCE). Chemical oxidation is not effective for treatment of chlorinated alkanes such as 1,2-DCA and for perchlorate that were also detected in the groundwater at LHAAP-17.
- **Implementability** – This process option may be difficult to implement in situ because of concerns regarding delivery and sufficient exposure of the contaminants to the chemical oxidants. An additional concern is the release of excess reactants or byproducts to the environment including generation of VOC emissions and release of heat generated during the oxidation process. There have been limited applications of

these processes, which are generally more readily implemented in the ex situ mode. A recent USEPA evaluation by their Technology Innovation Office concluded that the application of in situ oxidation is highly dependent upon the delivery system. A pilot test would be required to characterize the site specific aquifer parameters.

- **Cost** – Low to moderate.

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.

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 (palladized 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.

4.5.2.4.2 Biological Treatment

Biological treatment process options use living organisms such as bacteria or fungi to detoxify or immobilize contaminants in waste. These process options are primarily used to convert organic contaminants into nontoxic products.

Enhanced Bioremediation. This general process option covers a wide range of individual biological process options that rely on microbial transformation of organic contaminants under aerobic or anaerobic conditions into benign forms to obtain energy or carbon. Enhanced biodegradation is applicable to the groundwater at LHAAP-17. Excessively high concentrations of contaminants could be toxic to microbes. Many organic contaminants, including the COCs at LHAAP-17, 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 has demonstrated that some enhancements will allow indigenous bacteria to degrade chlorinated solvents such as those detected at LHAAP-17.
- **Implementability** – Enhancing the biological activity may be difficult in some of the low permeability soil at LHAAP-17 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** – Low to moderate.

4.5.2.4.3 Summary of In Situ Treatment Process Options

Therefore, MNA is retained as a remediation option in both the shallow zone and intermediate zones. Other physical/chemical treatment process options will not be retained for remedial alternative development as these options, with the exception of the permeable reactive barrier, are effective for the removal of VOCs but are less effective for perchlorate. The permeable reactive barrier is a passive system that has been proven effective at removing both VOCs and

perchlorate. Enhanced bioremediation is retained for remedial alternative development. This process option is aggressive and has been proven effective for the removal of VOCs and perchlorate and will produce less toxic byproducts than other competing processes.

4.5.2.5 Ex Situ Treatment

Ex-situ treatment technologies provide varying levels of water treatment following extraction or collection of the water. These technologies are applied to reduce the volume, mobility, or toxicity of recovered groundwater. Although ex situ treatment technologies considered are physical/chemical, thermal, and biological, they have been grouped into two process options under an on-site treatment technology – the existing treatment system and a new mobile or skid-mounted system near the extraction point.

4.5.2.5.1 New 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 COCs from the extracted groundwater. GAC or air stripping could remove the COCs. 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 would be effective. All of the considered technologies are proven effective and are even used at an existing treatment plant at LHAAP. Smaller units have less operational flexibility and may expect deviations more often.
- **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 a potential that the operational costs could be minimized.

4.5.2.5.2 Burning Ground No.3 Groundwater Treatment Plant

This facility, which is currently processing contaminated groundwater from other LHAAP sites (LHAAP-18/24 and LHAAP-16), includes unit operations such as neutralization, precipitation, and air stripping. The effluent from the plant is discharged to Harrison Bayou.

- **Effectiveness** – The existing plant 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 existing 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 plant would be necessary. LHAAP-17 is located adjacent to the existing plant hence the implementability of direct pumping to the plant is a practical viable option.

- **Cost** – Low.

4.5.2.5.3 Summary of Ex Situ Treatment Process Options

The utilization of the existing LHAAP groundwater treatment plant will be retained for remedial alternative development. It is already effectively operational, and the capital costs for construction of the plant have already been spent. Currently, groundwater from other LHAAP sites provides the majority of the water that is treated by the plant and hydraulic capacity is available to treat groundwater from additional sites. Because of its proven effectiveness and lower costs, the current treatment system is used to develop alternatives.

4.5.2.6 Disposal

The representative on-site disposal process option evaluated is surface water discharge.

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 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.

4.5.2.7 Summary of Disposal Process Options

Disposal is retained since this technology is evaluated in combination with ex-situ groundwater treatment.

4.5.2.8 Summary of Representative Groundwater Process Options

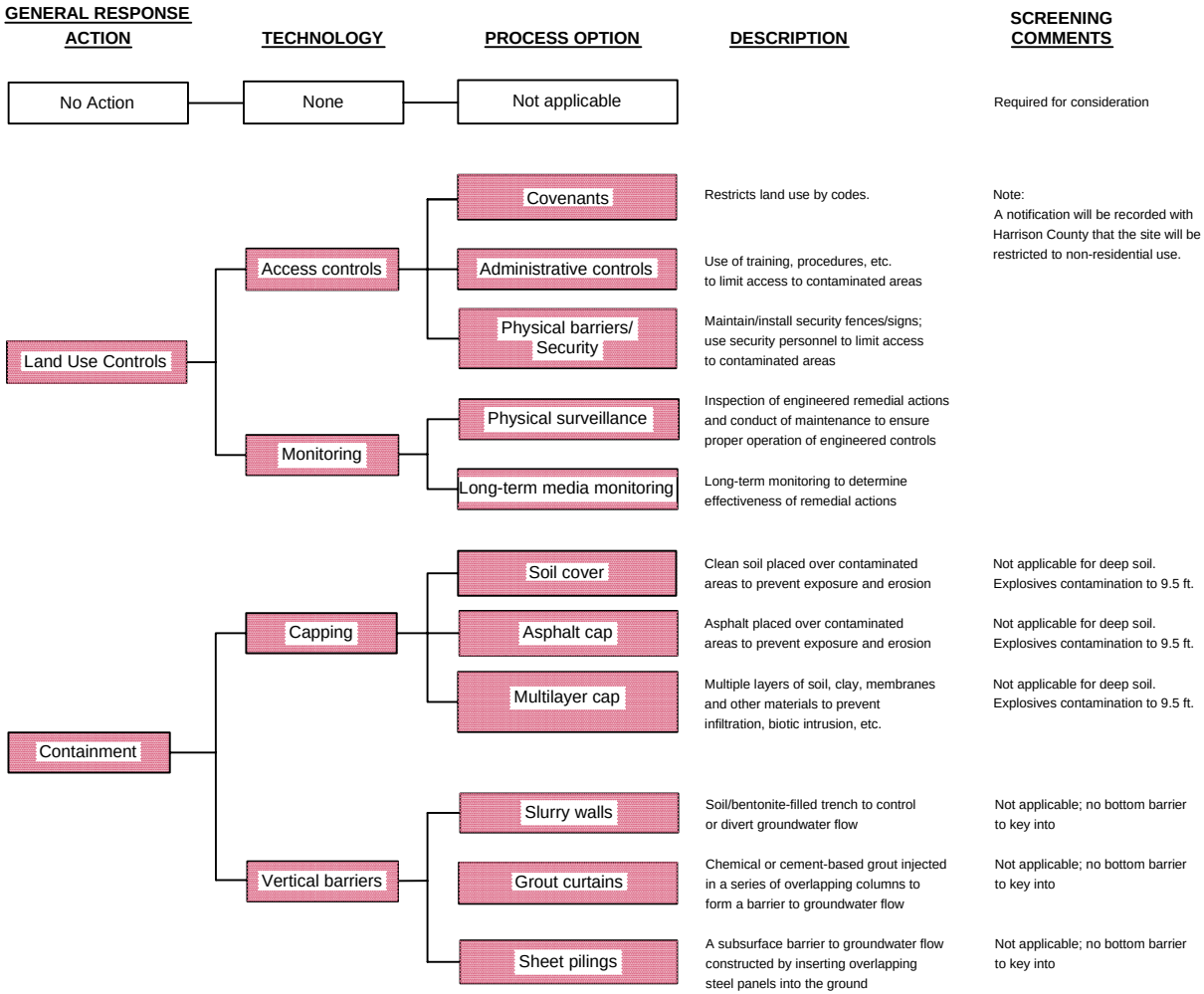
Figure 4-4 is presented to illustrate the process options that have been selected for remedial alternative development. The following representative process options are retained:

- No action
- LUCs

- In situ enhanced bioremediation for shallow and intermediate groundwater zones
- Groundwater extraction and ex situ treatment for shallow and intermediate groundwater zones
- MNA for shallow and intermediate groundwater zones
- Disposal (surface water discharge)

PLOT DATE: 11/17/08
FORMAT REVISION 5/13/02

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	---	HOUSTON, TX.	L. JONES	02/01/09	S. WATSON	4/08/09	P. SRIVASTAV	4/08/09	117591-A41



U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

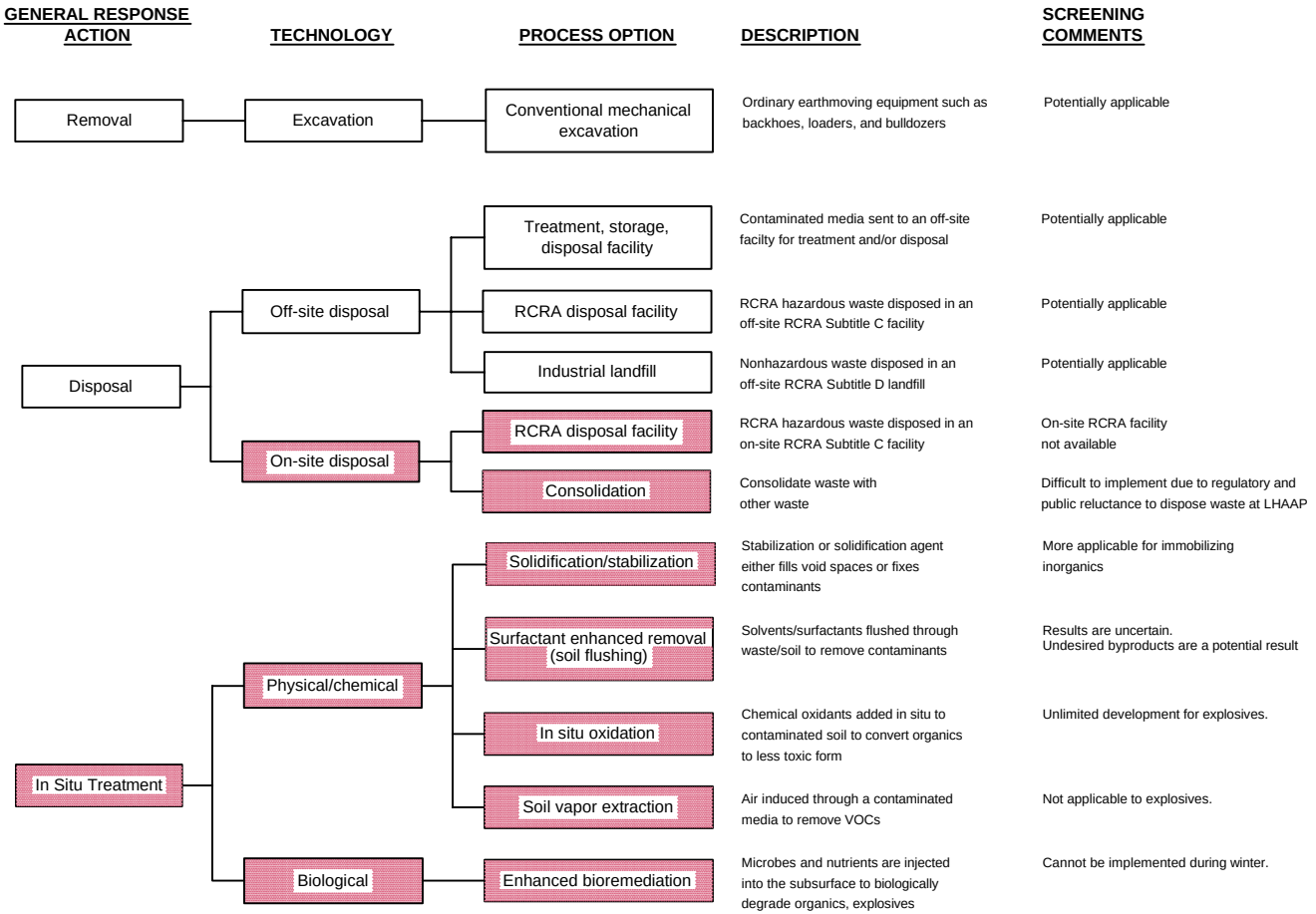
Figure 4-1 (1 of 3)

Soil Technology Screening
LHAAP-17 Feasibility Study

Longhorn Army Ammunition Plant
Karnack, Texas

PLOT DATE: 11/17/08
FORMAT REVISION 5/13/02

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	---	HOUSTON, TX.	L. JONES	02/01/09	S. WATSON	4/08/09	P. SRIVASTAV	4/08/09	117591-A34



U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

Figure 4-1 (2 of 3)

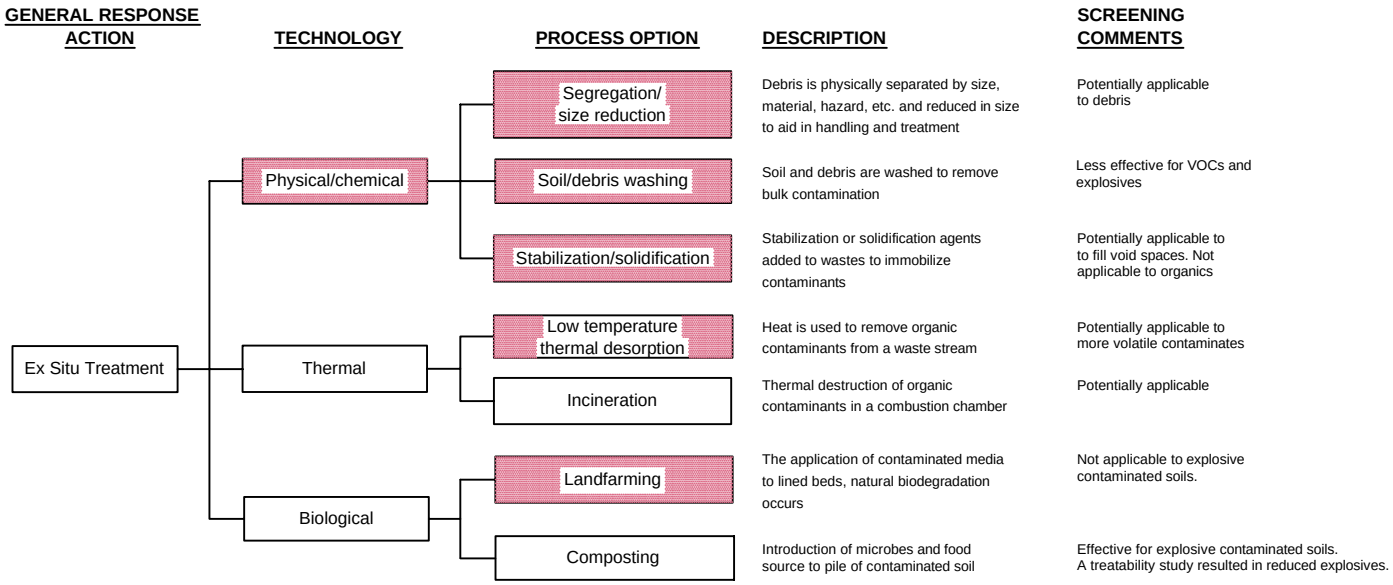
Soil Technology Screening
LHAAP-17 Feasibility Study

Longhorn Army Ammunition Plant
Karnack, Texas

00089198

PLOT DATE: 11/17/08
FORMAT REVISION 5/13/02

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	---	HOUSTON, TX.	L. JONES	02/02/09	S. WATSON	4/08/09	P. SRIVASTAV	4/08/09	117591-A35



Process option screened out

Process option retained

U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

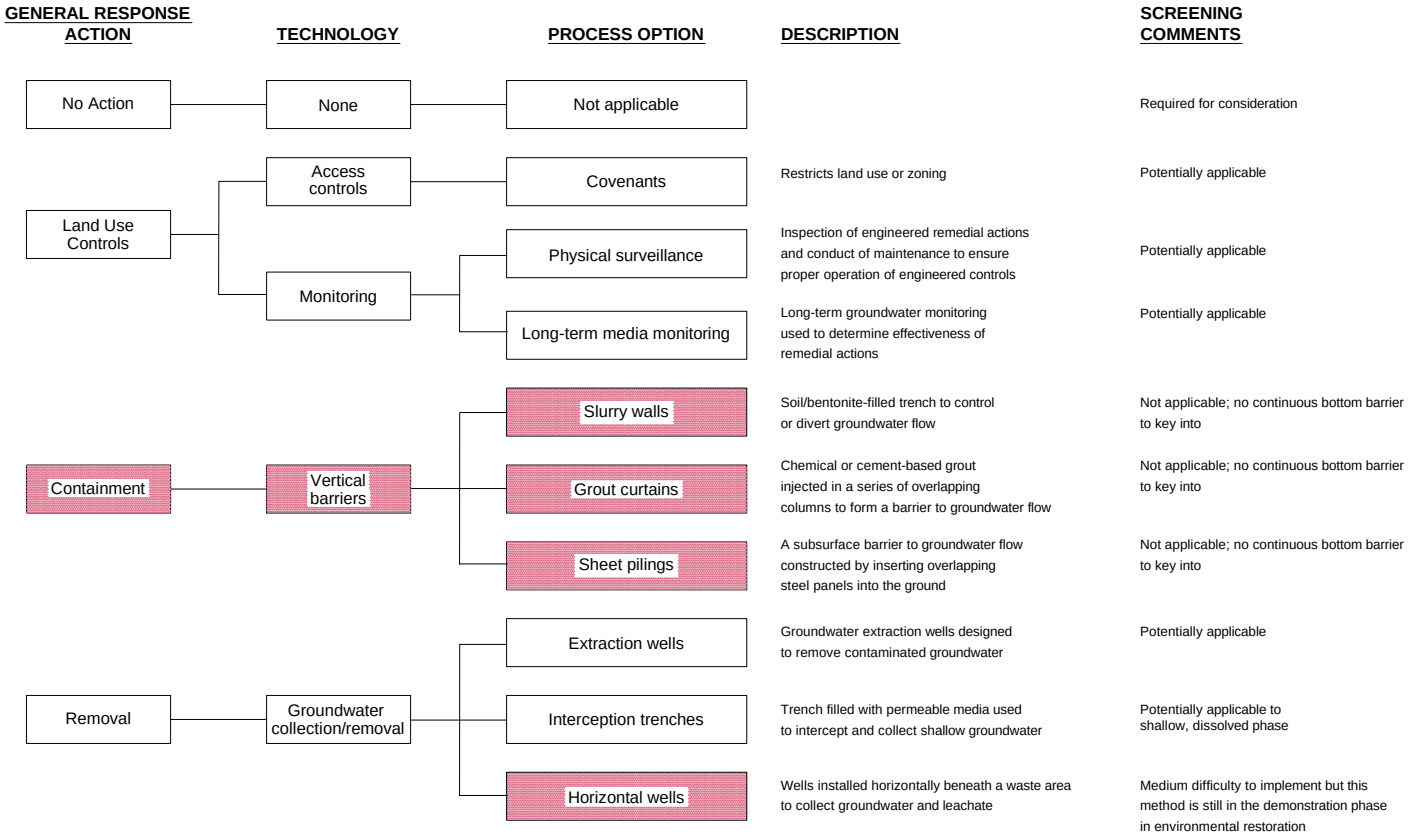
Figure 4-1 (3 of 3)

Soil Technology Screening
LHAAP-17 Feasibility Study

Longhorn Army Ammunition Plant
Karnack, Texas

PLOT DATE: 12/16/08
FORMAT REVISION 5/13/02

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	---	HOUSTON, TX.	L. JONES	02/02/09	S. WATSON	4/08/09	P. SRIVASTAV	4/08/09	117591-A36



U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

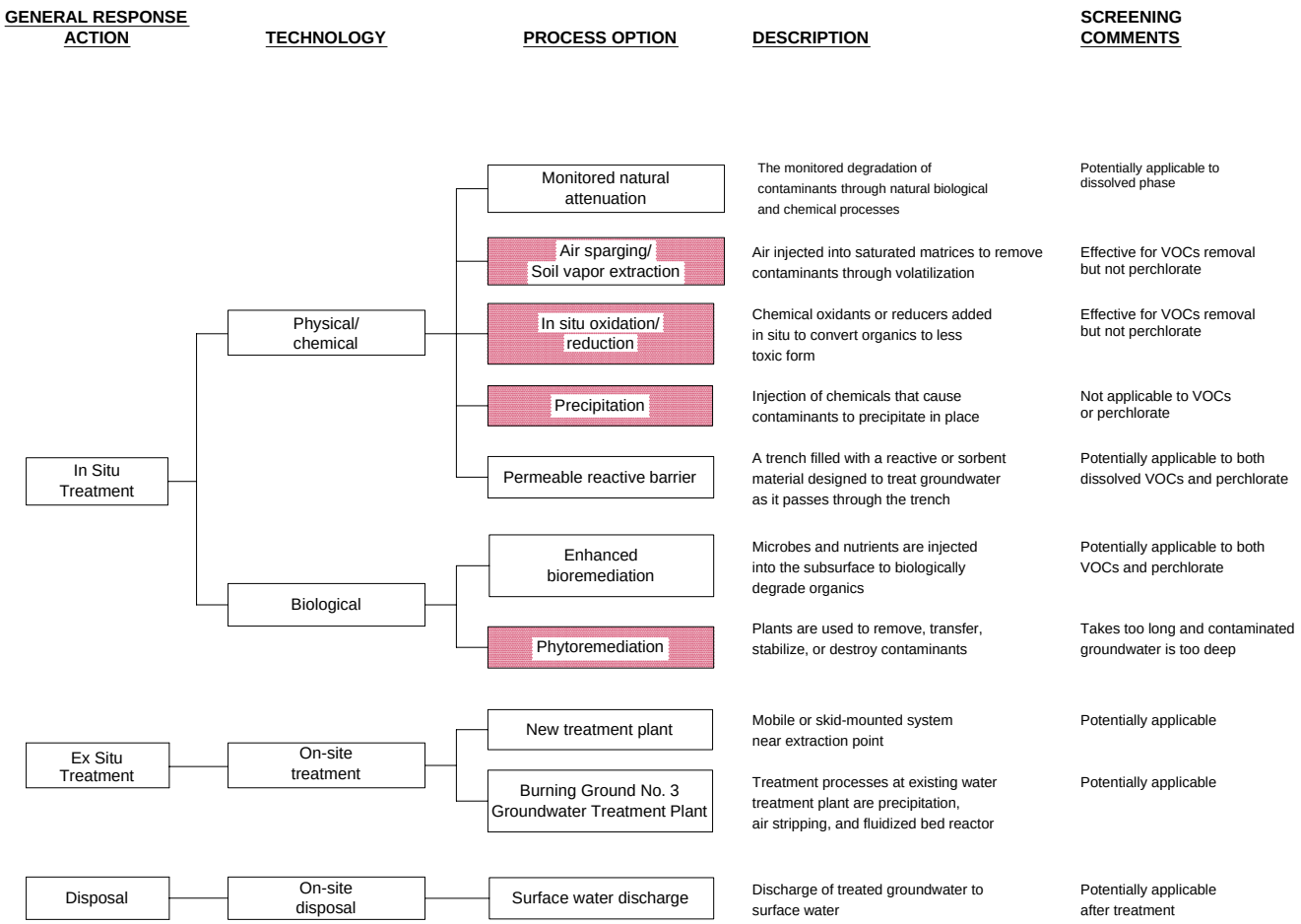
Figure 4-2 (1 of 2)

Groundwater Technology Screening
LHAAP-17 Feasibility Study

Longhorn Army Ammunition Plant
Karnack, Texas

PLOT DATE: 12/16/08
FORMAT REVISION 5/13/02

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	---	HOUSTON, TX.	L. JONES	02/02/09	S. WATSON	4/08/09	P. SRIVASTAV	4/08/09	117591-A37



U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

Figure 4-2 (2 of 2)

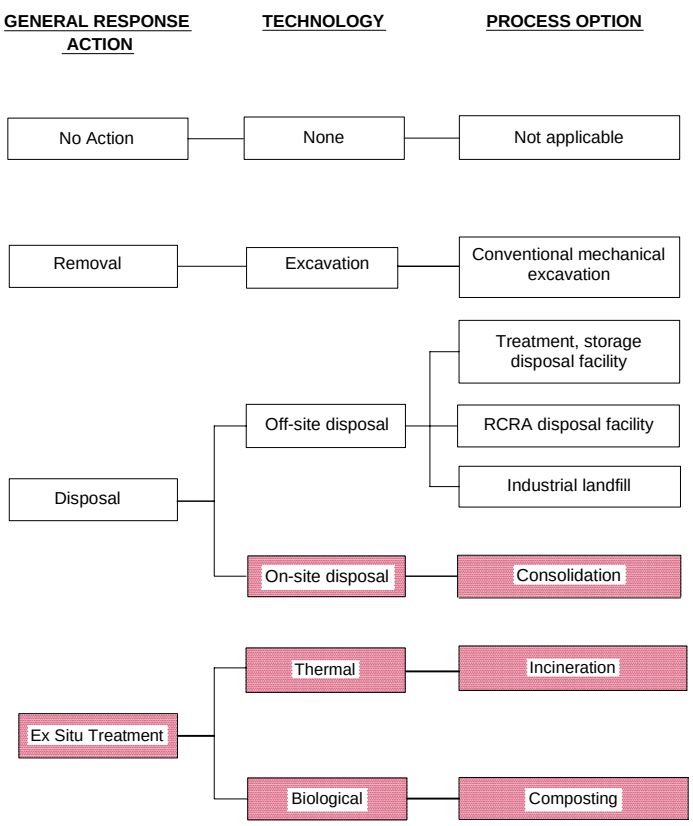
Groundwater Technology Screening
LHAAP-17 Feasibility Study

Longhorn Army Ammunition Plant
Karnack, Texas

00089201

PLOT DATE: 11/17/08
FORMAT REVISION 5/13/02

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	---	HOUSTON, TX.	L. JONES	02/02/09	S. WATSON	4/08/09	P. SRIVASTAV	4/08/09	117591-A40



PROCESS OPTION	EFFECTIVENESS	IMPLEMENTABILITY	COST
Not applicable	Does not achieve RAOs.	Not acceptable to USEPA	None
Conventional mechanical excavation	Effective for permanent removal of contaminants. Removed solids require treatment or disposal.	Easily implemented. Conventional soil removal equipment is widely available.	Medium capital, no maintenance.
Treatment, storage disposal facility	Effective at treating and disposing of treated wastes in a permitted, off-site dispoal facility.	Easily implemented. Numerous facilities exist that treat similar site waste.	Medium capital, no maintenance.
RCRA disposal facility	Effective at isolating wastes from the environment due to engineering design requirements.	Moderate implementability if the waste criteria can be met. Requires frequent waste sampling.	Medium capital, no maintenance.
Industrial landfill	Effective at isolating low hazard wastes from the environment due to waste restrictions.	Easily implemented if waste criteria is below acceptable levels for landfill disposal.	Medium capital, no maintenance.
Consolidation	Effective for low hazard waste only.	Difficult to implement due to regulatory and public reluctance to dispose waste at LHAAP.	Low cost, high maintenance.
Incineration	Effective for permanent destruction of VOCs and explosives.	Readily implemented; however, offgas may require additional treatment. Public may have concerns with emissions.	High capital, no maintenance.
Composting	Effective at permanent destruction of VOCs and explosives.	Readily implemented; however, offgas may require additional treatment. Substantial space may be required.	Low cost, no maintenance.

Process option screened out

Selected representative process option

U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

Figure 4-3
Selection of Representative Soil Process Options
LHAAP-17 Feasibility Study
Longhorn Army Ammunition Plant
Karnack, Texas

00089202

PLOT DATE: 12/16/08
FORMAT REVISION 5/13/02

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
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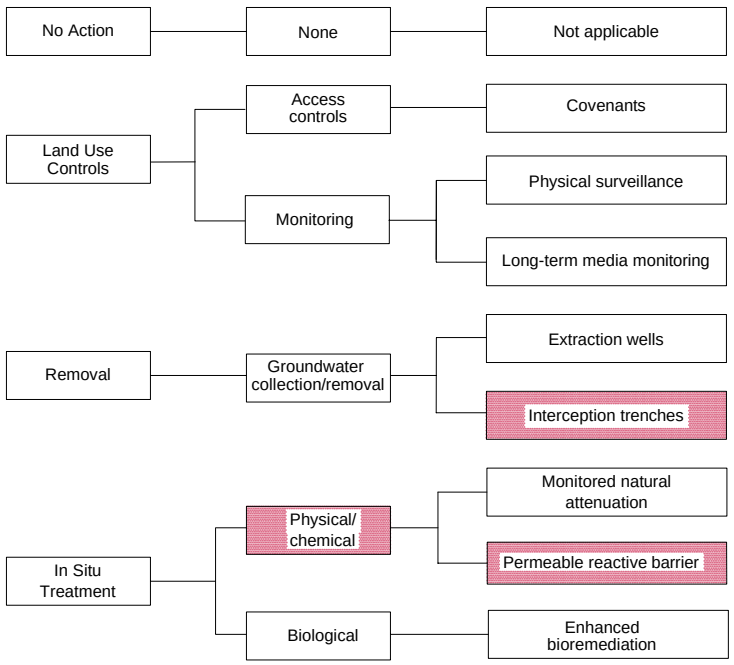

PROCESS OPTION	EFFECTIVENESS	IMPLEMENTABILITY	COST
Not applicable	Does not achieve RAOs.	Not acceptable to USEPA	None
Covenants	Effective as long as propery owners and local authorities enforce them. Does not reduce contamination.	Readily implemented but has legal and authority requirements	Low cost to document land use restrictions
Physical surveillance	Effective but needs to be used with contaminant monitoring to assess impact of integrity failure.	Readily implemented but requires experienced to make routine inspections.	Low cost to implement; however, depends on frequency of inspections.
Long-term media monitoring	Effectiveness depends on the design of the monitoring plan.	Readily implemented. The site is accessible and groundwater monitoring wells exist onsite.	Moderate costs due to labor and analytica costs.
Extraction wells	Considered most effective groundwater removal method.	Easily implemented. Extraction wells are easy to install and existing wells are easily modified.	Low to moderate capital.
Interception trenches	Effective at collecting groundwater in shallow groundwater zone.	Difficult to implement. May be difficult to install and requires long-term maintenance.	Medium capital, high maintenance.
Monitored natural attenuation	Effective when sources have been mitigated and a determination that MNA is occurring.	Requires significant groundwater sampling. No significant detection of degradation products (cis-1,2-DCE or vinyl chloride).	Moderate cost due to sample requirements.
Permeable reactive barrier	Effectiveness depends greatly upon the contaminants, the reactive media, hydrology and geochemistry.	Difficult to implement. Requires a treatability study and long-term maintenance.	Low to moderate capital, low maintenance.
Enhanced bioremediation	Effective when adequate mixing of bacteria and nutrients occurs.	Equipment and expertise are readily available. Treatability study would be needed and right conditions are required.	Low to moderate capital, low maintenance.

Process option screened out

Selected representative process option

U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

Figure 4-4 (1 of 2)

Selection of Representative Groundwater Process Options
LHAAP-17 Feasibility Study

Longhorn Army Ammunition Plant
Karnack, Texas

PLOT DATE: 12/16/08
FORMAT REVISION 5/13/02

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	---	Houston, Texas	L. JONES	02/02/09	S. WATSON	4/08/09	P. SRIVASTAV	4/08/09	117591-A49

GENERAL RESPONSE ACTION	TECHNOLOGY	PROCESS OPTION	EFFECTIVENESS	IMPLEMENTABILITY	COST
Ex Situ Treatment	On-site treatment	New treatment plant	Would be effective at removing volatiles and perchlorate.	May be difficult to implement. A design and treatability study would be required.	Moderate cost; however, operation cost could be less than existing treatment plant.
		Burning Ground No. 3 Groundwater Treatment Plant	Current treatment plant is effectively treating groundwater and hydraulic capacity has not yet been met.	The treatment plant is already operational.	Low cost compared to a new treatement plan.
Disposal	On-site disposal	Surface water discharge	Effective if required site NPDES discharge limits can be met	Easily implemetable as discharge limits have already been selected for the current discharge points	Low cost.

Process option screened out

Process option retained

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 4-4 (2 of 2)
SELECTION OF REPRESENTATIVE GROUNDWATER PROCESS OPTIONS
LHAAP-17 FEASIBILITY STUDY
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

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 RAO and applicable ARARs **(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 LUCs for treatment residuals and untreated waste.
- Use of LUCs, 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.

These statutory requirements and preferences were given due consideration in the development of alternatives for LHAAP-17.

5.1.2 Development using Remediation Strategies and Process Options

The media at LHAAP-17 presenting an unacceptable risk and hazard are soil and groundwater. Thus, the purpose of the remedial alternatives is to present the decision maker with technical and

economic options for remediation of soil and groundwater at LHAAP-17. Although all of the action alternatives would achieve the RAO 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 were grouped and combined into alternatives to meet the RAOs as indicated on **Table 5-1**.

5.2 Description of Remedial Alternatives

The following sections describe the remedial alternatives in more detail (see **Table 5-1** for a presentation of the components of each alternative). The details included in the alternative descriptions (e.g., quantities and dimensions) support the evaluation in **Section 6.0** and the cost estimate in **Appendix C**. Quantities and dimensions are provided for cost estimating purposes only and may be changed based on the design. 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 the source units (contaminated soil) and 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 – Excavation and Off-site Disposal for Soil; MNA and LUCs for Groundwater

The goals of this alternative are to prevent exposure of the hypothetical future maintenance worker to contaminated soil and groundwater and the ecological receptors to surface soil at LHAAP-17. Soil that has the potential to pose risk to the human or ecological receptor or impact groundwater will be removed. The shallow zone and intermediate zone groundwater have contaminants above MCLs or GW-Ind that will be reduced over time to meet the cleanup levels. Natural attenuation will be monitored and evaluated to confirm that contaminant concentrations in the shallow and intermediate groundwater remains localized, and contaminants are being reduced to cleanup levels over time. LUCs would be maintained until groundwater preliminary cleanup levels are met.

5.2.2.1 Removal of Soil above Preliminary Cleanup Levels

The recommended removal action consists of excavation of the explosives, barium and dioxin contaminated soil and off-site disposal at a RCRA Subtitle D-permitted landfill. Excavation of

the contaminated soil and disposal in a RCRA-permitted landfill will result in the following: 1) removal of soil that is a direct risk to the hypothetical future maintenance worker, thereby protecting human health by preventing inhalation, ingestion, and dermal contact with the COCs; 2) removal of contaminated soil that is a potential source of cross-contamination to groundwater, thereby ensuring that groundwater can ultimately be restored to its beneficial uses; and 3) removal of soil that is posing risk to ecological receptors. The estimated volume of soil to be removed is estimated to be approximately 8,000 cubic yards and is based on the preliminary cleanup levels in **Table 3-4**. The treatability demonstration study may have reduced the contaminants to the preliminary cleanup level. To verify the remaining levels of contamination and to further delineate areas of excavation for design purposes, a limited soil sampling will be conducted during the remedial design phase. The approximate excavation locations are highlighted on **Figure 5-1**. The removal of soil contamination will be verified by collecting confirmation samples from the walls and floors of the excavation area and submitting them for laboratory analysis for the COCs of interest. Clean borrow soil will be used as needed to backfill the excavations so they can be graded for proper drainage.

With the removal of the contaminated soil at LHAAP-17, health and ecological risks as well as the potential migration of contaminants from soil to groundwater will be eliminated.

5.2.2.2 Groundwater Program

For this alternative, a monitoring program would be implemented to address VOCs and perchlorate contamination in the shallow and intermediate zones. In both the shallow and intermediate groundwater zones, MNA will be utilized to ensure the degradation of contaminants in groundwater over time. MNA will reduce contaminant levels to the preliminary remediation goal and restore these zones to beneficial uses.

The attenuation evaluation in **Appendix A** has shown that attenuation has been effective in the shallow zone in reducing contaminant concentrations. Based on the findings of that evaluation, geochemical conditions and the presence of dechlorinating microorganisms are adequate for attenuation of chlorinated solvents and perchlorate in the localized areas. The evaluation approximated from 117 years for TCE to attenuate to MCL in the shallow zone. Perchlorate is estimated to achieve GW-Ind values in less time for the shallow zone. The attenuation of TCE in the intermediate zone is estimated to occur within the 30-year monitoring period (used for cost estimating purposes). The performance monitoring program will be developed as part of the remedial design phase and will define the MNA expectations. The objectives of the performance monitoring program will include the demonstration that MNA is occurring, verification that there has been no unacceptable impact to downgradient receptors, verification that the plume is not expanding, and verification of the attainment of RAOs. The sampling program design will be based on the current plume, seasonal variations, groundwater direction, and velocity.

Monitored Natural Attenuation

For the first 2 years of MNA, performance monitoring will be performed quarterly. After eight quarterly sampling events, MNA will be evaluated. The analytical program will consist of VOCs, including chlorinated compounds and degradation products, methane, ethene, and ethane. 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 number of wells to be monitored will be determined in the remedial design. However, the cost estimate includes installation of two new monitoring wells.

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.

Long-Term Operation

Long-term operations will begin after the eight quarters of MNA performance monitoring. The sampling frequency will then be changed to semiannual for 3 years, and then annual until the next 5-year review. Sampling and analysis of groundwater would be performed at LHAAP-17 for multiple contaminants and general chemistry parameters. Monitoring would be required to demonstrate that natural attenuation is occurring, as well as compliance with ARARs and the RAO. Data obtained during the monitoring program will be used in support of the 5-year reviews required by CERCLA Section 121(c). The sampling frequency may be changed to once every 5 years if the data suggest that less frequent sampling is appropriate.

For cost estimating purposes, the LTM schedule is assumed to be semiannual for years 3 through 5, annually for years 6 through 10, and once every 5 years thereafter for a period of 30 years. Future sampling frequency after the first 5-year review will be evaluated and determined at that time.

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 for a duration of 30 years.

5.2.3 Alternative 3 – Excavation and Off-site Disposal for Soil; In Situ Bioremediation, MNA and LUCs for Groundwater

The goals of this alternative are to prevent exposure of the hypothetical future maintenance worker to contaminated soil and groundwater and the ecological receptors to surface soil at LHAAP-17. Soil that has the potential to pose risk to the human or ecological receptor or impact

groundwater will be removed. Following the removal of the source soils to the proposed cleanup levels, in situ bioremediation will be implemented to reduce groundwater contaminant concentrations in the areas of the highest concentrations in the shallow zone. MNA will be used for the intermediate zone. After in situ bioremediation, natural attenuation will be monitored and evaluated for the entire plume to confirm that contaminant concentrations are being reduced to the proposed cleanup levels over time. LUCs would be maintained until groundwater is restored to beneficial use.

5.2.3.1 Removal of Soil above Cleanup Levels

The recommended removal action consists of excavation of the explosives, barium and dioxin contaminated soil and off-site disposal at a RCRA Subtitle D-permitted landfill. Excavation of the contaminated soil and disposal in a RCRA-permitted landfill will result in the following: 1) removal of soil that is a direct risk to the hypothetical future maintenance worker, thereby protecting human health by preventing inhalation, ingestion, and dermal contact with the COCs; 2) removal of contaminated soil that is a potential source of cross-contamination to groundwater, thereby ensuring that groundwater can ultimately be restored to its beneficial uses; and 3) removal of soil that is posing risk to ecological receptors. The estimated volume of soil to be removed is estimated to be approximately 8,000 cubic yards and is based on the preliminary cleanup levels in **Table 3-4**. The treatability demonstration study may have reduced the contaminants to the preliminary cleanup level. To verify the remaining levels of contamination and to further delineate areas of excavation for design purposes, a limited soil sampling will be conducted during the remedial design phase. The approximate excavation locations are highlighted on **Figure 5-1**. The removal of soil contamination will be verified by collecting confirmation samples from the walls and floors of the excavation area and submitting them for laboratory analysis for the COCs of interest. Clean borrow soil will be used as needed to backfill the excavations so they can be graded for proper drainage.

With the removal of the contaminated soil at LHAAP-17, health and ecological risks as well as the potential migration of contaminants from soil to groundwater will be eliminated.

The anticipated future use of the site as part of Caddo Lake National Wildlife Refuge is based on a Memorandum of Agreement between the USFWS and the Army (Army, 2004). A notification will be recorded with Harrison County that the site is suitable for non-residential use because the site was not evaluated for unrestricted use. The notification will also be included in the Environmental Protection Provisions in the ECOP document to be prepared for transferring the property to the USFWS. Limited monitoring will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every 5 years to document that the use of LHAAP-17 is consistent with the non-residential use scenarios evaluated in the risk assessment. The certification can be included with the CERCLA 5-year reviews for as long as they are conducted.

5.2.3.2 In Situ Bioremediation for Groundwater Plumes

This alternative would utilize in situ bioremediation for the shallow zone and MNA for the intermediate zone.

In situ groundwater bioremediation is a technology that encourages growth and reproduction of indigenous microorganisms to enhance biodegradation of organic constituents in the saturated zone. The microbiological processes are used to degrade or transform contaminants to ultimately less toxic or nontoxic forms. LHAAP-17 has mixed VOC and perchlorate plumes. The VOCs are primarily chlorinated solvents such as TCE, 1,1-DCE, and 1,2-DCA. These COCs exceed the applicable MCLs for groundwater as discussed in **Section 3.4**. Treatment under anaerobic conditions is often applied to these types of contaminants.

In general, the components of the in situ bioremediation action include:

- **Performing a treatability study.** A number of environmental conditions can slow or stop the biodegradation process. Therefore, prior to initiation of a bioremediation project, a specific microbial enhancement study and general hydrogeologic investigation will be required for the site. These studies are 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 biodegradability, phase-distribution, leaching potential, and chemical reactivity of the contaminants; the mix of contaminants in the plume; soil type and properties; pH; salinity; competing electron acceptors (e.g., sulfates, nitrates); the presence of adequate microbial populations; the presence of adequate microbial populations; and the presence or absence of inhibitory substances.
- **Retrofitting existing wells for injection.** Chlorinated solvents and perchlorate often require circulation of nutrients and other growth-stimulating additives/materials specific to the contaminants' metabolic degradation process. The wells will be used to inject these materials to accelerate microbial degradation of the plumes. It is anticipated that the material will be injected quarterly for 1 year and that the injection will occur in the shallow zone at approximately 15 feet bgs.
- **Injecting nutrients into the subsurface at a predetermined location.** Bacteria present in the groundwater can use chlorinated solvents as electron acceptors. 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 COCs at LHAAP-17 can degrade under anaerobic conditions, but microorganisms, mechanisms, and redox requirements differ. Based on results of a treatability study, appropriate nutrients and other materials will be injected into the subsurface. For this FS, it is assumed that a Hydrogen Release Compound® (HRC®), a sticky gel, will best degrade the COCs at LHAAP-17. HRC® is a polyacetate compound especially formulated for the slow release of lactate into water (Regenesis, 2002). The HRC® compound is typically heated to reduce its viscosity and injected

with a high viscosity fluid pump. In addition to the application of HRC®, degradation of the 1,1-DCE to vinyl chloride may require additional materials, such as KB-1 (Cox, 2002). The plume will be gridded with direct-push technology (DPT) injection sites through which the various materials would be injected. For costing purposes in this FS, it is assumed that application would include 10 DPT injection points at approximately 15 feet bgs to cover the groundwater plume.

- **Sampling wells to monitor effectiveness.** Monitoring for contaminants will be performed to assess the effectiveness of the treatment. Anticipated remediation times may be short with appropriate contact. Assuming first order anaerobic degradation rates and reasonable half-lives for the COCs, the COCs could be reduced to their respective levels amenable to MNA remediation in approximately 2 years. Additional monitoring in the treatment zone is recommended for 1 to 3 years after reduction of the COCs to the remediation levels. Since there is considerable uncertainty about achieving sufficient contact between the contaminated groundwater and the injected material, the groundwater in the treatment zone will continue to be monitored for the maximum recommended period, 3 years, after reduction of the COCs to the preliminary remediation goals.

If at some time in the future, property ownership is transferred from a federal agency to the private sector, a deed restriction for the use of groundwater and use of the land as an industrial/wildlife refuge will be developed. The Army will record a notice of LUCs with Harrison County and will include the notice with any transfer letter to the USFWS for the intended future use as a national wildlife refuge.

5.2.3.3 Monitored Natural Attenuation

In both the shallow and intermediate groundwater zones, MNA will be utilized to complete the remediation. MNA will reduce contaminant levels to the preliminary cleanup levels.

The MNA evaluation in **Appendix A** has shown that MNA has been effective in the shallow zone and intermediate zone in reducing contaminant concentrations. Based on the findings of that evaluation, geochemical conditions and the presence of dechlorinating microorganisms are adequate for the reductive dechlorination of chlorinated solvents in localized areas. Site conditions in localized areas are also favorable for perchlorate reductions.

MNA will be implemented in the shallow zone following the 1.5 years of in situ bioremediation activities, which will have reduced the COC concentrations to levels that are amenable to remediation by MNA. MNA will be implemented in the intermediate zone concurrent with the biotreatment of the shallow zone. MNA sampling for the intermediate zone will be quarterly for at least the first 2 years. More extensive environmental monitoring will be performed under this alternative than for Alternative 2. It is anticipated that the existing monitoring wells at LHAAP-17 can be utilized as a network for in situ groundwater bioremediation and monitoring. The frequency of sampling will be established so that trends of contaminant concentrations can

be identified. Additional analytes will be collected to assess the biological condition of the groundwater.

After the implementation of bioremediation has been completed in the shallow zone, groundwater sampling will occur quarterly for years 1.5 through 3.5. The treatment method may require modification if concentrations do not decrease as anticipated.

5.2.3.4 Long-Term Operation

Long-term operation would include maintenance of the LUCs and the MNA activities. Sampling and analysis of groundwater would be performed at LHAAP-17 for VOCs, perchlorate and general chemistry parameters.

Land use controls and LTM will be maintained until the cleanup levels are achieved. The LUC will consist of a restriction on groundwater use at LHAAP-17. If at some time in the future, property ownership is transferred from a federal agency to the private sector, a deed restriction for the use of groundwater will be developed, if transfer occurs during the time frame that COCs are present above groundwater cleanup levels.

The monitoring program will be defined during remedial design. For estimating purposes, it is assumed that monitoring will occur semi-annually for years 3 through 5 in the intermediate zone and for years 3.5 through 5 for the shallow zone, annually through year 10 in both zones, and will be reduced to once every 5 years thereafter until preliminary cleanup levels are reached. For the estimate, it is assumed that the LTM will continue until year 30. The sampling frequencies may change based on the results of the 5-year reviews and the contaminant concentrations at those times. Monitoring would be required to demonstrate that reductions in concentrations are occurring, as well as progress toward the RAOs. Data obtained during the monitoring program will be used in support of the 5-year reviews required by CERCLA Section 121(c). Sampling results will be evaluated in accordance with the monitoring program, and if the results indicate unusual deviations outside of sampling variability or seasonal fluctuations, additional sampling or action will be taken as described in the monitoring program.

Any well that is proposed for LTM 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 periodic monitoring report.

5.2.4 Alternative 4 – Excavation and Off-site Disposal for Soil; Groundwater Extraction; MNA and LUCs for Groundwater

The goals of this alternative are to prevent exposure of the hypothetical future maintenance worker to contaminated soil and groundwater and the ecological receptors to surface soil at LHAAP-17. Soil that has the potential to impact groundwater will be removed.

This alternative uses groundwater extraction followed by MNA in the shallow zone until the preliminary cleanup levels are reached. The extracted groundwater will be piped to the existing groundwater treatment plant at LHAAP-18/24 for treatment and discharge. In the intermediate zone, MNA will be implemented until the preliminary cleanup levels are reached. LUCs will be in place in both zones until groundwater preliminary cleanup levels are met.

5.2.4.1 Removal of Soil above Cleanup Levels

The recommended removal action consists of excavation of the explosives, barium and dioxin contaminated soil and off-site disposal at a RCRA Subtitle D-permitted landfill. Excavation of the contaminated soil and disposal in a RCRA-permitted landfill will result in the following: 1) removal of soil that is a direct risk to the hypothetical future maintenance worker, thereby protecting human health by preventing inhalation, ingestion, and dermal contact with the COCs; 2) removal of contaminated soil that is a potential source of cross-contamination to groundwater, thereby ensuring that groundwater can ultimately be restored to its beneficial uses; and 3) removal of soil that is posing risk to ecological receptors. The estimated volume of soil to be removed is estimated to be approximately 8,000 cubic yards and is based on the preliminary cleanup levels in **Table 3-4**. The treatability demonstration study may have reduced the contaminants to the preliminary cleanup level. To verify the remaining levels of contamination and to further delineate areas of excavation for design purposes, a limited soil sampling will be conducted during the remedial design phase. The approximate excavation locations are highlighted on **Figure 5-1**. The removal of soil contamination will be verified by collecting confirmation samples from the walls and floors of the excavation area and submitting them for laboratory analysis for the COCs of interest. Clean borrow soil will be used as needed to backfill the excavations so they can be graded for proper drainage.

With the removal of the contaminated soil at LHAAP-17, health and ecological risks as well as the potential migration of contaminants from soil to groundwater will be eliminated.

5.2.4.2 Groundwater Extraction and Treatment for Shallow Groundwater Plumes

The groundwater remediation for the shallow groundwater zone will involve the extraction of contaminated groundwater by means of recovery wells or interception trenches (provided the results of the predesign studies warrant their use). The extracted water will undergo treatment at the existing groundwater treatment plant. The purpose of this "pump and treat" system will be to reduce the perchlorate concentrations in the groundwater to levels that allow natural attenuation

of the VOCs. Perchlorate will also continue to attenuate. MNA monitoring will begin after approximately 1.5 years of extraction.

Pre-Design Study. This action in the shallow groundwater zone will begin with a pre-design study. A pump test will be conducted and hydrogeologic parameters will be measured to better design the system. During the design activities, extraction trenches will also be evaluated. Groundwater flow will be modeled to set performance evaluation parameters and to assess the likely time required for remediation.

Construction. The shallow zone groundwater contamination at LHAAP-17 consists of a VOC plume and an overlapping perchlorate plume. The contamination occurs in the shallow groundwater zone where a sufficient number of groundwater monitoring wells are located throughout the site. To remediate the contaminated groundwater, three of the existing monitoring wells in the shallow zone will be converted to extract the contaminated groundwater from the aquifers. A new piping system will be constructed to transport the water to the nearby groundwater treatment plant.

For costing purposes, 900 linear feet of 4-inch high-density polyethylene (HDPE) pipe is assumed to bring the water from each well to the treatment plant. Backflow preventer valves will be installed on each run of pipe. Air release valves will be installed at four topographic high points. The length of pipeline will require one booster pump and a minimum of three clean outs to facilitate cleaning of the line. The HDPE pipes will be installed to depth of three (3) feet in a sandy granular material. The valves and pumps will be installed in concrete vaults. It is estimated that it will take 1.5 years for the highest concentrations of perchlorate and VOCs to be removed from the LHAAP-17 groundwater, thus reducing the contaminant mass. These estimates are for costing purposes only and will likely be modified during the design.

Performance Monitoring. During extraction, samples will be collected from the three extraction wells to monitor the effectiveness of the action. Monthly sampling will be conducted for approximately six months during startup and initial operation of the extraction system. After six months, monitoring will be reduced to quarterly for approximately 1 year or until pumping ceases. If perchlorate concentrations have not been reduced to levels at or below 20,000 µg/L, a contingency action may be initiated pending lead agency and regulatory approval. If the 20,000 µg/L trigger value has been obtained, then MNA will be implemented.

Water Treatment/Surface Water Discharge. The extracted groundwater from LHAAP-17 will be treated at the LHAAP groundwater treatment plant, which was originally built to treat groundwater containing VOCs and metals extracted from other LHAAP sites. The plant uses air stripping, carbon adsorption, and thermal oxidation. Perchlorate treatment using a fluidized bed reactor was added in April 2001 to the treatment plant. **Figure 5-2** shows a simplified flow

diagram of the primary treatment components in the existing plant. The extracted water from LHAAP-17 will be discharged from the piping into the existing 300,000-gallon equalization tank. This tank receives water from other LHAAP sites and is stored in this tank until treatment. After the water is treated, the effluent will be discharged in accordance with plant procedures to surface water. The plant presently operates at a fraction of its maximum capacity of 1 to 1.5 million gallons of water per month. The original groundwater treatment plant components have adequate capacity to accommodate the increase in volume that will be introduced to the system when the contaminated groundwater is transported through the piping system from LHAAP-17 to the plant.

Extraction System. Operation and maintenance will include groundwater extraction system maintenance, groundwater treatment plant operations, and environmental media monitoring. In approximately 1.5 years, the extraction wells are anticipated to remove the highest concentrations of VOCs and perchlorate from the groundwater at LHAAP-17, thus reducing the contaminant mass to make conditions favorable for MNA. During the groundwater extraction operations, the extraction wells will require regular maintenance to prevent fouling of well screens, and the extraction pumps will require routine maintenance and may also require replacement. Cleaning of the pipelines, refurbishing pumps and other maintenance activities will be needed on the groundwater collection and transport system during full-scale operation. O&M costs will include the addition of chemicals, power, and labor; equipment cleaning, tank cleaning, general system maintenance, and replacement; and regulatory monitoring and reporting. O&M activities will also be conducted at the LHAAP plant location as part of the routine plant O&M activities.

5.2.4.3 Monitored Natural Attenuation

MNA will reduce contaminant levels to cleanup levels. In the shallow groundwater zone, MNA will be utilized to complete the remediation after extraction. In the intermediate groundwater zone, MNA will be the treatment utilized to reach the cleanup levels.

The MNA evaluation in **Appendix A** has shown that MNA has been effective in reducing contaminant concentrations in groundwater. Based on the findings of that evaluation, geochemical conditions and the presence of dechlorinating microorganisms are adequate for the reductive dechlorination of chlorinated solvents in localized areas. Site conditions in localized areas are also favorable for perchlorate reduction.

In the shallow zone, the perchlorate trigger value of 20,000 µg/L or below should be obtained after approximately 1.5 years of pumping. At that point, conditions are expected to be favorable for MNA. The extraction wells will then be restored to their original monitoring well role and MNA will be implemented to demonstrate that remaining perchlorate and VOCs are attenuated by natural processes.

MNA will be implemented in the intermediate zone concurrent with the extraction in the shallow zone. MNA activities for the intermediate zone will be similar to those described in Alternative 3. For the first 2 years of MNA, monitoring will be quarterly.

5.2.4.4 Long-Term Operation

Long-term operation would include maintenance of the LUCs and the MNA activities. Sampling and analysis of groundwater would be performed at LHAAP-17 for VOCs, perchlorate and general chemistry parameters.

Land use controls and LTM will be maintained until the proposed cleanup levels are achieved. The LUC will consist of a restriction on groundwater use at LHAAP-17. If at some time in the future, property ownership is transferred from a federal agency to the private sector, a deed restriction for the use of groundwater and use of the land as an industrial/wildlife refuge will be developed. The Army will record a notice of LUCs with Harrison County and will include the notice with any transfer letter to the USFWS for the intended future use as a national wildlife refuge.

The monitoring program will be defined during remedial design. For estimating purposes, it is assumed that long-term groundwater monitoring will occur semi-annually for years 3 through 5 in the intermediate zone and for years 3.5 through 5 for the shallow zone, annually through year 10 in both zones, and will be reduced to once every 5 years thereafter until preliminary cleanup levels are reached. It is also assumed that the LTM will continue until year 30. The sampling frequencies may change based on the results of the 5-year reviews and the contaminant concentrations at those times. Monitoring would be required to demonstrate that reductions in concentrations are occurring, as well as progress toward the RAOs.

Data obtained during the monitoring program will be used in support of the 5-year reviews required by CERCLA Section 121(c). Sampling results will be evaluated in accordance with the monitoring program, and if the results indicate unusual deviations outside of sampling variability or seasonal fluctuations, additional sampling or action will be taken as described in the monitoring program. Any well that is proposed for LTM 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 periodic monitoring report.

Table 5-1
Alternative Development

Contaminated Media	Process Option	Selected for Alternative Grouping			
		1 (No Action)	2	3	4
Solids	No Action	Yes	—	—	—
Soil	Excavate media above cleanup levels	—	Yes	Yes	Yes
	Off-site Disposal	—	Yes	Yes	Yes
Groundwater	No Action	Yes	—	—	—
Shallow and Intermediate Zones	Monitored Natural Attenuation (MNA)	—	Yes	Yes	Yes
Shallow and Intermediate Zones	Land Use Controls until goals achieved	—	Yes	Yes	Yes
Shallow Zone	In situ bioremediation	—	—	Yes	—
Shallow Zone	Extraction and Ex-situ treatment	—	—	—	Yes
Shallow Zone	Disposal	—	—	—	Yes

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LEGEND

- Sample location with contamination that poses Ecological Risk. See Table 2-5 for additional information.
- Sample location with contamination that poses Human Health Risk (for soil to groundwater).
- Soil sample location not posing risk.
- Soil sample deemed unusable by EPA for environmental decisions (Jacobs, 2002).
- Road
- Proposed excavation areas with average depth of 5 feet below ground surface.
- Approximate boundary of treatability demonstration study (PEC, 2004).
- Site

0 40 80 160 Feet

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FIGURE 5-1

AREAS OF SOIL REMEDIATION
LHAAP-17 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

OFFICE	DRAWN BY	CHECKED BY
Houston, TX	B. Muske 02/03/09	S. Watson 02/27/09

APPROVED BY: P. Srivastav 04/08/09

FILE PATH: T:\Longhorn\MXD\ST2917\LHAAP17_SoilRemediation.mxd

Plot Date: 2/27

00089218

PLOT DATE: 1/30/06
FORMAT REVISION 5/13/02

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	---	Houston, Texas	J. RDZ	1/24/06	D. CRISPO	8/13/07	P. SRIVASTAV	8/13/07	117591-A16

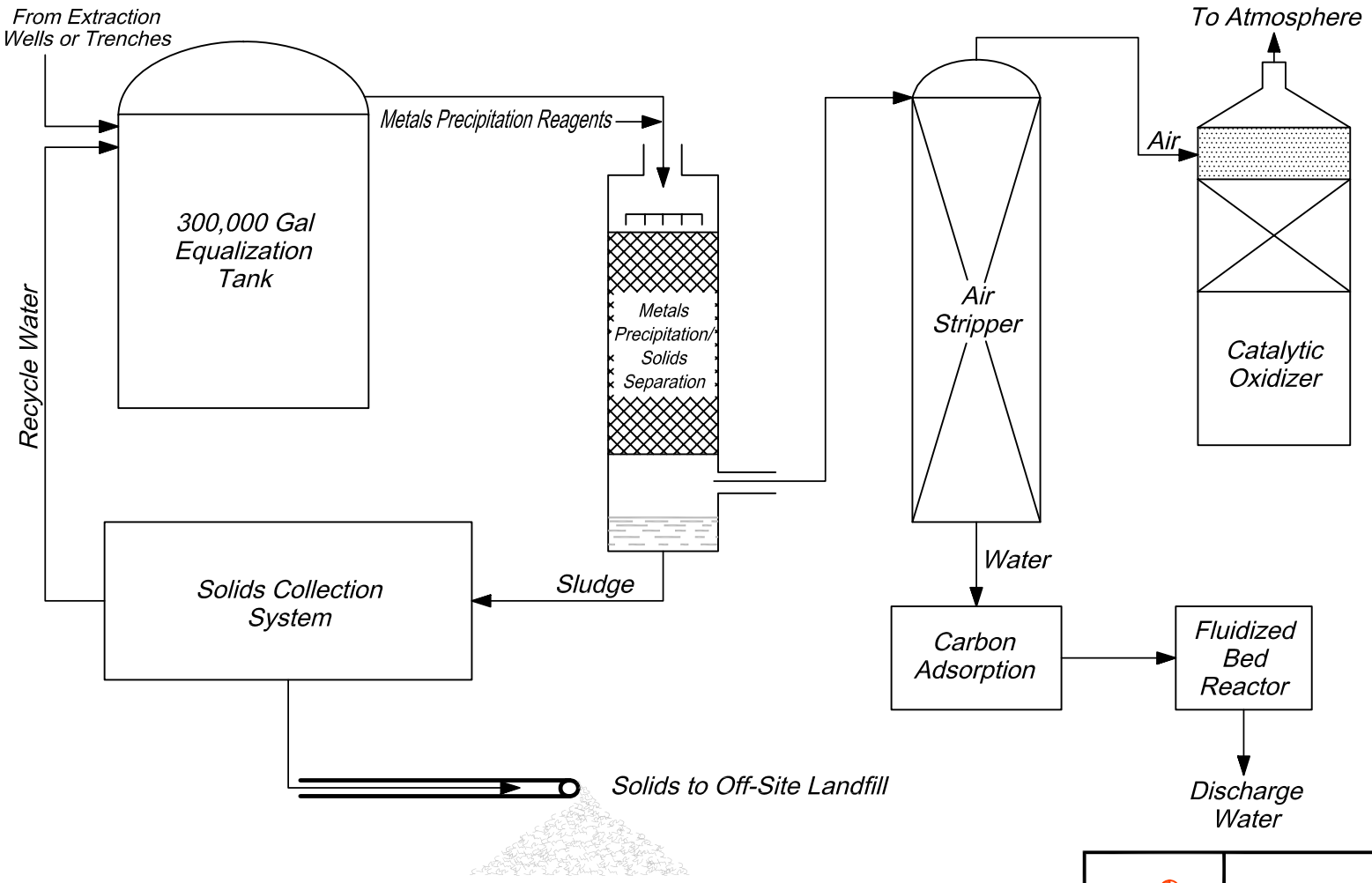

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FIGURE 5-2
EXISTING GROUNDWATER TREATMENT PLANT PROCESS
LHAAP-17 FEASIBILITY STUDY
LONGHORN ARMY AMMUNTION PLANT
KARNACK, TEXAS

6.0 Detailed Analysis of Alternatives

6.1 Introduction

This section presents and assesses relevant information that provides the basis for selecting an alternative. **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.

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 nine criteria and an overview of the approach taken by this FS to evaluate each alternative with regard to 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 COCs. In such cases, nonpromulgated advisories, criteria, or guidance developed by the USEPA or other federal agencies or states can be TBCs. There are three types of ARARs; chemical-specific, location-specific, and action-specific. The chemical-, location- and action-specific ARARs are presented in **Section 3.3**.

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.

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 LUCs 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 TSD 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 are 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 2.8 percent and a base O&M and monitoring period of up to 30 years, unless the alternative evaluated is expected to be complete in less than 30 years.

Appendix C 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 PP 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 PP 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 Alternative

Under the no action alternative, no further action will be taken at LHAAP-17 to control human exposure to contaminated groundwater or to monitor potential groundwater impacts to surface water. The contaminated soil and groundwater will remain in place without the implementation

of any contaminant removal, treatment, or containment. The LUCs to prevent access to the site will not be established or will be discontinued. No environmental monitoring will occur. It is assumed that the public and ecological receptors could access the waste. 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 RAOs for LHAAP-17. This alternative provides no control of exposure to the contaminated soil and groundwater and no reduction in the risks to human and ecological receptors for current and future land use scenarios. Risks to receptors will exceed the USEPA-established threshold for acceptable incremental lifetime cancer risk of 1×10^{-4} for carcinogens or an HI of 1 for noncarcinogens. The greatest risk will come from ingestion of groundwater although risk from exposure to surface soil is possible. The contaminants causing the greatest amount of risk are VOCs and perchlorate in groundwater and explosive compounds in soil. The EEQ is greater than 1 for the deer mouse and short-tailed shrew. Explosive compounds, barium and dioxin in the soil pose ecological hazard (Shaw, 2007b).

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

6.3.1.3.1 Magnitude of Residual Risk

The "no action" alternative will not provide an effective or permanent long-term solution. The residual risk and toxicity from soil and groundwater exposure under a "no action" alternative will be unacceptable at LHAAP-17. Soil exposure routes account for over 46.9 percent of the overall carcinogenic and non-carcinogenic risks, generating a carcinogenic risk of 1.4×10^{-3} and an HI of 37 for the hypothetical future maintenance worker and an unacceptable EEQ for ecological receptors. For the hypothetical future maintenance worker, groundwater exposure routes account for over 53 percent of the overall carcinogenic and non-carcinogenic risks, generating a carcinogenic risk of 1.6×10^{-3} and an HI of 3,500. These risks were conservatively calculated for a hypothetical future maintenance worker ingesting the groundwater. Currently, the

groundwater at LHAAP-17 is not used for drinking water, and is not anticipated to be used for drinking water under a wildlife refuge future use scenario.

Currently, there is no unacceptable risk or toxicity from recreational exposure to surface water sediment in Harrison Bayou, into which surface water from LHAAP-17 drains. The VOC plume at LHAAP-17 is still localized and has not spread much beyond the burning ground area. The perchlorate plume overlaps the VOC plume. Most of the wells closest to Harrison Bayou have no perchlorate detections.

6.3.1.3.2 Adequacy and Reliability of Controls

The "no action" alternative will not establish or maintain any LUCs at LHAAP-17 and, therefore, will not reduce the existing site risks.

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 will be taken; therefore, the short-term effectiveness criterion is not applicable to this alternative. The "no action" alternative will not cause any added short-term risks to remediation workers, the community or the environment.

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 – Excavation and Off-site Disposal for Soil; MNA and LUCs for Groundwater

This alternative consists of the following major components:

- Soil excavation and off-site disposal
- MNA for COCs in the shallow and intermediate groundwater zones
- Long-term LUCs to restrict use of the site groundwater

6.3.2.1 Overall Protection of Human Health and the Environment

6.3.2.1.1 Protection of Human Health

The actions proposed for this alternative will:

1. Prevent exposure to residual wastes in the soil that exceed proposed cleanup levels
2. Prevent leaching of contaminants from the soil into the groundwater at concentrations that exceed proposed cleanup levels
3. Restore both the shallow and intermediate groundwater zones to proposed cleanup levels
4. Prevent inappropriate site groundwater usage via LUCs

Therefore, the residual site risk upon completion of these actions will be within the target risk range for the hypothetical future maintenance worker. This alternative is protective of human health and the environment and achieves the RAOs for LHAAP-17.

The field activities planned under this alternative will have some short-term risks requiring the significant reliance on engineering controls to minimize the risk. Exposure to risks that occur during excavation of contaminated soil will be controlled through the implementation of a health and safety plan in compliance with 29 CFR 1910.120. The plan will establish safe work procedures and appropriate PPE.

6.3.2.1.2 Protection of the Environment

The removal of soil that exceeds cleanup levels at LHAAP-17 will reduce the risk to human and ecological receptors from contaminated soil. In the short-term, risks will occur when soils are removed and staged. Engineering controls will be important to control direct exposure and runoff potential during the field work.

6.3.2.2 Compliance with ARARs

6.3.2.2.1 Chemical-Specific ARARs

This alternative will comply with the chemical-specific ARARs for soils and groundwater at LHAAP-17. Soil excavation will remove material that exceeds the proposed cleanup levels. The removal of the source soils will positively impact groundwater by eliminating the potential for the leaching of contaminants into groundwater at concentrations exceeding cleanup levels.

MNA will achieve the chemical-specific ARARs for groundwater through natural biological and chemical processes.

6.3.2.2.2 Location-Specific ARARs

The activities that will be conducted under this alternative would comply with all location-specific ARARs. No activities will take place in sensitive environments such as wetlands.

6.3.2.2.3 Action-Specific ARARs

The activities that will be conducted under this alternative would comply with all action-specific ARARs. Soil remediation will occur in compliance with all transportation and disposal requirements. Stormwater runoff controls will be implemented during soil excavation since the excavation activities will impact an area of more than 1 acre. All runoff requirements will be met to protect Harrison Bayou and other surface water bodies.

6.3.2.3 Long-Term Effectiveness and Permanence

6.3.2.3.1 Magnitude of Residual Risks

Upon completion of source removal, the residual site risk will be within the target risk range and below an HI of 1 for the hypothetical future maintenance worker and within risk range for the ecological receptor. The implementation of LUCs under this alternative would prevent direct contact by human receptors with contaminated groundwater at LHAAP-17, thus minimizing the potential risk posed by groundwater contamination.

6.3.2.3.2 Adequacy and Reliability of Controls

The soil exposure risk at LHAAP-17 for a hypothetical future maintenance worker or ecological receptor will be removed by excavating the contaminated soil areas and placed in a RCRA-permitted landfill.

MNA will be implemented for groundwater in both the shallow and intermediate zones. The lines of evidence for the MNA evaluation at LHAAP-17, is discussed in **Appendix A** and has demonstrated that the natural attenuation of the COCs is occurring at the site. In both shallow and intermediate zones, long-term success will be ensured by monitoring that verifies that natural attenuation is actively occurring.

Long-term LUCs for groundwater will prevent exposure to the remaining COCs in both the shallow and intermediate groundwater zones during the time required to restore the groundwater. The reliability of LUCs will depend on the maintenance of the controls. Compliance with the risk-reduction goals will be monitored and consistent with the required 5-year CERCLA review, the performance of the controls will be assessed throughout the duration of this alternative. The 5-year reviews may indicate the need for components of this alternative to be repaired, modified, or replaced.

6.3.2.4 Reduction of Toxicity, Mobility, or Volume through Treatment

The alternative provides no active remedial measure to reduce the toxicity, mobility, or volume of COCs in groundwater. However, reduction of toxicity, mobility, and volume is achieved though natural biological and chemical processes of contaminants in the aquifer. This reduction would be verified through the monitoring program over several years.

The soil excavation portion of this alternative provides reduction of mobility because contaminated soil is removed from the site and placed in a RCRA-permitted disposal facility.

6.3.2.5 Short-Term Effectiveness

6.3.2.5.1 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. Truck traffic for equipment and materials, including the shipment of contaminated soil off the site for disposal and on-site delivery of borrow material (for backfilling), will occur. If a contaminated soil spill occurs, the spill would be easy to contain and would not impact the surrounding communities. During excavation of soils at LHAAP-17, control of surface runoff will be implemented to avoid releases of contamination to adjacent surface water bodies.

6.3.2.5.2 Protection of Workers during Remedial Action

Some short-term risks to human health or the environment will exist during implementation of this alternative. The soil excavation activity has the potential for transportation or construction accidents. Additionally, this alternative will involve potential short-term risks to workers associated with the operation of excavation equipment and potential exposure to contaminated groundwater and excavated soil. Other risks to workers include those generally associated with construction activities (e.g., slips, trips, and falls).

The implementation of proper engineering controls and safety equipment will minimize potential short-term risks to personnel conducting groundwater sampling activities. Measures will be taken to prevent the contact of personnel with the extracted groundwater. Workers will conform to the site health and safety program and will be equipped with the necessary PPE. A site-specific health and safety plan will be prepared prior to implementing this alternative.

6.3.2.5.3 Short-Term Environmental Effects

Minor clearing and grubbing at LHAAP-17 will be required to effectively excavate the soil; however, since these areas have been cleared in the past, it is unlikely that there are any sensitive species that would be impacted. If any sensitive areas were found, the appropriate regulations will be followed. The implementation of proper engineering controls will minimize the risk of environmental impacts.

6.3.2.5.4 Duration of Remedial Activities

The anticipated duration of the field activities is approximately two months with the major activity being excavation and off-site transport of the contaminated soil at LHAAP-17. Implementation of LUCs would prevent exposure to contaminated groundwater by prohibiting the installation of potable water wells at the site. This alternative could provide almost

immediate protection because LUCs can be implemented relatively quickly (e.g., within six months).

Long-term monitoring will be implemented annually until the first 5-year review, and every 5 years thereafter. Until preliminary cleanup levels are met, groundwater monitoring will be needed to determine the effectiveness of MNA. The amount of time needed to achieve proposed cleanup levels in groundwater will depend on the effectiveness of the natural attenuation, but it is estimated to be as long as 120 years based on the shallow zone TCE plume.

6.3.2.6 Implementability

6.3.2.6.1 Technical Feasibility

All components of this alternative are easy to implement. The limited amount of soil excavation is easy to implement once the area requiring excavation is defined and cleared. There are no other construction activities required. Considering the small quantity of soil with reasonably low levels of contamination requiring disposal, a disposal location will be available. All equipment, services and materials are readily available to conduct the activities for this alternative.

6.3.2.6.2 Administrative Feasibility

All actions under this alternative would be 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 Army shall submit to the USEPA and TCEQ a Responsiveness Summary and ROD. Following consideration of any comments by TCEQ, the ROD will be finalized jointly by the 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 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 Army. The 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.

6.3.2.7 Cost

The total project present worth cost of this alternative is approximately $1.9 million. The details and comparisons of the cost estimates for all of the alternatives are presented in **Appendix C**.

6.3.2.7.1 Capital Cost

The total capital cost is estimated to have a present worth of approximately $1.4 million. The direct capital cost includes mobilization, excavation of soil material; transportation and disposal of excavated soils; demobilization of construction activities and the activities associated with LUCs. Capital costs also include a work plan, regulatory and remedial design documents and a closure report.

6.3.2.7.2 O&M Cost

The total O&M present worth cost is estimated at approximately $0.5 million. The O&M cost includes MNA in the shallow and intermediate zones, monitoring to support required CERCLA 5-year reviews, and LUC surveillance to verify continued use as an industrial area.

6.3.3 Alternative 3 – Excavation and Off-site Disposal for Soil; In Situ Bioremediation, MNA and LUCs for Groundwater

This alternative consists of the following major components:

- Soil excavation and off-site disposal
- In situ bioremediation to address the area of greatest contamination in the shallow zone groundwater plume
- MNA for the remaining contamination in the shallow and intermediate groundwater zones
- Long-term LUCs to restrict use of the site groundwater

6.3.3.1 Overall Protection of Human Health and the Environment

6.3.3.1.1 Protection of Human Health

The actions proposed for this alternative will:

1. Prevent exposure to residual wastes in the soil that exceed cleanup levels
2. Prevent leaching of contaminants from the soil into the groundwater at concentrations that exceed cleanup levels
3. Ultimately restore both the intermediate and shallow groundwater zones to cleanup levels
4. Prevent inappropriate site groundwater usage via LUCs

Therefore, the residual site risk upon completion of these actions will be within the target risk range for the hypothetical future maintenance worker. This alternative is protective of human health and the environment and achieves the RAOs for LHAAP-17.

The field activities planned under this alternative will have some short-term risks requiring the significant reliance on engineering controls to minimize the risk. Exposure to risks that occur during excavation of contaminated soil will be controlled through the implementation of a health and safety plan in compliance with 29 CFR 1910.120. The plan will establish safe work procedures and appropriate PPE.

6.3.3.1.2 Protection of the Environment

The removal of soil that exceeds cleanup levels at LHAAP-17 will reduce the risk to ecological receptors from contaminated soil. In the short-term, risks will occur when soils are removed and staged. Engineering controls will be important to control direct exposure and runoff potential during the field work.

6.3.3.2 Compliance with ARARs

6.3.3.2.1 Chemical-Specific ARARs

This alternative will comply with the chemical-specific ARARs for soils at LHAAP-17. Soil excavation will remove material that causes exceedances of the proposed cleanup levels. The removal of the source soils will positively impact groundwater by eliminating the potential for the leaching of contaminants into groundwater at concentrations exceeding cleanup levels. In situ bioremediation will treat the elevated VOCs and perchlorate concentrations in the shallow groundwater zone and VOCs in the intermediate zone targeting the bulk of the contaminant mass that exceeds chemical-specific ARARs.

6.3.3.2.2 Location-Specific ARARs

The activities that will be conducted under this alternative would comply with all location-specific ARARs. No activities would take place in sensitive environments such as wetlands, and no impacts to archeological resources or threatened and endangered species are anticipated.

6.3.3.2.3 Action-Specific ARARs

The activities that will be conducted under this alternative will comply with all action-specific ARARs. Soil remediation will occur in compliance with all transportation and disposal requirements. Stormwater runoff controls will be implemented during soil excavation since the excavation activities will impact an area of more than 1-acre. All runoff requirements will be met to protect Harrison Bayou and other surface water bodies.

6.3.3.3 Long-Term Effectiveness and Permanence

6.3.3.3.1 Magnitude of Residual Risks

Upon completion of source removal, the residual site risk will be within the target risk range and below an HI of 1 for the hypothetical future maintenance worker. LUCs for groundwater until cleanup levels are achieved will prevent access to the contaminated groundwater.

6.3.3.3.2 Adequacy and Reliability of Controls

The soil exposure risk at LHAAP-17 for a hypothetical future maintenance worker or ecological receptor would be removed by excavating the contaminated soil areas.

Treatment of elevated concentrations of VOCs and perchlorate in the shallow groundwater zone through in situ bioremediation will be effective for reducing COC concentrations to levels that can be addressed via natural attenuation. However, optimum groundwater conditions will be required to increase the effectiveness of biological activity on these contaminants. More extensive treatability studies and further groundwater characterization will be needed before designing the system. Pilot-scale studies will be needed to determine optimum DPT spacing and HRC® injection rates to determine if target redox conditions can be met for reductive dehalogenation. Occasional high concentrations of sulfate or oxidized iron and manganese in the aquifer matrix must be reduced before target contaminants can begin to be destroyed. For 1,1-DCE, application of additional materials such as KB-1 may be necessary. The success of these bioremediation technologies in high concentration areas may be limited due to the toxicity of the contaminants to the microorganisms. Also, because of the low groundwater velocity, a somewhat longer period of time is expected to be required for the treatment material to travel in the subsurface. Therefore, grid spacing must be designed so that the HRC® migrates to all areas of contamination before it is consumed or degraded. The effectiveness of this technology at LHAAP-17 cannot be fully assessed until the treatability and pilot-scale studies have been completed.

MNA will be implemented for groundwater in both the shallow and intermediate zones. In the shallow zone, it will be initiated after the in situ bioremediation Phase. The MNA evaluation (**Appendix A**) has demonstrated that natural attenuation can be effective at the site. In both shallow and intermediate zones, long-term success will be ensured by monitoring that verifies that natural attenuation is actively occurring.

Long-term LUCs for groundwater will prevent exposure to the remaining COCs in both the shallow and intermediate groundwater zones during the time required to restore the groundwater. The reliability of LUCs will depend on the maintenance of the controls. Compliance with the risk-reduction goals will be monitored and consistent with the required 5-year CERCLA review, the performance of the controls will be assessed throughout the duration of this alternative. The 5-year reviews may indicate the need for components of this alternative to be repaired, modified, or replaced.

6.3.3.4 Reduction of Toxicity, Mobility, or Volume through Treatment

In two ways, this alternative satisfies the USEPA statutory preference for remedial actions that permanently reduce contaminant toxicity, mobility and volume and utilize treatment as a principle element. In the shallow groundwater zone of LHAAP-17, in situ bioremediation will

reduce the toxicity and volume of the major contaminants. In both the shallow and intermediate groundwater zones, MNA will reduce the toxicity and volume through natural biological and chemical processes.

6.3.3.5 Short-Term Effectiveness

6.3.3.5.1 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. Truck traffic for equipment and materials, including the shipment of contaminated soil taken off the site for disposal and on-site delivery of borrow material (for backfilling), and bioremediation additives/materials will occur. If a spill of contaminated soil occurs, the spill would be easy to contain and would not likely impact the surrounding communities. During remediation activities at LHAAP-17, control of surface runoff will be important to avoid releases of contamination to adjacent surface water bodies.

6.3.3.5.2 Protection of Workers during Remedial Action

Some short-term risks to human health or the environment will exist during implementation of this alternative. The soil excavation activity has the potential for transportation or construction accidents. Additionally, this alternative will involve potential short-term risks to workers associated with the potential exposure to contaminated groundwater, bioremediation additives/materials, and excavated soil. Other risks to workers include those generally associated with construction activities (e.g., slips, trips, and falls).

The implementation of proper engineering controls and safety equipment will minimize potential short-term risks to remediation personnel conducting the in situ bioremediation and groundwater sampling activities. Measures will be taken to prevent the contact of personnel with the extracted groundwater. Remediation workers will conform to the site health and safety program and will be equipped with the necessary PPE. A site-specific health and safety plan will be prepared prior to implementing this alternative.

6.3.3.5.3 Short-Term Environmental Effects

Minor clearing and grubbing at LHAAP-17 will be required to effectively excavate the soil and install monitoring wells or injection points for bioremediation of groundwater. However, since these areas have been cleared in the past, it is unlikely that there are any sensitive species that will be impacted. If any sensitive areas are found, the appropriate regulation would be followed. The implementation of proper engineering controls will minimize the risk of environmental impacts.

6.3.3.5.4 Duration of Remedial Activities

The duration of this alternative in the shallow zone treated area is approximately 5 years; 6 months for the treatability and pilot studies, 1.5 years to remove the contaminant mass and achieve the remediation goals for groundwater after one HRC® injection, and 3 years of additional groundwater monitoring. Treatability and pilot studies are needed prior to the design of the in situ bioremediation groundwater action. Completion of the studies can be followed with the excavation of surface soils at the site.

The amount of time needed to meet groundwater remediation levels after HRC® injection will depend on the effectiveness of the treatment action, but is estimated to be 1.5 years based on first order anaerobic degradation rates and reasonable half-lives for the COCs; however, there is considerable uncertainty in this time estimate. Monitoring will be needed until remediation levels are met to determine trends in groundwater contamination levels and effectiveness of the remedial action. For this estimate, MNA monitoring is assumed to continue for 30 years throughout the plume (primarily intermediate zone and untreated areas in shallow zone). The monitoring time may increase or decrease depending on the effectiveness of the treatment method. The amount of time needed to achieve cleanup levels in groundwater will depend on the effectiveness of the natural attenuation.

6.3.3.6 Implementability

6.3.3.6.1 Technical Feasibility

The limited amount of soil excavation is easy to implement once the area requiring excavation is defined and cleared. Considering the small quantity of soil with reasonably low levels of contamination requiring disposal, a disposal location will be available. All equipment, services and materials are readily available to conduct the activities for this alternative.

Minimal technical concerns exist that will hinder the implementation of the in situ bioremediation. The equipment and materials required for carbon source delivery are commercially available, but specialized knowledge of in situ biological treatment will be required for implementation. Very few commercial vendors have the required expertise. A treatability study and pilot testing will be required to determine scale-up doses and treatment duration. With sufficient study, it is likely that an implementable design could be developed.

6.3.3.6.2 Administrative Feasibility

All actions under this alternative would be 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 Army shall submit to the USEPA and TCEQ a Responsiveness Summary and ROD. Following consideration of any comments by TCEQ, the ROD will be finalized jointly by the 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 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 Army. The 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 $2.6 million. The details and a comparison of the cost estimates for all of the alternatives are presented in **Appendix C**.

6.3.3.7.1 Capital Cost

The total capital cost is estimated to have a present worth of approximately $2.0 million. The capital cost include mobilization, excavation of soil material, installation and operation of the in situ bioremediation system, transportation and disposal of excavated soils, demobilization of construction activities and the activities associated with LUCs.

The capital costs also include work plans, regulatory and remedial design documents, supplemental soil sampling, the in situ bioremediation treatability study, and a closure report.

6.3.3.7.2 O&M Cost

The total O&M present worth cost is estimated at approximately $0.6 million. The O&M cost includes the assessment of in situ bioremediation performance, monitoring for MNA in the shallow and intermediate zones, monitoring to support the required CERCLA 5-year review process, and LUC surveillance to verify continued industrial use.

6.3.4 Alternative 4 – Excavation and Off-site Disposal for Soil; Groundwater Extraction; MNA and LUCs for Groundwater

This alternative consists of the following major components:

- Soil excavation and off-site disposal;
- Extraction, treatment, and disposal of highly contaminated groundwater from the shallow zone
- MNA for the remaining contamination in the shallow and intermediate groundwater zones
- Long-term LUCs to restrict use of the groundwater

6.3.4.1 Overall Protection of Human Health and the Environment

6.3.4.1.1 Protection of Human Health

The actions proposed for this alternative will:

1. Prevent exposure to residual wastes in soil that exceed cleanup levels
2. Prevent leaching of contaminants from the soil into the groundwater at concentrations that exceed cleanup levels
3. Extract, treat, and dispose highly contaminated groundwater from the shallow and intermediate groundwater zones
4. Ultimately restore both the intermediate and shallow groundwater zones to cleanup levels
5. Prevent inappropriate site groundwater usage via LUCs

Therefore, the residual site risk upon completion of these actions would be within the target risk range for the hypothetical future maintenance worker. This alternative is protective of human health and the environment and achieves the RAOs for LHAAP-17.

The field activities planned under this alternative will have some short-term risks requiring significant reliance on engineering controls to minimize the risk. Exposure to risks that occur during excavation of contaminated soil will be controlled through the implementation of a health and safety plan in compliance with 29 CFR 1910.120. The plan will establish safe work procedures and appropriate PPE.

6.3.4.1.2 Protection of the Environment

The removal of soil that exceeds cleanup levels at LHAAP-17 will reduce the risk to ecological receptors from contaminated soil. In the short-term, risks will occur when soils are removed and staged. Engineering controls will be important to control direct exposure and runoff potential during the field work.

6.3.4.2 Compliance with ARARs

6.3.4.2.1 Chemical-Specific ARARs

This alternative will comply with the chemical-specific ARARs for soils at LHAAP-17. Soil excavation will remove material that causes exceedances of the proposed cleanup levels. The removal of the source soils will positively impact groundwater by eliminating the potential for the leaching of contaminants into groundwater at concentrations exceeding cleanup levels. Groundwater extraction will remove and treat the contaminated groundwater to attain the proposed cleanup levels.

6.3.4.2.2 Location-Specific ARARs

The activities that will be conducted under this alternative will comply with all location-specific ARARs. No activities will take place in sensitive environments such as wetlands, and no impacts to archeological resources or threatened and endangered species are anticipated.

6.3.4.2.3 Action-Specific ARARs

The activities that will be conducted under this alternative will comply with all action-specific ARARs. Soil remediation will occur in compliance with all transportation and disposal requirements. Stormwater runoff control will be implemented during soil excavation since more than 1 acre will be disturbed by excavation activities. All runoff requirements will be met to protect Harrison Bayou and other surface water bodies.

6.3.4.3 Long-Term Effectiveness and Permanence

6.3.4.3.1 Magnitude of Residual Risks

Upon completion of source removal, the residual site risk will be within the target risk range and below an HI of 1 for an industrial user scenario. Groundwater extraction followed by MNA will gradually restore the groundwater. Until the cleanup levels are achieved, LUCs will be needed to prevent access to the groundwater contamination and disturbance of the extraction system.

6.3.4.3.2 Adequacy and Reliability of Controls

The soil exposure risk at LHAAP-17 for a hypothetical future maintenance worker or ecological receptor would be removed by excavating the contaminated soil areas.

Groundwater extraction and treatment will be effective for reducing COC concentrations to the applicable remediation levels in LHAAP-17 groundwater. The extracted water will be treated at the existing LHAAP groundwater treatment plant, which has been operating successfully for several years. There are significant issues associated with the effectiveness of groundwater extraction, especially associated with the use of extraction wells. If the hydraulic conductivity is too low in the aquifer, groundwater extraction will be slow and ineffective. Small capture zones may lead to excessive time frames to capture the contamination. There are also maintenance issues associated with low flow conditions. If extraction wells go dry, it causes the pumps to overheat and fail to operate. A pre-design study may be needed to determine the optimum configuration of wells.

MNA will be implemented for the intermediate zone groundwater and for the shallow zone after the extraction phase. The MNA evaluation (**Appendix A**) has demonstrated that natural attenuation can be effective at the site. In both shallow and intermediate zones, long-term success will be ensured by monitoring that verifies that natural attenuation is actively occurring.

Long-term LUCs for groundwater will prevent exposure to the remaining COCs in both the shallow and intermediate groundwater zones during the time required to restore the groundwater. The reliability of LUCs will depend on the maintenance of the controls. Consistent with the required 5-year CERCLA review, compliance with the risk-reduction goals will be monitored and performance of the controls will be assessed throughout the duration of this alternative. The 5-year reviews may indicate the need for components of this alternative to be repaired, modified, or replaced.

6.3.4.4 Reduction of Toxicity, Mobility, or Volume through Treatment

This alternative satisfies the USEPA statutory preference for remedial actions that permanently reduce the toxicity, mobility, and volume of the contaminants and utilize treatment as a principal element. Implementation of groundwater extraction at LHAAP-17 would permanently reduce the toxicity, mobility, and volume of the groundwater contaminants in this area. Use of the current LHAAP plant would provide irreversible destruction of the COCs in the extracted groundwater from the intermediate zone. In both the shallow and intermediate groundwater zones, MNA will reduce the toxicity and volume through natural biological and chemical processes

6.3.4.5 Short-Term Effectiveness

6.3.4.5.1 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. Truck traffic for equipment and materials, including the shipment of contaminated soil taken off the site for disposal and on-site delivery of borrow material for backfilling, will occur. If a spill of contaminated soil occurs, the spill would be easy to contain and would not likely impact the surrounding communities. During remediation activities at LHAAP-17, control of surface runoff will be implemented to avoid releases of contamination to adjacent surface water bodies.

6.3.4.5.2 Protection of Workers during Remedial Action

Some short-term risks to human health or the environment would exist during implementation of this alternative. The soil excavation activity has the potential to present transportation or construction accidents to the work site environmental. Additionally, this alternative will involve potential short-term risks to workers associated with potential exposure to contaminated groundwater and excavated soil. Other risks to workers include those associated with extended operation of the LHAAP groundwater treatment plant plus risks common to construction activities (e.g., slips, trips, and falls).

The implementation of proper engineering controls and safety equipment will minimize potential short-term risks to remediation personnel conducting the installation of the groundwater

extraction system and groundwater sampling activities. Measures will be taken to prevent the contact of personnel with the extracted groundwater. Remediation workers will conform to the site health and safety program and will be equipped with the necessary PPE. A site-specific health and safety plan will be prepared prior to implementing this alternative.

6.3.4.5.3 Short-Term Environmental Effects

Minor clearing and grubbing at LHAAP-17 will be required to effectively excavate the soil and to install extraction wells and pipelines for groundwater recovery. However, since these areas have been cleared in the past, it is unlikely that there are any sensitive species that will be impacted. If any sensitive areas were found, the appropriate regulation will be followed. The implementation of proper engineering controls will minimize the risk of environmental impacts.

6.3.4.5.4 Duration of Remedial Activities

In 1.5 years, the groundwater extraction system is expected to remove the highest concentrations of perchlorate and VOCs from LHAAP-17 shallow zone groundwater, thus reducing the contaminant mass. After 1.5 years, the extraction wells will be used as monitoring wells, and monitoring will be implemented to demonstrate that any remaining perchlorate and VOCs are attenuated by natural processes.

During extraction activities, samples will be collected from the three extraction wells in the shallow zone monthly for approximately 6 months to monitor the effectiveness of the action. After 6 months, performance monitoring will be reduced to quarterly for approximately 1 year or until pumping ceases. At this point, MNA will begin with quarterly monitoring of several wells for 2 years (Year 3.5), reducing to semiannual sampling for 3 years, and annually thereafter until the next 5-year review. MNA will be implemented in the intermediate zone concurrent with the extraction in the shallow zone. MNA monitoring in the intermediate zone will be conducted quarterly for the first 2 years, semiannual sampling for the following three years, and further reduced to annual monitoring until the next 5-year review. The sampling frequencies may change based on the results of the 5-year reviews and the contaminant concentrations at those times.

6.3.4.6 Implementability

6.3.4.6.1 Technical Feasibility

The limited amount of soil excavation is easy to implement once the area requiring excavation is defined and cleared. Maintenance of the LUCs for the site will be required for industrial use. Considering the small quantity of soil with reasonably low levels of contamination requiring disposal, a disposal location will be available. All equipment, services and materials are readily available to conduct the activities for this alternative.

Minimal technical concerns exist that would hinder the implementation of this alternative. Routine inspection and maintenance of the LUCs would be required. All equipment, services and materials are readily available to conduct the activities for this alternative, and the groundwater treatment plant is already operational. Implementation of groundwater extraction at LHAAP-17 should be straightforward, although uncertainties exist regarding the ability of groundwater extraction to lower contaminant levels sufficiently to reach applicable remediation goals. Low groundwater yield could decrease the effectiveness of the extraction system. A detailed pre-design study would be needed to determine the ideal extraction technique (wells or trenches) and the optimum configuration of wells and/or trenches for effective extraction of the LHAAP-17 groundwater.

6.3.4.6.2 Administrative Feasibility

All actions under this alternative would be 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 Army shall submit to the USEPA and TCEQ a Responsiveness Summary and ROD. Following consideration of any comments by TCEQ, the ROD will be finalized jointly by the 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 development of an implementation plan 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 Army. The 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 $2.1 million. The details and a comparison of the cost estimates for all of the alternatives are presented in **Appendix C**.

6.3.4.7.1 Capital Cost

The total capital cost is estimated to have a present worth of approximately $1.6 million. The capital cost include mobilization,, excavation of soil material, transportation and disposal of excavated soils, demobilization of construction activities and the activities associated with LUCs. The capital costs also include work plans, remedial design document, supplemental soil sampling, pre-design study and a closure report.

6.3.4.7.2 O&M Cost

The total O&M present worth cost is estimated at approximately $0.5 million. The O&M cost includes O&M of the groundwater extraction system, monitoring for MNA in the shallow and intermediate zones, monitoring to support the required CERCLA 5-year review process, and LUC surveillance to verify continued industrial use.

6.4 Comparative Analysis of Alternatives

6.4.1 Introduction

This section presents a comparative analysis of the remedial alternatives for LHAAP-17 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:

- 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 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 four alternatives provide varying degrees of human health protection. The 'no action' alternative (Alternative 1) would not be protective of human health or the environment as no remedial activities or LUCs would be conducted. Alternative 1 does not achieve 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 pathways for human and ecological exposure.

All three action alternatives (Alternative 2, 3, and 4) satisfy the RAOs for LHAAP-17. They remove the contaminated soil, restore the groundwater to cleanup levels and provide access and use restrictions for residual contamination. Alternatives 2, 3, and 4 rely heavily on LUCs to prevent access to the groundwater until cleanup levels are achieved by MNA. Alternatives 3 and 4 both provide a similar level of overall protection as Alternative 2 but achieve cleanup levels for the shallow groundwater zone in a shorter time.

6.4.2.2 Compliance with ARARs

Alternative 1 does not comply with chemical-specific ARARs as no remediation of groundwater will be conducted. Alternatives 2, 3 and 4 comply with all chemical-specific ARARs for soil and groundwater. All of the action alternatives comply with the location-specific and action-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. Under this alternative, no contaminant removal or treatment would take place and no measures would be implemented to control exposure risks posed by contaminated soil and groundwater at LHAAP-17.

Alternative 2 would provide a moderate degree of long-term effectiveness by removing the source soils and providing restoration of the groundwater by MNA. LUCs would be required for groundwater for the protection of human health exposure.

Alternatives 3 and 4 would significantly reduce groundwater contaminant concentrations and rely on MNA and LUCs until the cleanup levels are achieved. These alternatives provide long-term effectiveness by achieving cleanup levels in the shallow zone in a shorter time as compared to Alternative 2. Should MNA in the intermediate zone or in situ bioremediation or groundwater extraction in the shallow zone be considered ineffective after implementation, the remedy or the cleanup levels may need to be re-evaluated.

6.4.3.2 Reduction of Toxicity, Mobility, or Volume through Treatment

Alternatives 1 does not employ treatment in groundwater and would not result in a reduction of toxicity, mobility, or volume of contaminants by active treatment.

Alternatives 2, 3 and 4 would provide a large degree of permanent reduction in toxicity, mobility and volume of the groundwater contaminants.

6.4.3.3 Short-Term Effectiveness

Because Alternative 1 does not involve remedial measures, no short-term risk to workers, the local community or the environment would exist. Alternatives 2, 3, and 4 involve material excavation and off-site disposal which represent a greater exposure potential to remediation workers, a greater potential for runoff releases to the environment, and the potential for off-site traffic accidents and impacts on communities between LHAAP and the disposal facility. Additionally, Alternatives 2, 3, and 4 involve potential short-term risks to workers associated with exposure to contaminated groundwater from monitoring and/or operation of drilling/construction equipment.

Alternative 3 has short-term risks due to remediation workers due to performing in situ bioremediation activities, including the handling of additives/materials. Alternative 4 has short-term risks associated with increased operations at the LHAAP groundwater treatment system, which includes chemical handling (caustic acids) and operation of a high-temperature catalytic oxidizer.

By planning the construction, excavation, and transportation activities in accordance with industry and OSHA codes and requirements, risks from contaminant exposure and construction operations would be controlled to acceptable levels. Sediment deposition into adjacent surface water bodies can be controlled during earthwork and construction activities. Erosion control measures would include surface grading; emplacement of silt fences; covering surfaces with straw, mulch, riprap, and/or geotextile fabrics. Following completion of all construction and excavation, disturbed areas would be regraded with clean backfill and revegetated with native grasses.

6.4.3.4 Implementability

Administratively, all of the alternatives are implementable. Under the Alternative 1, no remedial action would be taken. Therefore, no difficulties or uncertainties would be associated with its implementation.

For Alternatives 2, 3, and 4, soil excavation would require extensive coordination between excavation, sampling, transportation and disposal. For groundwater, Alternatives 3 and 4 are also technically implementable, although less so than Alternative 2 because of the uncertainties associated with hydrogeology conditions that may impact the ability of in situ bioremediation or groundwater extraction to lower contaminant levels sufficiently to reach concentrations amenable to MNA. Alternatives 3 involves the use of in situ bioremediation which from a technical standpoint requires specialized expertise required to design and construct the in-situ bioremediation treatment elements. A groundwater treatment system currently exists at the LHAAP and is easily accessible to the site; thereby, making groundwater extraction as part of Alternative 4 technically implementable.

6.4.3.5 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 2.8 percent. Total project present worth costs for each alternative is presented in **Appendix C**.

The progression of present worth costs from the least expensive alternative to the most expensive alternative is as follows: Alternative 1, Alternative 2, Alternative 4, and Alternative 3. No costs are associated with Alternative 1 because no remedial activities would be conducted. Alternative 2 has the lowest present worth and capital costs of the active remedial alternatives as no active remediation of groundwater will be implemented. Alternative 3 has the highest present worth and capital costs primarily due to the activities associated with the injection phase of in situ bioremediation. The presence of the existing groundwater treatment system at LHAAP greatly reduces the costs associated with groundwater extraction in Alternative 4.

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Appendix A

LHAAP-17 Natural Attenuation Evaluation

APPENDIX A
NATURAL ATTENUATION EVALUATION

FINAL
FEASIBILITY STUDY
LHAAP-17, BURNING GROUND 2/FLASHING AREA, GROUP 2
LONGHORN ARMY AMMUNITION PLANT

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Shaw Project No. 117591

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Acronyms and Abbreviations

µg/L	micrograms per liter
bgs	below ground surface
cells/mL	cells per milliliter
CO_2	carbon dioxide
COC	chemicals of concern
ClO_4^-	perchlorate
ClO_3-	chlorate
ClO_2-	chlorite
Cl-	chloride
DCE	dichloroethene
DCA	dichloroethane
DHC	*Dehalococcoides ethenogenes*
DO	dissolved oxygen
Fe^{+3}	ferric iron
GW-Ind	groundwater medium specific concentration for industrial use
GWRTAC	Groundwater Remediation Technologies Analysis Center
INCHEM	International Program on Chemical Safety
LHAAP	Longhorn Army Ammunition Plant
MC	methylene chloride
MCL	maximum contaminant level
MNA	monitored natural attenuation
MSC	medium specific concentration
mV	millivolts
NO_3^-	nitrate
O_2	oxygen
ORP	oxidation-reduction potential
PCE	tetrachloroethene
Shaw	Shaw Environmental, Inc.
SO_4^{-2}	sulfate
TBC	to be considered
TCA	trichloroethane
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TNT	trinitrotoluene
TOC	total organic carbon
USAFCEE	U.S. Air Force Center for Environmental Excellence
USEPA	U.S. Environmental Protection Agency
VC	vinyl chloride

1.0 Introduction

The U.S. Army Corps of Engineers, Tulsa District, contracted Shaw Environmental, Inc. (Shaw), under the Louisville District's Multiple Award Remediation Contract No. W912QR-04-D-0027, Task Order DS02, to conduct environmental restoration of LHAAP-17 at Longhorn Army Ammunition Plant (LHAAP). This report presents the evaluation for the occurrence of natural attenuation of groundwater contaminants at LHAAP-17. The general location of this site is shown on **Figure A-1**.

LHAAP-17, known as Burning Ground No. 2/Flashing Area, encompasses approximately 3.9 acres and is located in the southeastern quadrant of LHAAP (**Figure A-1**). LHAAP-17 is north of Avenue Q and bisected by Scudday Avenue (**Figure A-2**). The site has been graded above the surrounding terrain, is relatively flat, and covered with grass and scattered brush.

LHAAP-17 was used as a burning ground from 1959 through 1980. Bulk trinitrotoluene (TNT), photo flash powder, and reject material from Universal Match Corporation operations were burned at LHAAP-17. In 1959, all of the material removed from the TNT production area (LHAAP-29) and the TNT Waste Disposal Plant (LHAAP-32) during razing were burned and/or flashed at LHAAP-17. The site was then used until 1980 as a flashing area to decontaminate recoverable metal byproducts. Burning trenches were located around the inside perimeter of the previously fenced area and within the open area on the western boundary of the site. As each trench filled with ash, it was covered and a new trench was dug. The waste residues were reportedly removed from the trenches in 1984.

The subsurface is composed of silty clay to clayey silt, and poorly sorted silty sand. The clay layers tend to separate this groundwater zone into shallow, intermediate, and deep groundwater zones. The shallow zone groundwater flow direction is northwest, towards Harrison Bayou basin (**Figure A-2**).

In February 2007, sampling was conducted for natural attenuation parameters from wells located at the site. The monitoring wells evaluated in February 2007 for evidence of natural attenuation are 130, 17WW01, 17WW02, 17WW05, 17WW06, 17WW10, 17WW12 and 17WW16. All of these monitoring wells are in the shallow groundwater zone except for 17WW05 and 17WW16 which are from the deep groundwater zone. Additional results that were collected before and after February 2007 were also used to evaluate concentration trends and natural attenuation where applicable.

2.0 Description of Natural Attenuation

Natural attenuation is defined as the reduction of contaminants from the combined effect of intrinsic biodegradation, advection, dispersion, dilution, volatilization, and absorption mechanisms. Generally, intrinsic biodegradation is the most important natural attenuation mechanism that results in contaminant destruction. Intrinsic biodegradation can occur in any environment that supports microbial activity. The biodegradation may be limited by the lack of a suitable respiratory substrate (e.g., oxygen) or inorganic nutrients, extreme pH, or limited contaminant bioavailability. Accurate contamination delineation, subsurface conditions characterization, and contaminant migration determination are critical for defining the contribution of intrinsic biodegradation to concentration reduction, for evaluating the effectiveness of natural attenuation, and for establishing regulatory support for use of natural attenuation at a site. Monitored natural attenuation (MNA) entails the use of natural attenuation within the context of a monitoring plan to demonstrate reductions in contaminant concentrations and achievement of remedial objectives.

2.1 Natural Attenuation Lines of Evidence

The U.S. Environmental Protection Agency (USEPA) guidance, Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater (USEPA, 1998), was used in the evaluation of the data to date to assess if natural attenuation could be considered as an alternative in the feasibility study (FS). The USEPA guidance specifies a tiered approach of recommended lines of evidence required for demonstrating that MNA is an effective remedy.

There are three lines of evidence according to the USEPA guidance document based on the OSWER Directive 9200.4-17, which are described as follows:

1. ***First line of evidence.*** Observed Reduction in Contaminant Mass and Concentration. Relies on use of historical groundwater data that demonstrate a clear trend of stable or decreasing chemical of concern (COC) concentrations over time at appropriate monitoring or sampling points.
2. ***Second line of evidence.*** Identified and Quantified Natural Attenuation Processes. Uses geochemical indicators to document certain geochemical signatures or "footprints" in the groundwater that demonstrate (indirectly) the type of natural attenuation process(es) occurring at the site and the rate at which such processes will reduce COCs to the maximum contaminant levels (MCLs) or groundwater medium-specific concentration (MSC) for industrial use (GW-Ind) levels established by the Texas Commission on Environmental Quality (TCEQ) (TCEQ, 2006).

- ***Third line of evidence.*** Microcosm Studies. Most often consists of predictive modeling studies and other laboratory/field studies that demonstrate the occurrence of natural attenuation process(es) at the site and its ability to degrade the COCs.

All three lines of evidence were evaluated for LHAAP-17 to demonstrate the occurrence of natural attenuation of groundwater COCs.

2.2 First Line of Evidence-Contaminant Reduction

The first line of evidence is the observed reduction in concentrations through various attenuation processes. Biodegradation occurs when bacteria use contaminants as carbon sources or electron acceptors. The COCs at LHAAP-17 include perchlorate (ClO_4^-) and chlorinated solvents exceeding their MCLs or GW-Ind levels. The COCs can be degraded through microbial activity in the subsurface. Under the right conditions, all site COCs are amenable to biodegradation. The following subsections provide a brief description of biodegradation of perchlorate and chlorinated solvents, COCs for LHAAP-17.

2.2.1 Perchlorate

Perchlorate is the soluble anion associated with ammonium, potassium, and sodium perchlorate. Perchlorate is used as an energetic booster or oxidant in solid propellant for rockets and missiles, and likely leached into groundwater during the disposal of explosive materials and solid rocket fuel. The perchlorate anion is very mobile in aqueous systems, and can persist in the environment for many decades under aerobic condition because of its resistance to react with other available constituents. However, perchlorate can be reduced to chlorite in the presence of indigenous perchlorate-reducing microbes under anaerobic conditions (Ground Water Remediation Technologies Analysis Center [GWRTAC], 2001). The reduction in perchlorate concentration can be direct evidence for the occurrence of biodegradation supporting the first line of evidence.

Perchlorate-reducing organisms couple the oxidization of an organic or inorganic electron donor to the reduction of perchlorate in a form of anaerobic respiration. Perchlorate reduction produces chlorate (ClO_3^-), which can be further reduced to chlorite (ClO_2^-), then to the innocuous final product as chloride (Cl^-) and oxygen (O_2) (Rikken et al., 1996), as indicated in the following pathway:

$$ClO_4^- \rightarrow ClO_3^- \rightarrow ClO_2^- \rightarrow Cl^- + O_2$$

2.2.2 Chlorinated Solvents

The chlorinated solvents at this site are classified as chlorinated ethenes, ethanes, and methane. The most abundant chlorinated solvent at the site is trichloroethene (TCE). Chlorinated ethenes and ethanes include parent compounds TCE, tetrachloroethene (PCE), 1,1,1-trichloroethane (TCA), 1,1,2-TCA that biodegrade via multiple pathways and generate a variety of daughter products (cis-1,2-dichloroethene [DCE], 1,1-DCE, 1,2-dichloroethane [DCA], and vinyl chloride [VC]) that are generated from biotic or abiotic degradation of those parent compounds.

Observing decreasing trends of parent compounds and generation of daughter products are direct evidence for the occurrence of biodegradation supporting the first line of evidence.

One of the most prevalent pathways for biodegradation of chlorinated solvents is via reductive dechlorination. During this process, a chlorinated hydrocarbon is used as an electron acceptor resulting in the replacement of a chlorine atom with a hydrogen atom. The biodegradation of TCE primarily produces cis-1,2-DCE, with a trace amount of trans-1,2-DCE. 1,2-DCE isomers undergo reductive dechlorination resulting in the formation of VC, and subsequently the innocuous product ethene. When the 1,2-DCE isomers are generated, the cis-isomer is produced 10 to 100 times more often than the trans-isomer (Bouwer, 1994 and USEPA, 1998). The TCA compounds can also undergo reductive dechlorination, resulting in the formation of DCA isomers, followed by chloroethane, and then the harmless product ethane. The isomer 1,1-DCE is predominantly produced via abiotic hydrolysis of 1,1,1-TCA, and then further reduced to VC via reductive dechlorination.

Alternately, the DCE isomers, DCA and VC can be utilized as carbon sources and undergo biodegradation to carbon dioxide and chloride ion via aerobic or anaerobic oxidation.

Chlorinated solvent can also undergo biogeochemical reductive dechlorination under high sulfate and iron levels (U.S. Air Force Center for Environmental Excellence [USAFCEE], 2003). During this degradation pathway, sulfate reducing bacteria produce sulfite and mineral iron without VC generation.

The technical protocol for evaluating natural attenuation of chlorinated solvents in groundwater (USEPA, 1998) has a preliminary screening worksheet for evaluating whether anaerobic biodegradation is occurring. The worksheet assigns points for geochemistry and the presence of daughter products. A point total of 5 or less, devotes inadequate evidence of anaerobic degradation. A point total of 15 or more is adequate evidence for anaerobic biodegradation. In between 5 and 15, the score represents limited evidence for anaerobic degradation. The preliminary screening worksheet only addresses anaerobic degradation, not any of the other pathways for natural attenuation (aerobic biodegradation, diffusion, adsorbtion, etc.).

2.3 Second Line of Evidence – Geomicrobiology

Biological monitoring parameters are indicators of microbiological activity in the subsurface and are evaluated in support of the second line of evidence. Microbial respiration is the biochemical process that leads to the oxidation of reduced organic carbon. Frequently encountered respiratory substrates (or electron acceptors) include O_2, nitrate (NO_3^-), ferric iron (Fe^{+3}), sulfate (SO_4^{-2}), and carbon dioxide (CO_2). Respiratory substrates are used preferentially based on the amount of energy that can be derived from each of them. Respiratory substrates are used in the following order:

$$O_2 > NO_3^- > Fe^{+3} > SO_4^{-2} > CO_2$$

Biodegradation of perchlorate can occur under anaerobic nitrate-reducing conditions (GWRTAC, 2001). Reductive dechlorination of chlorinated solvents occurs under anaerobic (reducing) conditions such as sulfate-reducing and methanogenic conditions (USEPA, 1998). Nitrate-reducing conditions provide more energy to microorganisms than iron-reducing conditions, sulfate-reducing conditions, and methanogenic conditions. Sulfate reduction and methanogenesis are inhibited until oxygen, nitrate, and ferric iron have been depleted (USAFCEE, 2004). When perchlorate coexists with chlorinated solvents in groundwater, microbes derive more energy from perchlorate degradation, thus chlorinated solvents will typically persist in groundwater until perchlorate is depleted.

The reduction of highly chlorinated compounds like PCE, TCE, and TCA may occur under sulfate reducing conditions; however, DCE isomers, 1,2-DCA, and VC require the more reducing methanogenic conditions to undergo reductive dechlorination, which typically commence once the sulfate concentrations near depletion.

As discussed above, the concentrations of microbial respiratory substrates and products can be used to demonstrate intrinsic biodegradation. Expected changes include depressed concentrations of dissolved oxygen (DO) and negative oxidation-reduction potential (ORP) values within and downgradient of actively degrading contaminant plumes. The concentrations of anaerobic respiratory substrates such as nitrate and sulfate should decrease in groundwater located within and downgradient of a contaminant plume that is actively undergoing intrinsic anaerobic biodegradation. Similarly, the concentrations of the products of anaerobic microbial respiration, specifically ferrous iron and methane, should increase under similar circumstances.

The biodegradation of perchlorate and chlorinated solvents, whether via reductive dechlorination, dichloroelimination, or anaerobic oxidation, releases chloride ions into groundwater. In areas where the groundwater has a very low background chloride concentration, an elevation in chloride concentration may be observed as a result of biodegradation of chlorinated solvents. However, high background chloride concentrations were observed at LHAAP-17, thus, the slight contribution of chloride to groundwater through biodegradation is not quantifiable.

2.4 Third Line of Evidence – Microbial Analysis

Microbial analysis can provide evidence to support the third line of evidence. A number of bacteria that contain nitrate reductases are capable of reducing perchlorate, such as *Staphylococcus epidermidis* and *Bacillus cereus* et al (GWRTAC, 2001). Perchlorate-reducing bacteria appear to be nearly ubiquitous in natural environments such as soils, sediments, surface water, and groundwater aquifers. There are multiple strains that can dechlorinate TCE and TCA under anaerobic reductive conditions, but only one strain, *Dehalococcoides* (DHC), can

completely reduce the DCE isomers and VC to ethene. The presence of DHC in the groundwater can be the evidence to support the third line of evidence.

3.0 Natural Attenuation Evaluation Results

This section presents the results of the natural attenuation evaluation in accordance with the three lines of evidence.

For the purposes of this evaluation, the USEPA MCLs for drinking water or the GW-Ind under TCEQ guidelines (Standard No. 2 MSCs) were used as the cleanup levels for LHAAP-17. COCs that exceed their MCLs include TCE, 1,1-DCE, and 1,2-DCA. The GW-Ind was used for the evaluation of the COCs without MCLs. The COC at this site exceeding the GW-Ind is perchlorate.

Current data along with historical data for wells in the shallow zone used in this evaluation is summarized in **Tables A-1** and **A-2** at the end of this report. The last round of samples used for this report was March 2009. **Figures A-3** through **A-6** present concentration trends of individual COCs. **Figures A-7** and **A-8** present natural attenuation rate estimates at selected shallow wells for the COCs. **Figures A-9** and **A-10** present concentrations over distance from the plume to downgradient wells. **Figure A-11** presents a natural attenuation rate estimate at an intermediate well. The figures are presented at the end of the report following the tables. The groundwater sample forms and laboratory reports associated with the February 2007, December 2007, and March 2009 groundwater sample rounds for this natural attenuation evaluation are presented in Appendix B of the FS.

The preliminary screening worksheet was used to evaluate the occurrence of anaerobic degradation for multiple well locations in the chlorinated solvent plume at LHAAP-17. Twenty-seven various parameters are used in the preliminary worksheet. Six of the wells had available data for 22 parameters. The screening totals ranged from 4 to 13 for wells 17WW01, 17WW02, 17WW06, 17WW10, 17WW12 and 17WW16, showing limited evidence of anaerobic degradation. Two other wells (17WW03 and 17WW17) within the plume had available data for only 16 parameters and scored 6 and 10 points; even with the lack of available data for the parameters (i.e., there is no possible point for several parameters) the screening score still indicates limited evidence of anaerobic degradation. **Table A-3** shows the preliminary screening scores for these wells. Because the preliminary screening shows limited evidence for anaerobic biodegradation at the time of sampling, additional evaluation needs to be conducted to determine if natural attenuation can meet the cleanup objectives.

The evaluation of the lines of evidence for the shallow groundwater zone at LHAAP-17 is presented below. Less extensive evaluations of MNA in the intermediate and deep groundwater zones are presented where the available data supports such an evaluation.

3.1 Shallow Groundwater Zone

Monitoring wells at LHAAP-17 that tap the shallow groundwater zone are screened between depths of 5 and 35 feet below ground surface (bgs). The COCs of LHAAP-17 including perchlorate and TCE have been mainly distributed in the shallow aquifer. Six shallow monitoring wells, 130, 17WW01, 17WW02, 17WW06, 17WW10, and 17WW12 were sampled for natural attenuation parameters in February 2007. The November 2007 water levels indicate a northwest groundwater flow direction (**Figure A-2**), and 17WW01, 17WW11/17WW12, and 18WW10/18WW11 compose a well vector along the flow direction from source area to downgradient of the plume. Historic groundwater elevations have indicated groundwater flows vary from the west to the north.

3.1.1 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 in the shallow groundwater at LHAAP-17.

3.1.1.1 Perchlorate

Perchlorate is very soluble and has high mobility in the groundwater; therefore perchlorate has been the most widely distributed COC at LHAAP-17. Perchlorate has exceeded the 72 micrograms per liter (µg/L) GW-Ind in nine monitoring wells in the past, but the most recent results from each well show only five monitoring wells above 72 µg/L. During the February 2007 sampling event, perchlorate was observed below the detection limit of 4 µg/L in three shallow monitoring wells, and perchlorate concentrations at 63,800 and 177,000 µg/L were detected in 17WW01 and 17WW02, respectively (**Table A-1**). Monitoring wells 17WW03, 17WW04, 17WW08, 17WW10, and 17WW12 previously exceeded the GW-Ind, but now show no detectable perchlorate. Monitoring wells 130 and 17WW06 show decreasing concentration trends, while 17WW01 and 17WW02 show fluctuating concentrations (**Figure A-3**) with the most recent fluctuations downward. Monitoring well 17WW11 shows an increasing concentration trend, but the concentrations are low (990 µg/L max) compared to the other monitoring wells.

These perchlorate results suggest that natural attenuation is controlling perchlorate, except at monitoring well 17WW11. Four monitoring wells show a reduction of perchlorate from above the GW-Ind to below the GW-Ind. Two monitoring wells show trends of decreasing concentrations, and one monitoring well shows an increasing concentration trend. The current perchlorate plume map is located in the main text of the FS.

3.1.1.2 Chlorinated Ethenes

According to historical and current data, TCE and 1,1-DCE were detected above their respective MCLs. Daughter products are also discussed in this section. To be plotted on figures, a well must have at least three results to be included on the concentration figures.

TCE: In February 2007, TCE was detected exceeding its MCL (5 µg/L) in four wells, 130, 17WW01, 17WW02, and 17WW06 (**Table A-1**). Monitoring well 17WW06 shows a decreasing concentration trend, while 130, 17WW01 and 17WW02 show fluctuating or increasing concentration trends (**Figure A-4**). Monitoring well 17WW04 previously exceeded 5 µg/L, but the most recent result there shows a concentration below 5 µg/L. The most recent result at monitoring well 17WW03 shows a concentration above 5 µg/L. The existence of large quantities of perchlorate is expected to inhibit the reductive dechlorination of TCE as discussed previously. The TCE plume in the shallow zone is encompassed in the perchlorate plume, thus, no significant decrease of TCE has been observed at this site. Following the depletion of perchlorate in the shallow zone, the TCE concentration is expected to decrease.

1,2-DCE: As TCE is degraded via reductive dechlorination, daughter products formed are cis-1,2-DCE and trans-1,2-DCE at approximately a 100:1 to 10:1 ratio. Concentrations of cis-1,2-DCE and trans-1,2-DCE were all below their MCLs (70 and 100 µg/L, respectively) except for the March 2009 result at 17WW01 of 107 µg/L (**Table A-1**). Direct evidence supporting the occurrence of biodegradation is the ratio of cis- to trans- isomer. At monitoring well 17WW01, the cis- to trans- ratio of 1,2-DCE between June 1993 and March 2009 increased from 0.55 (6 µg/L:11 µg/L) to 5.32 (107 µg/L:20.1 µg/L), suggesting reductive dechlorination is occurring (**Table A-1**).

1,1-DCE: The abiotic hydrolysis of 1,1,1-TCA produces 1,1-DCE which can undergo reductive dechlorination to VC and ethene. In the sampling event in February 2007, 17WW01 is the only well that exhibited 1,1-DCE concentrations above the MCL of 7 µg/L (**Table A-1**). A decrease of 1,1-DCE from 51 to 32.6 µg/L was observed between June 1993 and February 2007, but the most recent result from March 2009 is 70 µg/L. Monitoring well 17WW04 previously exceeded 7 µg/L, but the most recent result was less than 7 µg/L (**Figure A-5**). The decreases in 1,1-DCE concentrations are likely due to dispersion, dilution, volatilization, and sorption mechanisms, suggested by the lack of VC detection. Concentrations less than the MCL have also been detected at 17WW02 and 17WW06.

VC: As the parent compound TCE or TCA is reduced, the final chlorinated daughter product during reductive dechlorination is VC. In February 2007, VC was not observed in any monitoring wells. Vinyl chloride has not been detected in any well to date at LHAAP-17.

The presence of cis-1,2-DCE and increasing ratio of cis- to trans- 1,2-DCE isomers, indicate that biodegradation is occurring at this site under the first line of evidence, however the lack of elevated 1,2-DCE and VC suggests that reductive dechlorination is not a dominant process of natural attenuation under current conditions likely due to the presence of perchlorate inhibiting TCE degradation.

3.1.1.3 Chlorinated Ethanes

The TCA compounds can also undergo reductive dechlorination, resulting in the formation of DCA isomers, followed by chloroethane, and then the harmless product ethane. The chlorinated ethane 1,2-DCA exceeded the MCL (5 µg/L) at monitoring wells 17WW01, 17WW02 and 17WW06 during the February 2007 sampling event (**Table A-1**). Concentrations of 1,2-DCA show a decreasing trend at 17WW06, while fluctuating at 17WW01 and 17WW02. In 17WW01, 1,2-DCA concentrations have decreased from its peak concentration of 89 µg/L in September 2004 to 44.7 µg/L in February 2007 to 35.8 µg/L in March 2009. At monitoring well 130, the 1,2-DCA concentration exceeded 5 µg/L in May 2006, and has been detectable but below 5 µg/L since then (**Figure A-6**). Chloroethane, the daughter product of 1,2-DCA, was not detected in any of the site monitoring wells, suggesting that the biodegradation process is in progress and has not reached the final stages yet.

3.1.1.4 Distance

The evaluation of changes in COC concentrations with time has shown evidence of the occurrence of natural attenuation, the evaluation of changes in COC concentrations with respect to distance further elucidates that natural attenuation mechanisms have controlled plume migration.

Figure A-9 shows the most recent perchlorate concentrations from the center of the perchlorate plume along a downgradient line from monitoring well 17WW02 (160,000 µg/L) through 17WW11 (990 µg/L) to 18WW10 (< 0.5 µg/L).

Figure A-10 shows the most recent TCE concentrations from the center of the TCE plume along a downgradient line from monitoring well 17WW01 (6,090 µg/L) through 17WW02 (867 µg/L) to 17WW11 (< 0.25 µg/L).

LHAAP-17 was a burning ground where material was formerly burned in trenches. The wells with the higher concentrations were near areas where burning trenches were documented. Beyond these areas, the concentrations decrease with distance until they are below their respective cleanup levels.

3.1.2 Second Line of Evidence – Geochemical Indicators

Groundwater field parameters, including DO, ORP, pH, temperature, and conductivity, were analyzed in the field during the 2007 sampling events. In addition, laboratory analyses for the following natural attenuation parameters were performed during the same sampling event: gases (methane, ethane, and ethene), anions (sulfate, nitrate, nitrite, and chloride), and total organic carbon (TOC). The shallow groundwater zone geochemical indicator results at LHAAP-17 are presented in **Table A-2**.

Dissolved Oxygen: Oxygen is the preferred terminal electron acceptor during aerobic microbial respiration. A DO level less than 500 µg/L is the most favorable condition for anaerobic reductive dechlorination, and anaerobic microbial activity would not tolerate DO levels above 5,000 µg/L (USEPA, 1998). DO levels ranged from 170 to 3,270 during the February 2007 sampling event, from 310 to 8,700 in December 2007, and from 150 to 1900 in March 2009 (**Table A-2**). The range of DO levels is for the most part appropriate for anaerobic microbial activity (20 of 21 readings <5,000 µg/L), and most favorable at many monitoring wells (7 of 21 readings <500 µg/L) including 17WW01 where TCE concentrations are the highest.

Oxygen Reduction Potential: ORP often correlates with the dominant type of microbial activity. The more negative the measurement, the more likely that sulfate-reducing or methanogenic conditions can occur in the subsurface. Reductive dechlorination could occur under an ORP level of less than 50 millivolts (mV) (USEPA, 1998). The ORP measurements in the shallow groundwater zone at LHAAP-17 ranged from -21.8 to 301.5 mV in February 2007, from 3 to 173.4 mV in December 2007, and from -45.8 to 415.6 in March 2009 (**Table A-2**). The range of ORP readings indicate conditions favorable for reductive dechlorination at some monitoring wells, but not at all wells. The readings correspond to the DO levels. At 17WW01, where TCE concentrations are the highest, the ORP was 49.6 mV and -45.8 mV indicating favorable conditions for reductive dechlorination.

Nitrate: Following oxygen, microorganisms preferentially use nitrate as a terminal electron acceptor. Concentrations of nitrate less than 1,000 µg/L are not expected to interfere with anaerobic reductive dechlorination (USEPA, 1998). Active nitrate-reducing conditions are often indicated by a depletion of nitrate in groundwater and a possible increase in nitrite, which is favorable for perchlorate degradation. At five of six monitoring wells (except for 130), nitrate concentrations were below 1,000 µg/L in February 2007 (**Table A-2**). Nitrite was generally not detected, with the highest nitrite concentration in February 2007 being 200 µg/L at 17WW12. From these results, nitrate reduction may be taking place at monitoring well 17WW12, and nitrate should not interfere with anaerobic reductive dechlorination except at 130.

Ferrous Iron: Once nitrate has been depleted, microorganisms use ferric iron as the next terminal electron acceptor. As a measurement of reduced ferric iron, an accumulation of ferrous iron may

be observed. Ferrous iron levels above 1,000 µg/L suggest the iron-reducing conditions are likely established (USEPA, 1998). Reductive dechlorination cannot occur under iron-reducing conditions, which are favorable for perchlorate degradation. During the February 2007 sampling event, levels of ferrous iron above 1,000 µg/L were observed at 17WW01, 17WW10, and 17WW12 (**Table A-2**). These data suggest that groundwater conditions at LHAAP-17 are favorable for the perchlorate degradation at some monitoring wells, and favorable for reductive dechlorination at others.

Sulfate: 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, nitrate, and bioavailable ferric iron are depleted, leaving sulfate as the primary acceptor. Active sulfate reduction is often indicated by a depletion of sulfate in groundwater and a possible increase in sulfide. Concentrations of sulfate greater than 20,000 µg/L may cause competitive exclusion of reductive dechlorination (USEPA, 1998), but no significant effect on perchlorate degradation. Perchlorate degradation occurs under nitrate-reducing conditions which could not be interfered by sulfate reduction. Furthermore, TCE can be transformed via biogeochemical pathways under elevated iron and sulfate concentrations (USAFCEE, 2003). **Table A-2** indicates that the sulfate concentrations at LHAAP-17 in February 2007 ranged from 89,000 to 144,000 µg/L. Sulfide was not detected in the samples. The data suggest that sulfate reducing conditions are not occurring in the wells sampled in February 2007. Sulfate results from 1993, 1995, 1998, and 2009 showed similar levels of sulfate higher than 20,000 µg/L except for monitoring well 17WW04, which had lower sulfate concentrations. Much of the LHAAP-17 groundwater is not under favorable conditions for complete reductive dechlorination at this time.

Methane: Methanogenesis occurs in highly reducing conditions and an accumulation of methane above 500 µg/L is considered to be methanogenic conditions (USEPA, 1998). During the February 2007 sampling event, methane concentrations ranged from 0.51 to 57.1 µg/L. During the March 2009 sampling event methane concentrations ranged from 5.1 to 66.7 µg/L. Thus, methanogenic conditions were not observed (**Table A-2**).

Ethane and Ethene: Ethane and ethene are the end products of reductive dechlorination of chlorinated ethenes. Ethane and ethene were not detected in groundwater from the February 2007 and March 2009 sampling events (**Table A-2**). The lack of significant detection of ethane and ethane suggests that complete dechlorination is not occurring in the shallow groundwater zone at LHAAP-17.

Chloride: Elevated chloride levels more than two times above the background concentrations may be evidence that degradation of chlorinated compounds are occurring. During the February

2007 sampling, chloride concentrations ranged from 305,000 to 1,310,000 µg/L. Similar chloride levels were found in previous and later sampling (**Table A-2**). The background chloride level calculated for the Group 4 Remedial Investigation was 1,416,000 µg/L (Jacobs, 2002). Therefore, the background chloride concentration is too high to determine any influence by the degradation of the COCs.

Total Organic Carbon: Regardless of the electron acceptor being used, organic carbon is a required source of reduced carbon and energy to sustain microbial activity. TOC concentrations greater than 20,000 µg/L are considered adequate to support microbial activity (USEPA, 1998). In the wells sampled in February 2007, TOC ranged from 3,000 µg/L to 6,000 µg/L at the shallow groundwater zone (**Table A-2**). TOC results from March 2009 ranged from 4,170 µg/L to 6,600 µg/L. Although the TOC levels are lower than the USEPA suggested concentrations, data suggest that TOC levels are adequate to sustain microbial degradation of perchlorate in the groundwater at this time.

pH: Optimal pH range for microbial activity is between 6 and 8 standard units but pH values between 5 and 9 are tolerated. The pH within the shallow groundwater zone ranged from 5.6 to 8.2 standard units during the February 2007 sampling event (**Table A-2**). Measurements of pH from 1993, December 2007 and March 2009 ranged from 5.74 to 7.51 standard units. The pH values at LHAAP-17 are generally within the optimal range to support biodegradation, and all pH values were in the tolerated range.

3.1.3 Third Line of Evidence – Attenuation Rates and Microbial Analysis

Natural attenuation rate estimation with respect to time and distance, and microbial analysis provide evidence supporting the third line of evidence for the shallow groundwater zone at LHAAP-17. These attenuation rate estimations incorporate all of the attenuation pathways, but cannot determine which pathway accounts for what portion of the attenuation.

3.1.3.1 Time Dependent Natural Attenuation

Time-dependent attenuation rates were computed and evaluated in accordance with the USEPA guidance material (USEPA, 1998). Time-dependent attenuation rate constants and estimated in-well cleanup times were determined based on perchlorate and TCE concentration data over time from individual wells assuming first order degradation kinetics. Attenuation rates were calculated for the monitoring wells with the highest concentrations for which the available data allow such a calculation.

Perchlorate: A time-dependent attenuation rate constant for perchlorate was calculated for monitoring well 130 due to elevated perchlorate concentrations (1,700 µg/L) and available sequential data (**Figure A-7**). The time-dependent attenuation rate at 130 is 0.000862 per day.

The cleanup time to achieve the GW-Ind for perchlorate (72 µg/L) at monitoring well 130 is 10 years (**Table A-4**) based on the attenuation half-life of 2.2 years.

A time-dependent attenuation rate constant for perchlorate was also calculated for monitoring well 17WW06 due to elevated perchlorate concentrations (74,000 µg/L) and available sequential data (**Figure A-7**). While the perchlorate results at 17WW06 are erratic, the time-dependent attenuation rate is roughly calculated to be 0.00124 per day. The cleanup time to achieve the GW-Ind for perchlorate (72 µg/L) at monitoring well 17WW06 is 15 years (**Table A-4**) based on the attenuation half-life of 1.5 years.

Perchlorate was not detected in the most recent samples from wells 17WW03, 17WW04, 17WW08, 17WW10 and 17WW12, but these wells had elevated perchlorate concentrations in the past and time-dependent attenuation rate constants were calculated. The time-dependent attenuation rates ranged from 0.00213 to 0.000512 per day. Equivalent half-lives are 0.89 to 3.7 years (**Table A-4**).

TCE: A time-dependent attenuation rate constant for TCE was calculated for monitoring well 17WW06 due to elevated TCE concentrations (176 µg/L) and available sequential data (**Figure A-8**). The time-dependent attenuation rate at 17WW06 is 0.0000836 per day. The cleanup time to achieve the MCL for TCE (5 µg/L) at monitoring well 17WW06 is 117 years (**Table A-3**) based on the attenuation half-life of 23 years.

TCE was not detected in the most recent samples from well 17WW04 but this well had elevated TCE concentrations in the past and a time-dependent attenuation rate constant was calculated. The time-dependent attenuation rate was 0.000526 per day. The equivalent half-life is 3.6 years (**Table A-4**).

1,1-DCE: 1,1-DCE was not detected in the most recent samples from well 17WW04 but this well had elevated 1,1-DCE concentrations in the past and a time-dependent attenuation rate constant was calculated. The time-dependent attenuation rate was 0.000696 per day. The equivalent half-life is 2.7 years (**Table A-4**).

1,2-DCA: A time-dependent attenuation rate constant for 1,2-DCA was calculated for well 17WW01 due to elevated COC concentrations (35.8 µg/L) and available sequential data. The time-dependent attenuation rate at 17WW01 is 0.000563 per day. The cleanup time to achieve the MCL for 1,2-DCA (5 µg/L) at monitoring well 17WW01 is 10 years (**Table A-4**) based on the estimated half-life of 3.4 years.

A time-dependent attenuation rate constant for 1,2-DCA was calculated for well 17WW06 due to elevated COC concentrations (5.68 µg/L) and available sequential data. The time-dependent attenuation rate at 17WW06 is 0.000168 per day. The cleanup time to achieve the MCL for 1,2-

DCA (5 µg/L) at monitoring well 17WW06 is 2.1 years (**Table A-4**) based on the estimated half-life of 11 years.

1,2-DCA was not detected in the most recent samples from well 130 but this well had elevated 1,2-DCA concentrations in the past and a time-dependent attenuation rate constant was calculated. The time-dependent attenuation rate was 0.000418 per day. The equivalent half-life is 4.5 years (**Table A-4**).

3.1.3.2 Distance Dependent Natural Attenuation

Distance-dependent attenuation and biodegradation rates were calculated for perchlorate and TCE using a vector comprised of wells aligned in the direction of groundwater flow. The primary contaminants at this site are perchlorate and TCE. The distance-dependent rates for perchlorate and TCE were estimated using the March 2009 sampling results and a well vector towards Harrison Bayou. A northwest flow pattern for perchlorate may be represented by a well vector comprised of monitoring wells 17WW02, 17WW11, and 18WW10. A northwest flow pattern for TCE may be represented by a well vector comprised of monitoring wells 17WW01, 17WW02, and 17WW11. **Figure A-9** is a graphical presentation of a distance dependent natural attenuation rate calculation for the northwest flow pattern for perchlorate using the March 2009 analytical data. The intrinsic biodegradation rate and distance-dependent natural attenuation rate are nearly the same at 0.5666 and 0.5332 per year respectively. The corresponding half-life is 1.2 and 1.3 years. Based on this result, intrinsic biodegradation of perchlorate contributes to 100% of natural attenuation. **Figure A-10** is a graphical presentation of a distance dependent natural attenuation rate calculation for TCE using the March 2009 data and a northwest flow pattern. The intrinsic biodegradation rate and natural attenuation rate are estimated as 0.805 and 1.266 per year respectively. The corresponding half-life is 0.9 and 0.5 year respectively. Based on this result, intrinsic biodegradation of TCE contributes to 64% of natural attenuation.

The USEPA publication, Calculation and Use of First Order Rate Constants for Monitoring Natural Attenuation Studies (USEPA, 2002) indicates distance dependent attenuation rates cannot be used to directly estimate plume lifetimes. The recommendation against using the distance dependent natural attenuation rate to calculate plume lifetimes is based on the lack of any time dimension in the initial calculation. With that in mind, according to the estimated natural attenuation rate, the estimated cleanup time to reach the TCE MCL of 5 µg/L ranged from 5.6 years in 17WW01 to 1.4 years in well 130. Estimated cleanup times for perchlorate were calculated for 17WW01 and 17WW02 as 12 and 14 years respectively (**Table A-5**). These estimated cleanup times are shorter than those calculated by the time dependent methods.

Because elevated concentrations of perchlorate are present in 17WW01 and 17WW02, the TCE degradation is stalled under nitrate-reducing conditions. Based on these results, 17WW01 will be the monitoring well limiting site cleanup via natural attenuation. With the depletion of

perchlorate, the degradation rate for TCE may increase, which should result in a significantly shorter cleanup time.

3.1.3.3 Microbial Analysis

An important indicator of reductive dechlorination is the presence of DHC, the only known species capable of complete dechlorination of TCE and its daughter products to innocuous ethene via reductive dechlorination. During the February 2007 sampling event, DHC was observed from 35 to 50 cells per milliliter (cells/mL) in three (130, 17WW02 and 17WW10) of the six monitoring wells (**Table A-2**). DHC cells were not observed in March 2009 samples from 17WW01 and 17WW02. The presence of the dechlorinating microorganisms coupled with the presence of daughter products adds to the evidence that localized areas in shallow groundwater of LHAAP-17 are able to support reductive dechlorination.

3.1.3.4 Migration Rates

In the shallow groundwater zone at LHAAP-17, the plume extent is smaller than would be expected by migration alone. Perchlorate might be expected to migrate 45 feet/year as noted on **Figure A-9**. Since 1959, 50 years have elapsed, so the perchlorate plume might be expected to be 2,250 feet long. The 2009 measured perchlorate plume is approximately 750 feet long. Seasonal groundwater gradient shifts or biodegradation are likely responsible for this additional plume retardation. Similarly for TCE, **Figure A-10** notes an expected migration rate of 43 feet/year. The TCE plume might be expected to be 2,150 feet long, but the length of the 2009 measured plume is approximately 300 feet.

3.2 Intermediate Groundwater Zone

Monitoring wells at LHAAP-17 that tap the intermediate groundwater zone are screened between depths of 41 and 54 feet bgs. The COCs of LHAAP-17 in the intermediate zone are TCE and methylene chloride (MC). The intermediate zone is separated from the shallow and deep groundwater zones by clay layers except at 17WW11, where there the shallow and intermediate zones are not distinctly separated. Five monitoring wells 17WW07, 17WW09, 17WW15, 17WW17 and 17WW18 are located in the intermediate groundwater zone, and 17WW11 is classified as shallow-intermediate. During the February 2007 sampling event, natural attenuation parameters were not sampled from the intermediate groundwater zone. According to the historical data, chlorinated solvents had not been detected in the intermediate groundwater zone until the new well 17WW17 was installed in 2008 (**Table A-6**).

The LHAAP-17 COC TCE exceeded the MCL (5 µg/L) in the most recent sampling event (March 2009) at monitoring well 17WW17. MC previously exceeded its MCL (5 µg/L) at monitoring wells 17WW07 and 17WW17, but the most recent results indicate that no MC has been detected (**Table A-6**). Perchlorate previously exceeded its GW-Ind (72 µg/L) at monitoring

well 17WW07, but the most recent results indicate that no perchlorate has been detected (**Table A-6**).

The concentration trend at 17WW17 has limited data, but the trend is decreasing for TCE. TCE concentrations are less than the MCL in the surrounding intermediate zone wells. More in-depth analysis of natural attenuation can be made for the intermediate groundwater zone at LHAAP-17.

As TCE is degraded via reductive dechlorination, daughter products formed are cis-1,2-DCE and trans-1,2-DCE at approximately a 100:1 to 10:1 ratio. Concentrations of cis-1,2-DCE and trans-1,2-DCE are all below their MCLSs (70 and 100 µg/L respectively) (**Table A-6**). Direct evidence supporting the occurrence of biodegradation is the ratio of cis- to trans- isomer. At monitoring well 17WW17, the cis- to trans- ratio of 1,2-DCE for the February 2008, March 2008, and March 2009 samples were 20, 38, and 93, respectively, suggesting reductive dechlorination is occurring. The corresponding fall of TCE concentrations from 112 µg/L in March 2008 to 10.8 µg/L in March 2009 also suggests reductive dechlorination is producing 1,2-DCE.

Low concentrations of 1,1-DCE are also found at 17WW17, but at levels below the MCL of 7 µg/L. Low concentrations of 1,2-DCA are also found at 17WW17, but at levels below the MCL of 5 µg/L. VC has not been detected in any intermediate zone monitoring wells (**Table A-6**).

The changes in TCE concentration with distance clearly show TCE exceeding the MCL of 5 µg/L at monitoring well 17WW17, with undetectable TCE concentrations in all the surrounding intermediate zone wells. The exception is monitoring well 17WW11, classified as shallow/intermediate. The available information suggests that the TCE at 17WW11 originates in the shallow zone and did not migrate from 17WW17.

The geochemical indicators in the intermediate zone suggest that conditions there are generally favorable for reductive dechlorination. DO levels range from 150 to 3,840 µg/L, which is favorable or tolerable for anaerobic activity. ORP readings range from -228.7 to 142.9 mV and only the 142.9 mV reading at 17WW11 was above the 50 mV maximum favorable for reductive dechlorination. Nitrate was not detected, so should not interfere with anaerobic reductive dechlorination. Ferrous iron was detected at 17WW17 at 2,100 µg/L, suggesting iron reducing conditions favorable for perchlorate degradation. Sulfate concentrations ranged from 3,500 to 500,000 µg/L, and sulfide was not detected. The 3,500 µg/L sulfate was at 17WW17, indicating sulfate interference would not prevent dechlorination at that monitoring well. Methane was detected in 17WW17 at 201 µg/L, indicating methane production, but not high enough to indicate methanogenic conditions. Ethane and Ethylene were not detected at significant concentrations, suggesting complete dechlorination is not occurring. Chloride concentrations

ranged from 115,000 to 1,160,000 µg/L, but LHAAP background chloride concentrations are too high for any reductive chloride production to be noticeable. The TOC result for 17WW17 was 1,810 µg/L, less than the USEPA recommended level of 20,000 µg/L. The pH readings ranged from 5.89 at monitoring well 17WW11 to 7.7 at monitoring well 17WW07. These readings are mostly within the optimal range for microbial activity. The geochemical results indicate generally favorable conditions for reductive dechlorination at monitoring well 17WW17 where the TCE concentration exceeds the MCL of 5 µg/L.

With three results available for TCE at monitoring well 17WW17, a time-dependent natural attenuation rate estimation can be made (**Figure A-11**). The time-dependent attenuation rate at 17WW17 is 0.00534 per day, which corresponds to an attenuation half life of less than one year. The cleanup time to achieve the MCL for TCE (5 µg/L) at monitoring well 17WW17 is less than one year (**Table A-4**).

The presence of DHC, the only known species capable of complete dechlorination of TCE and its daughter products to innocuous ethene via reductive dechlorination, is an important indicator of reductive dechlorination. DHC cells were not observed in the March 2009 sample from 17WW17.

From the available test results for the intermediate zone, it appears that the TCE at monitoring well 17WW17 will likely degrade to 1,2-DCE via reductive dechlorination until TCE concentrations fall below the MCL (5 µg/L). Future monitoring results would serve as a check of that prediction. The concentrations of 1,2-DCE will remain below the MCL for cis-1,2-DCE (70 µg/L), and conditions are not favorable for further reductive dechlorination to VC.

3.3 Deep Groundwater Zone

Monitoring wells at LHAAP-17 that tap the deep groundwater zone are screened between depths of 141 and 152 feet bgs. The COCs of LHAAP-17 have not been detected in the deep zone (**Table A-7**). The deep zone is separated from the intermediate groundwater zone by clay layers. Two monitoring wells 17WW05 and 17WW16 are located in the deep groundwater zone.

In monitoring well 17WW05, perchlorate was detected at 1,200 µg/L in March 2004, therefore both of the deep monitoring wells were sampled for MNA parameters during the February 2007 sampling event (**Table A-7**). Currently, both wells present no COCs exceeding their MCL during the most recent sampling event (**Table A-7**).

In monitoring well 17WW05, the low DO and non-detect nitrate suggest nitrate-reducing conditions; meanwhile low ferrous iron and sulfate concentrations above 20,000 µg/L indicated the absence of sulfate-reducing conditions. In monitoring well 17WW16, methanogenic conditions have been established, indicated by the elevated methane level at 804 µg/L. In

contrast to the neutral or slightly acidic pH of the shallow and intermediate groundwater zones, the pH levels in the deep groundwater zone are in the alkaline range, ranging from 8.2 to 11.31 standard units, outside the optimal range for microbial activity.

Chloride levels were lower than the LHAAP background chloride levels. Levels of TOC were higher in the deep zone than in the shallow zone, but still less than the USEPA recommended value of 20,000 µg/L. The test for the presence of DHC indicated no detectable DHC cells in either monitoring well.

The deep groundwater zone has shown the capacity to naturally attenuate perchlorate concentrations. Currently, there are no COCs present in the deep groundwater zone.

4.0 Summary of Results and Conclusions

Historical perchlorate and chlorinated solvent data and geochemical indicators for the groundwater at LHAAP-17 were evaluated to determine if MNA can be used as a feasible remedy for chlorinated solvents and perchlorate present in the groundwater. Preliminary screening of multiple wells at LHAAP-17 indicated limited evidence for anaerobic biodegradation, and a more detailed evaluation was made. A tiered approach using three lines of evidence was used to examine 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 estimation of natural attenuation rates and microbial analysis. The results of the tiered evaluation and the conclusions are summarized below.

The COCs exceeding MCLs or GW-Ind at LHAAP-17 are TCE, 1,1-DCE, 1,2-DCA, and perchlorate in the shallow groundwater zone, and TCE in the intermediate groundwater zone. Wells designated as deep are not affected.

First Line of Evidence: Historical analytical trends indicate the occurrence of perchlorate biodegradation at LHAAP-17. Perchlorate was reduced in the shallow groundwater zone, but still exists in high levels at some areas.

In the shallow groundwater zone, the increasing ratio of cis- and trans-1,2-DCE isomer suggests the occurrence of reductive dechlorination of TCE in the shallow groundwater; meanwhile the elevated concentrations of TCE and stabilized 1,1-DCE and 1,2-DCA suggest that chlorinated solvents cannot achieve complete dechlorination under current conditions. Chlorinated solvents occurred in one well of the intermediate groundwater zone, but not in the deep groundwater zone.

In the shallow groundwater zone, natural attenuation is effectively controlling the TCE plume migration along the flow direction and the TCE plume is stable at LHAAP-17. Natural attenuation is effectively reducing perchlorate concentrations within the shallow groundwater zone perchlorate plume at most well locations. However, concentrations of perchlorate are increasing at monitoring well 17WW11 on the downgradient side of the plume. This is possibly the result of a field study in 2004 (Planteco, 2004) which may have introduced water with perchlorate into the subsurface. The perchlorate concentrations at 17WW11 are small compared to perchlorate concentrations within the rest of the plume and would be expected to attenuate quickly once perchlorate degradation restarts in this area.

In the intermediate groundwater zone, the TCE plume at monitoring well 17WW17 is stable and has a decreasing concentration trend.

Second Line of Evidence: The qualitative assessment of the geochemical indicators in the shallow, intermediate and deep groundwater zones at LHAAP-17 presents evidence that geochemical conditions are adequate for the reductive dechlorination of chlorinated solvents in localized areas. In the shallow groundwater zone, the low DO, intermediate ORP, and low nitrate values throughout LHAAP-17 suggest that the groundwater conditions are anaerobic and nitrate-reducing, which are favorable for perchlorate and TCE reduction. The elevated sulfate concentrations are at levels able to inhibit reductive dechlorination in the shallow groundwater zones. The TOC concentrations observed at LHAAP-17 shallow groundwater zone are at levels below the USEPA recommended level for reductive dechlorination, and so could be a limiting factor for TCE biodegradation. Following perchlorate depletion, the subsurface conditions may become reducing enough for complete reductive dechlorination.

Third Line of Evidence: An important indicator of reductive dechlorination is the presence of DHC which is the only known species capable of complete dechlorination of TCE. During the February 2007 sampling event, DHC was observed in half of the shallow monitoring wells, but neither of the deep monitoring wells or the intermediate monitoring well. The presence of the dechlorinating microorganisms and TCE, coupled with the production of TCE daughter products is further evidence that site conditions are conducive for the reduction of site COCs via natural attenuation in the shallow groundwater zone.

The time-dependent in-well natural attenuation rates were calculated for perchlorate and TCE per day. Perchlorate attenuation rates ranged from 0.000862 to 0.00213 per day in the shallow zone, and the estimated time to achieve GW-Ind ranges from already complete to 10 to 15 years. TCE attenuation rates for wells ranged from 0.000526 to 0.0000836 per day, and the estimated time to achieve the MCL ranged from already complete to 117 years. A TCE attenuation rate for one intermediate monitoring well resulted in an attenuation rate of 0.00534 per day and an estimated time to achieve the MCL of less than 1 year.

The distance-dependent natural attenuation rates for perchlorate and TCE were calculated as 0.00146 and 0.00347 per day respectively in shallow groundwater zone. Distance dependent natural attenuation rates should not be used to estimate plume lifetimes (USEPA, 2002). Calculated cleanup times were comparable for perchlorate (12 to 14 years), but much shorter for TCE (1.4 to 5.6 years), illustrating the reason for the USEPA caution about using distance-dependent attenuation rates in this way. Due to the presence of perchlorate at high concentrations, reductive dechlorination of TCE has been stalled in 17WW01 and 17WW02. After perchlorate levels have been reduced, the cleanup time for TCE should be reduced.

Conclusion: Reductions in concentrations of perchlorate, TCE, and other chlorinated solvents demonstrate that natural attenuation is occurring in the groundwater at LHAAP-17. The reduction of perchlorate has been observed site wide with the exception of monitoring well 17WW11. Perchlorate and TCE are attenuated via mechanisms including biodegradation, dispersion, dilution, volatilization, and sorption as shown by reduction of concentration with distance. Following perchlorate reduction, groundwater conditions are expected to become more favorable for reductive dechlorination in the shallow groundwater zone. The cleanup times for perchlorate and TCE by natural attenuation may extend beyond 100 years. The time period required for natural attenuation is long (estimated as up to 117 years), but the affected groundwater is not in use and is not expected to be used in the future over that time period.

5.0 References

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Tables

Table A-1
Summary of Shallow Groundwater Analytical Results
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
130	PM-MW130-000921	9/21/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	*52800*				1
130	PM-MW130-010131	1/31/01	REG	GEN CHEMISTRY	Perchlorate	µg/L	*63000*				1
130	PM-MW130-020315	3/15/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	*28800*				1
130	PM-MW130-020919	9/19/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	*30500*				1
130	PM-MW130-060523	5/23/06	REG	GEN CHEMISTRY	Perchlorate	µg/L	*8700*				1
130	MW130-120407	12/4/07	REG	GEN CHEMISTRY	Perchlorate	µg/L	*19400*				1
130	MW-130-030409	3/5/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	*1700*				1
17WW01	17WW01-000517	5/17/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	*100000*				1
17WW01	17WW01-000919	9/19/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	*88000*				1
17WW01	17WW01-010131	1/31/01	REG	GEN CHEMISTRY	Perchlorate	µg/L	*17000*				1
17WW01	17WW01-020314	3/14/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	*161000*				1
17WW01	17WW01-020920	9/20/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	*194000*				1
17WW01	17WW01-020920FD	9/20/02	FD	GEN CHEMISTRY	Perchlorate	µg/L	*198000*				1
17WW01	17WW01-040907	9/7/04	REG	GEN CHEMISTRY	Perchlorate	µg/L	*840000*	E	J	15	1
17WW01	17WW01-FEB2007	2/20/07	REG	GEN CHEMISTRY	Perchlorate	µg/L	*63800*		J	02B, 01, 15	1
17WW01	17WW01-FEB2007FD	2/20/07	FD	GEN CHEMISTRY	Perchlorate	µg/L	*66400*		J	02B, 01, 15	1
17WW01	17WW01-030409	3/4/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	*56000*				1
17WW02	17WW02-000517	5/17/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	*83000*				1
17WW02	17WW02-000517FD	5/17/00	FD	GEN CHEMISTRY	Perchlorate	µg/L	*150000*				1
17WW02	17WW02-000921	9/21/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	*130000*				1
17WW02	17WW02-010131	1/31/01	REG	GEN CHEMISTRY	Perchlorate	µg/L	10				1
17WW02	17WW02-020315	3/15/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	*139000*				1
17WW02	17WW02-020920	9/20/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	*197000*				1
17WW02	17WW02-FEB2007	2/22/07	REG	GEN CHEMISTRY	Perchlorate	µg/L	*177000*		J	02B, 01, 15	1
17WW02	17WW02-FEB2007FD	2/22/07	FD	GEN CHEMISTRY	Perchlorate	µg/L	*172000*		J	02B, 01, 15	1
17WW02	17WW02-030509	3/5/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	*160000*				1
17WW03	17WW03-000517	5/17/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	13				1
17WW03	17WW03-000919	9/19/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	26				1
17WW03	17WW03-010131	1/31/01	REG	GEN CHEMISTRY	Perchlorate	µg/L	8	<	U		1
17WW03	17WW03-020313	3/13/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	*631*				1
17WW03	17WW03-020921	9/21/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	22.8				1
17WW03	17WW03-030509	3/5/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.44	<	U		1
17WW04	17WW04-000522	5/22/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	1	<	U		1
17WW04	17WW04-000919	9/19/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.85	<	U		1
17WW04	17WW04-020314	3/14/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.958	U	U		1

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LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW04	17WW04-020920	9/20/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	13.3				1
17WW04	17WW04-120507	12/5/07	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.5	U	U		1
17WW04	17WW04-030209	3/2/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.22	U	U		1
17WW06	17WW06-000518	5/18/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	*200000*				1
17WW06	17WW06-000926	9/26/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	*290000*				1
17WW06	17WW06-010201	2/1/01	REG	GEN CHEMISTRY	Perchlorate	µg/L	*32000*				1
17WW06	17WW06-020313	3/13/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	*217000*				1
17WW06	17WW06-020920	9/20/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	*247000*				1
17WW06	17WW06-FEB2007	2/23/07	REG	GEN CHEMISTRY	Perchlorate	µg/L	4	U	U		1
17WW06	17WW06-120507	12/4/07	REG	GEN CHEMISTRY	Perchlorate	µg/L	*77800*				1
17WW06	17WW06-030509	3/5/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	*74000*				1
17WW08	17WW08-000921	9/21/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	*170*				1
17WW08	17WW08-010201	2/1/01	REG	GEN CHEMISTRY	Perchlorate	µg/L	*110*				1
17WW08	17WW08-020314	3/14/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	*159*				1
17WW08	17WW08-020920	9/20/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	1.45	U	U		1
17WW08	17WW08-040903	9/3/04	REG	GEN CHEMISTRY	Perchlorate	µg/L	-99	U	U		1
17WW08	17WW08-040903FD	9/3/04	FD	GEN CHEMISTRY	Perchlorate	µg/L	-99	U	U		1
17WW08	17WW08-022509	2/25/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.22	U	U		1
17WW10	17WW10-000919	9/19/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	*310*				1
17WW10	17WW10-010131	1/31/01	REG	GEN CHEMISTRY	Perchlorate	µg/L	*620*				1
17WW10	17WW10-020313	3/13/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	*259*				1
17WW10	17WW10-020918	9/18/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	3.86	J	J		1
17WW10	17WW10-040902	9/2/04	REG	GEN CHEMISTRY	Perchlorate	µg/L	*2000*				1
17WW10	17WW10-FEB2007	2/21/07	REG	GEN CHEMISTRY	Perchlorate	µg/L	4	U	U		1
17WW10	17WW10-120507	12/5/07	REG	GEN CHEMISTRY	Perchlorate	µg/L	2	U	U		1
17WW10	17WW10-022609	2/26/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.55	U	U		1
17WW10	17WW10-022609-FD	2/26/09	FD	GEN CHEMISTRY	Perchlorate	µg/L	0.55	U	U		1
17WW11	17WW11-000919	9/19/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	1.7	<	U		1
17WW11	17WW11-020315	3/15/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.958	U	U		1
17WW11	17WW11-020919	9/19/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	1.45	U	U		1
17WW11	17WW11-040903	9/3/04	REG	GEN CHEMISTRY	Perchlorate	µg/L	-99	U	U		1
17WW11	17WW11-022609	2/26/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	*290*				1
17WW11	17WW11-033009	3/30/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	*990*				1
17WW12	17WW12-000919	9/19/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.85	<	U		1
17WW12	17WW12-020315	3/15/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	*119*				1

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Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW12	17WW12-020919	9/19/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	1.45	U	U		1
17WW12	17WW12-020919FD	9/19/02	FD	GEN CHEMISTRY	Perchlorate	µg/L	1.45	U	U		1
17WW12	17WW12-040903	9/3/04	REG	GEN CHEMISTRY	Perchlorate	µg/L	7				1
17WW12	17WW12-FEB2007	2/21/07	REG	GEN CHEMISTRY	Perchlorate	µg/L	4	U	U		1
17WW12	17WW12-022609	2/26/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.22	U	U		1
17WW13	17WW13-000921	9/21/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	20				1
17WW13	17WW13-010201	2/1/01	REG	GEN CHEMISTRY	Perchlorate	µg/L	8	<	U		1
17WW13	17WW13-010201FD	2/1/01	FD	GEN CHEMISTRY	Perchlorate	µg/L	8	<	U		1
17WW13	17WW13-020314	3/14/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.958	U	U		1
17WW13	17WW13-020920	9/20/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	1.45	U	U		1
17WW13	17WW13-040902	9/2/04	REG	GEN CHEMISTRY	Perchlorate	µg/L	-99	U	U		1
17WW13	17WW13-030309	3/3/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.55	U	U		1
17WW14	17WW14-000919	9/19/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.85	<	U		1
17WW14	17WW14-020314	3/14/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	1.01	J	J		1
17WW14	17WW14-020918	9/18/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	1.45	U	U		1
17WW14	17WW14-040903	9/3/04	REG	GEN CHEMISTRY	Perchlorate	µg/L	-99	U	U		1
17WW14	17WW14-022509	2/25/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.55	U	U		1
18WW10	18WW10-000525	5/25/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	1	<	U		1
18WW10	18WW10-020311	3/11/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.958	U	U		1
18WW10	18WW10-020923	9/23/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	29	U	U		1
18WW10	LH-18WW10-1896	3/7/07	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.35	U	U		1
18WW10	18WW10-091507	9/15/07	REG	GEN CHEMISTRY	Perchlorate	µg/L	1.73	J	J	15	1
18WW10	18WW10-031108	3/11/08	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.5	U	U		1
18WW10	18WW10-092508	9/25/08	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.5	U	U		1
130	PM-MW130-930516	5/16/93	REG	VOLATILES	Trichloroethene	µg/L	5	<	U		1
130	PM-MW130-950522	5/22/95	REG	VOLATILES	Trichloroethene	µg/L	5	<	U		1
130	PM-MW130-980721	7/21/98	REG	VOLATILES	Trichloroethene	µg/L	3.6				1
130	PM-MW130-980721FD	7/21/98	FD	VOLATILES	Trichloroethene	µg/L	3.8				1
130	PM-MW130-990120	1/20/99	REG	VOLATILES	Trichloroethene	µg/L	*5.6*				1
130	PM-MW130-060523	5/23/06	REG	VOLATILES	Trichloroethene	µg/L	*21.1*				1
130	17WW130-FEB2007	2/23/07	REG	VOLATILES	Trichloroethene	µg/L	*25.1*				1
130	MW130-120407	12/4/07	REG	VOLATILES	Trichloroethene	µg/L	*23.6*				1
130	MW-130-030409	3/4/09	REG	VOLATILES	Trichloroethene	µg/L	*31.1*				1
17WW01	17WW01-930613	6/13/93	REG	VOLATILES	Trichloroethene	µg/L	*4000*				1
17WW01	17WW01-950523	5/23/95	REG	VOLATILES	Trichloroethene	µg/L	*5320*				1

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Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW01	17WW01-950523FD	5/23/95	FD	VOLATILES	Trichloroethene	µg/L	*4340*				1
17WW01	17WW01-980722	7/22/98	REG	VOLATILES	Trichloroethene	µg/L	*160*				1
17WW01	17WW01-040907	9/7/04	REG	VOLATILES	Trichloroethene	µg/L	*7000*	D			10
17WW01	17WW01-FEB2007	2/20/07	REG	VOLATILES	Trichloroethene	µg/L	*5970*				1
17WW01	17WW01-FEB2007FD	2/20/07	FD	VOLATILES	Trichloroethene	µg/L	*6240*				1
17WW01	17WW01-030409	3/4/09	REG	VOLATILES	Trichloroethene	µg/L	*6090*				1
17WW02	17WW02-950523	5/23/95	REG	VOLATILES	Trichloroethene	µg/L	*42*				1
17WW02	17WW02-980723	7/23/98	REG	VOLATILES	Trichloroethene	µg/L	*85*				1
17WW02	17WW02-FEB2007	2/22/07	REG	VOLATILES	Trichloroethene	µg/L	*479*				1
17WW02	17WW02-FEB2007FD	2/22/07	FD	VOLATILES	Trichloroethene	µg/L	*468*				1
17WW02	17WW02-030509	3/5/09	REG	VOLATILES	Trichloroethene	µg/L	*867*				1
17WW03	17WW03-950522	5/22/95	REG	VOLATILES	Trichloroethene	µg/L	5	<	U		1
17WW03	17WW03-980722	7/22/98	REG	VOLATILES	Trichloroethene	µg/L	3.5				1
17WW03	17WW03-990311	3/11/99	REG	VOLATILES	Trichloroethene	µg/L	2.9				1
17WW03	17WW03-030509	3/5/09	REG	VOLATILES	Trichloroethene	µg/L	*12.8*				1
17WW04	17WW04-950525	5/25/95	REG	VOLATILES	Trichloroethene	µg/L	*9*				1
17WW04	17WW04-980723	7/23/98	REG	VOLATILES	Trichloroethene	µg/L	*19*				1
17WW04	17WW04-120507	12/5/07	REG	VOLATILES	Trichloroethene	µg/L	1.57				1
17WW04	17WW04-030209	3/2/09	REG	VOLATILES	Trichloroethene	µg/L	0.914	J	J	15	1
17WW06	17WW06-950523	5/23/95	REG	VOLATILES	Trichloroethene	µg/L	*292*				1
17WW06	17WW06-980722	7/22/98	REG	VOLATILES	Trichloroethene	µg/L	*210*				1
17WW06	17WW06-FEB2007	2/23/07	REG	VOLATILES	Trichloroethene	µg/L	*205*				1
17WW06	17WW06-120507	12/4/07	REG	VOLATILES	Trichloroethene	µg/L	*168*				1
17WW06	17WW06-030509	3/5/09	REG	VOLATILES	Trichloroethene	µg/L	*176*				1
17WW08	17WW08-980721	7/21/98	REG	VOLATILES	Trichloroethene	µg/L	1.3		J		1
17WW08	17WW08-990311	3/11/99	REG	VOLATILES	Trichloroethene	µg/L	1	<	U		1
17WW08	17WW08-040903	9/3/04	REG	VOLATILES	Trichloroethene	µg/L	5	U	U		1
17WW08	17WW08-040903FD	9/3/04	FD	VOLATILES	Trichloroethene	µg/L	5	U	U		1
17WW08	17WW08-022509	2/25/09	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
17WW10	17WW10-980721	7/21/98	REG	VOLATILES	Trichloroethene	µg/L	1	<	U		1
17WW10	17WW10-040902	9/2/04	REG	VOLATILES	Trichloroethene	µg/L	5	U	U		1
17WW10	17WW10-FEB2007	2/21/07	REG	VOLATILES	Trichloroethene	µg/L	0.63	U	U		1
17WW10	17WW10-120507	12/5/07	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
17WW10	17WW10-022609	2/26/09	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
17WW10	17WW10-022609-FD	2/26/09	FD	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1

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Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW11	17WW11-980721	7/21/98	REG	VOLATILES	Trichloroethene	µg/L	1	<	U		1
17WW11	17WW11-040903	9/3/04	REG	VOLATILES	Trichloroethene	µg/L	1	J	J	15	1
17WW11	17WW11-022609	2/26/09	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
17WW12	17WW12-980721	7/21/98	REG	VOLATILES	Trichloroethene	µg/L	1	<	U		1
17WW12	17WW12-040903	9/3/04	REG	VOLATILES	Trichloroethene	µg/L	5	U	U		1
17WW12	17WW12-FEB2007	2/21/07	REG	VOLATILES	Trichloroethene	µg/L	0.63	U	U		1
17WW12	17WW12-022609	2/26/09	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
17WW13	17WW13-980722	7/22/98	REG	VOLATILES	Trichloroethene	µg/L	1.5				1
17WW13	17WW13-990311	3/11/99	REG	VOLATILES	Trichloroethene	µg/L	1	<	U		1
17WW13	17WW13-040902	9/2/04	REG	VOLATILES	Trichloroethene	µg/L	5	U	U		1
17WW13	17WW13-030309	3/3/09	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
17WW14	17WW14-980722	7/22/98	REG	VOLATILES	Trichloroethene	µg/L	0.58		J		1
17WW14	17WW14-040903	9/3/04	REG	VOLATILES	Trichloroethene	µg/L	5	U	U		1
17WW14	17WW14-022509	2/25/09	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
18WW10	18WW10-950602	6/2/95	REG	VOLATILES	Trichloroethene	µg/L	5	<	U		1
18WW10	LH-18WW10-1896	3/7/07	REG	VOLATILES	Trichloroethene	µg/L	0.22	U	U		1
18WW10	18WW10-091507	9/15/07	REG	VOLATILES	Trichloroethene	µg/L	*41.9*				1
18WW10	18WW10-031108	3/11/08	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
18WW10	18WW10-092508	9/25/08	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
130	PM-MW130-930516	5/16/93	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	5	<	U		1
130	PM-MW130-980721	7/21/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
130	PM-MW130-980721FD	7/21/98	FD	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
130	PM-MW130-990120	1/20/99	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
130	17WW130-FEB2007	2/23/07	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.83	J	J	15	1
130	MW130-120407	12/4/07	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.737	J	J	15	1
130	MW-130-030409	3/4/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.606	J			1
17WW01	17WW01-930613	6/13/93	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	6				1
17WW01	17WW01-980722	7/22/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	2.5	<	U		1
17WW01	17WW01-040907	9/7/04	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	27				1
17WW01	17WW01-FEB2007	2/20/07	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	17.4				1
17WW01	17WW01-FEB2007FD	2/20/07	FD	VOLATILES	cis-1,2-Dichloroethene	µg/L	16.9				1
17WW01	17WW01-030409	3/4/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	*107*				1
17WW02	17WW02-980723	7/23/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	2.1		J		1
17WW02	17WW02-FEB2007	2/22/07	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	4.5				1
17WW02	17WW02-FEB2007FD	2/22/07	FD	VOLATILES	cis-1,2-Dichloroethene	µg/L	4.2				1

Table A-1
Summary of Shallow Groundwater Analytical Results
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW02	17WW02-030509	3/5/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	8.11				1
17WW03	17WW03-980722	7/22/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	2.5	<	U		1
17WW03	17WW03-990311	3/11/99	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
17WW03	17WW03-030509	3/5/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1.58				1
17WW04	17WW04-980723	7/23/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	2.3				1
17WW04	17WW04-120507	12/5/07	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW04	17WW04-030209	3/2/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW06	17WW06-980722	7/22/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	3.5				1
17WW06	17WW06-FEB2007	2/23/07	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	9.5				1
17WW06	17WW06-120507	12/4/07	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	7.52				1
17WW06	17WW06-030509	3/5/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	13				1
17WW08	17WW08-980721	7/21/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	2	<	U		1
17WW08	17WW08-990311	3/11/99	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
17WW08	17WW08-040903	9/3/04	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	5	U	U		1
17WW08	17WW08-040903FD	9/3/04	FD	VOLATILES	cis-1,2-Dichloroethene	µg/L	5	U	U		1
17WW08	17WW08-022509	2/25/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW10	17WW10-980721	7/21/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
17WW10	17WW10-040902	9/2/04	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	5	U	U		1
17WW10	17WW10-FEB2007	2/21/07	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.83	U	U		1
17WW10	17WW10-120507	12/5/07	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW10	17WW10-022609	2/26/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW10	17WW10-022609-FD	2/26/09	FD	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW11	17WW11-980721	7/21/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
17WW11	17WW11-040903	9/3/04	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	5	U	U		1
17WW11	17WW11-022609	2/26/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW12	17WW12-980721	7/21/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
17WW12	17WW12-040903	9/3/04	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	5	U	U		1
17WW12	17WW12-FEB2007	2/21/07	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.83	U	U		1
17WW12	17WW12-022609	2/26/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW13	17WW13-980722	7/22/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
17WW13	17WW13-990311	3/11/99	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
17WW13	17WW13-040902	9/2/04	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	5	U	U		1
17WW13	17WW13-030309	3/3/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW14	17WW14-980722	7/22/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
17WW14	17WW14-040903	9/3/04	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	5	U	U		1

Table A-1
Summary of Shallow Groundwater Analytical Results
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW14	17WW14-022509	2/25/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
18WW10	18WW10-091507	9/15/07	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1.13				1
18WW10	18WW10-031108	3/11/08	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
18WW10	18WW10-092508	9/25/08	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
130	PM-MW130-930516	5/16/93	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	5	<	U		1
130	PM-MW130-980721	7/21/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
130	PM-MW130-980721FD	7/21/98	FD	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
130	PM-MW130-990120	1/20/99	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
130	17WW130-FEB2007	2/23/07	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.75	U	U		1
130	MW130-120407	12/4/07	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
130	MW-130-030409	3/4/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
17WW01	17WW01-930613	6/13/93	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	11				1
17WW01	17WW01-980722	7/22/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	2.5	<	U		1
17WW01	17WW01-040907	9/7/04	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	7				1
17WW01	17WW01-FEB2007	2/20/07	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	6.5				1
17WW01	17WW01-FEB2007FD	2/20/07	FD	VOLATILES	trans-1,2-Dichloroethene	µg/L	6.6				1
17WW01	17WW01-030409	3/4/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	20.1	J	J	15	1
17WW02	17WW02-980723	7/23/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	2.5	<	U		1
17WW02	17WW02-FEB2007	2/22/07	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.85	J	J	15	1
17WW02	17WW02-FEB2007FD	2/22/07	FD	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.88	J	J	15	1
17WW02	17WW02-030509	3/5/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1.54	J	J	15	1
17WW03	17WW03-980722	7/22/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	2.5	<	U		1
17WW03	17WW03-990311	3/11/99	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
17WW03	17WW03-030509	3/5/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW04	17WW04-980723	7/23/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
17WW04	17WW04-120507	12/5/07	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW04	17WW04-030209	3/2/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW06	17WW06-980722	7/22/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1.4		J		1
17WW06	17WW06-FEB2007	2/23/07	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	2.6				1
17WW06	17WW06-120507	12/4/07	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1.8				1
17WW06	17WW06-030509	3/5/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	2.38				1
17WW08	17WW08-980721	7/21/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	2	<	U		1
17WW08	17WW08-990311	3/11/99	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
17WW08	17WW08-040903	9/3/04	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	5	U	U		1
17WW08	17WW08-040903FD	9/3/04	FD	VOLATILES	trans-1,2-Dichloroethene	µg/L	5	U	U		1

Table A-1
Summary of Shallow Groundwater Analytical Results
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW08	17WW08-022509	2/25/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW10	17WW10-980721	7/21/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
17WW10	17WW10-040902	9/2/04	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	5	U	U		1
17WW10	17WW10-FEB2007	2/21/07	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.75	U	U		1
17WW10	17WW10-120507	12/5/07	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW10	17WW10-022609	2/26/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW10	17WW10-022609-FD	2/26/09	FD	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW11	17WW11-980721	7/21/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
17WW11	17WW11-040903	9/3/04	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	5	U	U		1
17WW11	17WW11-022609	2/26/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW12	17WW12-980721	7/21/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
17WW12	17WW12-040903	9/3/04	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	5	U	U		1
17WW12	17WW12-FEB2007	2/21/07	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.75	U	U		1
17WW12	17WW12-022609	2/26/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW13	17WW13-980722	7/22/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
17WW13	17WW13-990311	3/11/99	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
17WW13	17WW13-040902	9/2/04	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	5	U	U		1
17WW13	17WW13-030309	3/3/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW14	17WW14-980722	7/22/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
17WW14	17WW14-040903	9/3/04	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	5	U	U		1
17WW14	17WW14-022509	2/25/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
18WW10	18WW10-091507	9/15/07	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
18WW10	18WW10-031108	3/11/08	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
18WW10	18WW10-092508	9/25/08	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
130	PM-MW130-930516	5/16/93	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	<	U		1
130	PM-MW130-950522	5/22/95	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	<	U		1
130	PM-MW130-980721	7/21/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
130	PM-MW130-980721FD	7/21/98	FD	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
130	PM-MW130-990120	1/20/99	REG	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
130	PM-MW130-060523	5/23/06	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
130	17WW130-FEB2007	2/23/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.68	U	U		1
130	MW130-120407	12/4/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
130	MW-130-030409	3/4/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
17WW01	17WW01-930613	6/13/93	REG	VOLATILES	1,1-Dichloroethene	µg/L	*51*				1
17WW01	17WW01-950523	5/23/95	REG	VOLATILES	1,1-Dichloroethene	µg/L	*28*				1

Table A-1
Summary of Shallow Groundwater Analytical Results
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW01	17WW01-950523FD	5/23/95	FD	VOLATILES	1,1-Dichloroethene	µg/L	*27*				1
17WW01	17WW01-980722	7/22/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	2.5	<	U		1
17WW01	17WW01-040907	9/7/04	REG	VOLATILES	1,1-Dichloroethene	µg/L	*38*				1
17WW01	17WW01-FEB2007	2/20/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	*32.6*				1
17WW01	17WW01-FEB2007FD	2/20/07	FD	VOLATILES	1,1-Dichloroethene	µg/L	*31.8*				1
17WW01	17WW01-030409	3/4/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	*70*				1
17WW02	17WW02-950523	5/23/95	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	<	U		1
17WW02	17WW02-980723	7/23/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	2.3		J		1
17WW02	17WW02-FEB2007	2/22/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	5.3				1
17WW02	17WW02-FEB2007FD	2/22/07	FD	VOLATILES	1,1-Dichloroethene	µg/L	5.2				1
17WW02	17WW02-030509	3/5/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	6.22				1
17WW03	17WW03-950522	5/22/95	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	<	U		1
17WW03	17WW03-980722	7/22/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	2.5	<	U		1
17WW03	17WW03-990311	3/11/99	REG	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
17WW03	17WW03-030509	3/5/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW04	17WW04-950525	5/25/95	REG	VOLATILES	1,1-Dichloroethene	µg/L	*13*				1
17WW04	17WW04-980723	7/23/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	*13*				1
17WW04	17WW04-120507	12/5/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.763	J	J	15	1
17WW04	17WW04-030209	3/2/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW06	17WW06-950523	5/23/95	REG	VOLATILES	1,1-Dichloroethene	µg/L	6				1
17WW06	17WW06-980722	7/22/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	3.7				1
17WW06	17WW06-FEB2007	2/23/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	6.9				1
17WW06	17WW06-120507	12/4/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	4.8				1
17WW06	17WW06-030509	3/5/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	7				1
17WW08	17WW08-980721	7/21/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	2	<	U		1
17WW08	17WW08-990311	3/11/99	REG	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
17WW08	17WW08-040903	9/3/04	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	U	U		1
17WW08	17WW08-040903FD	9/3/04	FD	VOLATILES	1,1-Dichloroethene	µg/L	5	U	U		1
17WW08	17WW08-022509	2/25/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW10	17WW10-980721	7/21/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
17WW10	17WW10-040902	9/2/04	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	U	U		1
17WW10	17WW10-FEB2007	2/21/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.68	U	U		1
17WW10	17WW10-120507	12/5/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW10	17WW10-022609	2/26/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW10	17WW10-022609-FD	2/26/09	FD	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1

Table A-1
Summary of Shallow Groundwater Analytical Results
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW11	17WW11-980721	7/21/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
17WW11	17WW11-040903	9/3/04	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	U	U		1
17WW11	17WW11-022609	2/26/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW12	17WW12-980721	7/21/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
17WW12	17WW12-040903	9/3/04	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	U	U		1
17WW12	17WW12-FEB2007	2/21/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.68	U	U		1
17WW12	17WW12-022609	2/26/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW13	17WW13-980722	7/22/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
17WW13	17WW13-990311	3/11/99	REG	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
17WW13	17WW13-040902	9/2/04	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	U	U		1
17WW13	17WW13-030309	3/3/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW14	17WW14-980722	7/22/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
17WW14	17WW14-040903	9/3/04	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	U	U		1
17WW14	17WW14-022509	2/25/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
18WW10	18WW10-950602	6/2/95	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	<	U		1
18WW10	LH-18WW10-1896	3/7/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.12	U	U		1
18WW10	18WW10-091507	9/15/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
18WW10	18WW10-031108	3/11/08	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
18WW10	18WW10-092508	9/25/08	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
130	PM-MW130-930516	5/16/93	REG	VOLATILES	Vinyl chloride	µg/L	10	<	U		1
130	PM-MW130-950522	5/22/95	REG	VOLATILES	Vinyl chloride	µg/L	10	<	U		1
130	PM-MW130-980721	7/21/98	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
130	PM-MW130-980721FD	7/21/98	FD	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
130	PM-MW130-990120	1/20/99	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
130	PM-MW130-060523	5/23/06	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
130	17WW130-FEB2007	2/23/07	REG	VOLATILES	Vinyl chloride	µg/L	0.32	U	U		1
130	MW130-120407	12/4/07	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
130	MW-130-030409	3/4/09	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
17WW01	17WW01-930613	6/13/93	REG	VOLATILES	Vinyl chloride	µg/L	10	<	U		1
17WW01	17WW01-950523	5/23/95	REG	VOLATILES	Vinyl chloride	µg/L	10	<	U		1
17WW01	17WW01-950523FD	5/23/95	FD	VOLATILES	Vinyl chloride	µg/L	10	<	U		1
17WW01	17WW01-980722	7/22/98	REG	VOLATILES	Vinyl chloride	µg/L	2.5	<	U		1
17WW01	17WW01-040907	9/7/04	REG	VOLATILES	Vinyl chloride	µg/L	5	U	U		1
17WW01	17WW01-FEB2007	2/20/07	REG	VOLATILES	Vinyl chloride	µg/L	0.32	U	U		1
17WW01	17WW01-FEB2007FD	2/20/07	FD	VOLATILES	Vinyl chloride	µg/L	0.32	U	U		1

Table A-1
Summary of Shallow Groundwater Analytical Results
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW01	17WW01-030409	3/4/09	REG	VOLATILES	Vinyl chloride	µg/L	12.5	U	U		1
17WW02	17WW02-950523	5/23/95	REG	VOLATILES	Vinyl chloride	µg/L	10	<	U		1
17WW02	17WW02-980723	7/23/98	REG	VOLATILES	Vinyl chloride	µg/L	2.5	<	U		1
17WW02	17WW02-FEB2007	2/22/07	REG	VOLATILES	Vinyl chloride	µg/L	0.32	U	U		1
17WW02	17WW02-FEB2007FD	2/22/07	FD	VOLATILES	Vinyl chloride	µg/L	0.32	U	U		1
17WW02	17WW02-030509	3/5/09	REG	VOLATILES	Vinyl chloride	µg/L	1.25	U	U		1
17WW03	17WW03-950522	5/22/95	REG	VOLATILES	Vinyl chloride	µg/L	10	<	U		1
17WW03	17WW03-980722	7/22/98	REG	VOLATILES	Vinyl chloride	µg/L	2.5	<	U		1
17WW03	17WW03-990311	3/11/99	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
17WW03	17WW03-030509	3/5/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW04	17WW04-950525	5/25/95	REG	VOLATILES	Vinyl chloride	µg/L	10	<	U		1
17WW04	17WW04-980723	7/23/98	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
17WW04	17WW04-120507	12/5/07	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW04	17WW04-030209	3/2/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW06	17WW06-950523	5/23/95	REG	VOLATILES	Vinyl chloride	µg/L	10	<	U		1
17WW06	17WW06-980722	7/22/98	REG	VOLATILES	Vinyl chloride	µg/L	2.5	<	U		1
17WW06	17WW06-FEB2007	2/23/07	REG	VOLATILES	Vinyl chloride	µg/L	0.32	U	U		1
17WW06	17WW06-120507	12/4/07	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW06	17WW06-030509	3/5/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW08	17WW08-980721	7/21/98	REG	VOLATILES	Vinyl chloride	µg/L	2	<	U		1
17WW08	17WW08-990311	3/11/99	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
17WW08	17WW08-040903	9/3/04	REG	VOLATILES	Vinyl chloride	µg/L	5	U	U		1
17WW08	17WW08-040903FD	9/3/04	FD	VOLATILES	Vinyl chloride	µg/L	5	U	U		1
17WW08	17WW08-022509	2/25/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW10	17WW10-980721	7/21/98	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
17WW10	17WW10-040902	9/2/04	REG	VOLATILES	Vinyl chloride	µg/L	5	U	U		1
17WW10	17WW10-FEB2007	2/21/07	REG	VOLATILES	Vinyl chloride	µg/L	0.32	U	U		1
17WW10	17WW10-120507	12/5/07	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW10	17WW10-022609	2/26/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW10	17WW10-022609-FD	2/26/09	FD	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW11	17WW11-980721	7/21/98	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
17WW11	17WW11-040903	9/3/04	REG	VOLATILES	Vinyl chloride	µg/L	5	U	U		1
17WW11	17WW11-022609	2/26/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW12	17WW12-980721	7/21/98	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
17WW12	17WW12-040903	9/3/04	REG	VOLATILES	Vinyl chloride	µg/L	5	U	U		1

Table A-1
Summary of Shallow Groundwater Analytical Results
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW12	17WW12-FEB2007	2/21/07	REG	VOLATILES	Vinyl chloride	µg/L	0.32	U	U		1
17WW12	17WW12-022609	2/26/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW13	17WW13-980722	7/22/98	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
17WW13	17WW13-990311	3/11/99	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
17WW13	17WW13-040902	9/2/04	REG	VOLATILES	Vinyl chloride	µg/L	5	U	U		1
17WW13	17WW13-030309	3/3/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW14	17WW14-980722	7/22/98	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
17WW14	17WW14-040903	9/3/04	REG	VOLATILES	Vinyl chloride	µg/L	5	U	U		1
17WW14	17WW14-022509	2/25/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
18WW10	18WW10-950602	6/2/95	REG	VOLATILES	Vinyl chloride	µg/L	10	<	U		1
18WW10	LH-18WW10-1896	3/7/07	REG	VOLATILES	Vinyl chloride	µg/L	0.27	U	U		1
18WW10	18WW10-091507	9/15/07	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
18WW10	18WW10-031108	3/11/08	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
18WW10	18WW10-092508	9/25/08	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
130	PM-MW130-930516	5/16/93	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	<	U		1
130	PM-MW130-950522	5/22/95	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	<	U		1
130	PM-MW130-980721	7/21/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
130	PM-MW130-980721FD	7/21/98	FD	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
130	PM-MW130-990120	1/20/99	REG	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
130	PM-MW130-060523	5/23/06	REG	VOLATILES	1,2-Dichloroethane	µg/L	*6.73*				1
130	17WW130-FEB2007	2/23/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	4.9				1
130	MW130-120407	12/4/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	4.17				1
130	MW-130-030409	3/4/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	4.29				1
17WW01	17WW01-930613	6/13/93	REG	VOLATILES	1,2-Dichloroethane	µg/L	*29*				1
17WW01	17WW01-950523	5/23/95	REG	VOLATILES	1,2-Dichloroethane	µg/L	*62*				1
17WW01	17WW01-950523FD	5/23/95	FD	VOLATILES	1,2-Dichloroethane	µg/L	*63*				1
17WW01	17WW01-980722	7/22/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	2.5	<	U		1
17WW01	17WW01-040907	9/7/04	REG	VOLATILES	1,2-Dichloroethane	µg/L	*89*		JH	11A, 05B	1
17WW01	17WW01-FEB2007	2/20/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	*44.9*				1
17WW01	17WW01-FEB2007FD	2/20/07	FD	VOLATILES	1,2-Dichloroethane	µg/L	*44*				1
17WW01	17WW01-030409	3/4/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	*35.8*	J	J	15	1
17WW02	17WW02-950523	5/23/95	REG	VOLATILES	1,2-Dichloroethane	µg/L	*40*				1
17WW02	17WW02-980723	7/23/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	*34*				1
17WW02	17WW02-FEB2007	2/22/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	*40.7*				1
17WW02	17WW02-FEB2007FD	2/22/07	FD	VOLATILES	1,2-Dichloroethane	µg/L	*42.1*				1

Table A-1
Summary of Shallow Groundwater Analytical Results
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW02	17WW02-030509	3/5/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	*34.5*				1
17WW03	17WW03-950522	5/22/95	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	<	U		1
17WW03	17WW03-980722	7/22/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	2.5	<	U		1
17WW03	17WW03-990311	3/11/99	REG	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
17WW03	17WW03-030509	3/5/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.26	J	J	15	1
17WW04	17WW04-950525	5/25/95	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	<	U		1
17WW04	17WW04-980723	7/23/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	4.9				1
17WW04	17WW04-120507	12/5/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW04	17WW04-030209	3/2/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW06	17WW06-950523	5/23/95	REG	VOLATILES	1,2-Dichloroethane	µg/L	*18*				1
17WW06	17WW06-980722	7/22/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	*6.9*				1
17WW06	17WW06-FEB2007	2/23/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	*8*				1
17WW06	17WW06-120507	12/4/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	*5.4*				1
17WW06	17WW06-030509	3/5/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	*5.68*				1
17WW08	17WW08-980721	7/21/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	2	<	U		1
17WW08	17WW08-990311	3/11/99	REG	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
17WW08	17WW08-040903	9/3/04	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	U	UJ	05B	1
17WW08	17WW08-040903FD	9/3/04	FD	VOLATILES	1,2-Dichloroethane	µg/L	5	U	UJ	05B	1
17WW08	17WW08-022509	2/25/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW10	17WW10-980721	7/21/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
17WW10	17WW10-040902	9/2/04	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	U	UJ	05B	1
17WW10	17WW10-FEB2007	2/21/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.53	U	U		1
17WW10	17WW10-120507	12/5/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW10	17WW10-022609	2/26/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW10	17WW10-022609-FD	2/26/09	FD	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW11	17WW11-980721	7/21/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
17WW11	17WW11-040903	9/3/04	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	U	UJ	05B	1
17WW11	17WW11-022609	2/26/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW12	17WW12-980721	7/21/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
17WW12	17WW12-040903	9/3/04	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	U	UJ	05B	1
17WW12	17WW12-FEB2007	2/21/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.53	U	U		1
17WW12	17WW12-022609	2/26/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW13	17WW13-980722	7/22/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
17WW13	17WW13-990311	3/11/99	REG	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
17WW13	17WW13-040902	9/2/04	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	U	UJ	05B	1

Table A-1
Summary of Shallow Groundwater Analytical Results
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW13	17WW13-030309	3/3/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW14	17WW14-980722	7/22/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
17WW14	17WW14-040903	9/3/04	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	U	UJ	05B	1
17WW14	17WW14-022509	2/25/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
18WW10	18WW10-950602	6/2/95	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	<	U		1
18WW10	LH-18WW10-1896	3/7/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.074	U	U		1
18WW10	18WW10-091507	9/15/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
18WW10	18WW10-031108	3/11/08	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
18WW10	18WW10-092508	9/25/08	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1

Notes:

µg/L - micrograms per liter
DF - dilution factor
FD - field duplicate
Qual - data qualifier applied by the laboratory
RC - reason code
REG - regular sample
VQ - data qualifier applied by the validator

Data Qualifiers

<	Same as "U"
D	Sample was diluted and reanalyzed
E	Result exceeds calibration limits of the instrument
H	Result may be biased high
J	The analyte was positively identified; the reported value is the estimated concentration of the constituent detected
U	Not detected. The analyte was analyzed for, but not detected above the associated reporting limit

Reason Codes

01	Sample received outside of 4 +/- 2 degrees Celsius
02B	Analysis
05B	Compound % deviation QC criteria not met
11A	Recovery
15	Quantitation

Table A-2
Summary of Shallow GW Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
130	130-FEB2007	2/23/07	REG	FIELD TESTS	Dissolved Oxygen	µg/L	3270				1
130	MW130-120407	12/4/07	REG	FIELD TESTS	Dissolved Oxygen	µg/L	8700				1
17WW01	17WW01-FEB2007	2/20/07	REG	FIELD TESTS	Dissolved Oxygen	µg/L	200				1
17WW01	17WW01-030409	3/4/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	220				1
17WW02	17WW02-FEB2007	2/22/07	REG	FIELD TESTS	Dissolved Oxygen	µg/L	1140				1
17WW02	17WW02-030509	3/5/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	570				1
17WW03	17WW03-030509	3/5/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	870				1
17WW04	17WW04-120507	12/5/07	REG	FIELD TESTS	Dissolved Oxygen	µg/L	600				1
17WW04	17WW04-030209	3/2/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	700				1
17WW06	17WW06-FEB2007	2/23/07	REG	FIELD TESTS	Dissolved Oxygen	µg/L	310				1
17WW06	17WW06-120507	12/4/07	REG	FIELD TESTS	Dissolved Oxygen	µg/L	2310				1
17WW06	17WW06-030509	3/5/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	710				1
17WW08	17WW08-022509	2/25/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	1230				1
17WW10	17WW10-FEB2007	2/21/07	REG	FIELD TESTS	Dissolved Oxygen	µg/L	170				1
17WW10	17WW10-120507	12/5/07	REG	FIELD TESTS	Dissolved Oxygen	µg/L	310				1
17WW10	17WW10-022609	2/26/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	550				1
17WW11	17WW11-022609	2/26/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	1900				1
17WW12	17WW12-FEB2007	2/21/07	REG	FIELD TESTS	Dissolved Oxygen	µg/L	280				1
17WW12	17WW12-022609	2/26/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	150				1
17WW13	17WW13-030309	3/3/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	720				1
17WW14	17WW14-022509	2/25/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	840				1
130	130-FEB2007	2/23/07	REG	FIELD TESTS	Oxygen Reduction Potential	mV	301.5				1
130	MW130-120407	12/4/07	REG	FIELD TESTS	Oxygen Reduction Potential	mV	173.4				1
17WW01	17WW01-FEB2007	2/20/07	REG	FIELD TESTS	Oxygen Reduction Potential	mV	49.6				1
17WW01	17WW01-030409	3/4/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	-45.8				1
17WW02	17WW02-FEB2007	2/22/07	REG	FIELD TESTS	Oxygen Reduction Potential	mV	126.4				1
17WW02	17WW02-030509	3/5/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	415.6				1
17WW03	17WW03-030509	3/5/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	-19.7				1
17WW04	17WW04-120507	12/5/07	REG	FIELD TESTS	Oxygen Reduction Potential	mV	10.8				1
17WW04	17WW04-030209	3/2/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	117.4				1
17WW06	17WW06-FEB2007	2/23/07	REG	FIELD TESTS	Oxygen Reduction Potential	mV	36.8				1
17WW06	17WW06-120507	12/4/07	REG	FIELD TESTS	Oxygen Reduction Potential	mV	58.7				1
17WW06	17WW06-030509	3/5/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	62.6				1
17WW08	17WW08-022509	2/25/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	127.9				1
17WW10	17WW10-FEB2007	2/21/07	REG	FIELD TESTS	Oxygen Reduction Potential	mV	64.8				1
17WW10	17WW10-120507	12/5/07	REG	FIELD TESTS	Oxygen Reduction Potential	mV	3				1
17WW10	17WW10-022609	2/26/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	48.1				1

Table A-2
Summary of Shallow GW Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW11	17WW11-022609	2/26/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	142.9				1
17WW12	17WW12-FEB2007	2/21/07	REG	FIELD TESTS	Oxygen Reduction Potential	mV	-21.8				1
17WW12	17WW12-022609	2/26/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	-20.9				1
17WW13	17WW13-030309	3/3/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	32.9				1
17WW14	17WW14-022509	2/25/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	59.1				1
130	PM-MW130-930516	5/16/93	REG	GEN CHEMISTRY	Nitrate	µg/L	-99	<	U		1
130	PM-MW130-980721	7/21/98	REG	GEN CHEMISTRY	Nitrate	µg/L	9100		D		1
130	17WW130-FEB2007	2/23/07	REG	GEN CHEMISTRY	Nitrate	µg/L	2700				1
17WW01	17WW01-930613	6/13/93	REG	GEN CHEMISTRY	Nitrate	µg/L	-99	<	U		1
17WW01	17WW01-FEB2007	2/20/07	REG	GEN CHEMISTRY	Nitrate	µg/L	380				1
17WW01	17WW01-FEB2007FD	2/20/07	FD	GEN CHEMISTRY	Nitrate	µg/L	5	U	U		1
17WW01	17WW01-030409	3/4/09	REG	GEN CHEMISTRY	Nitrate	µg/L	1000	U	U		1
17WW02	17WW02-FEB2007	2/22/07	REG	GEN CHEMISTRY	Nitrate	µg/L	5	U	U		1
17WW02	17WW02-FEB2007FD	2/22/07	FD	GEN CHEMISTRY	Nitrate	µg/L	5	U	U		1
17WW02	17WW02-030509	3/5/09	REG	GEN CHEMISTRY	Nitrate	µg/L	500	U	U		1
17WW03	17WW03-030509	3/5/09	REG	GEN CHEMISTRY	Nitrate	µg/L	500	U	U		1
17WW06	17WW06-FEB2007	2/23/07	REG	GEN CHEMISTRY	Nitrate	µg/L	5	U	U		1
17WW06	17WW06-030509	3/5/09	REG	GEN CHEMISTRY	Nitrate	µg/L	1000	U	U		1
17WW10	17WW10-FEB2007	2/21/07	REG	GEN CHEMISTRY	Nitrate	µg/L	300				1
17WW12	17WW12-FEB2007	2/21/07	REG	GEN CHEMISTRY	Nitrate	µg/L	5	U	U		1
130	PM-MW130-980721	7/21/98	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	5320				1
130	PM-MW130-980721FD	7/21/98	FD	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	5310				1
130	17WW130-FEB2007	2/23/07	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	2700				1
17WW01	17WW01-980722	7/22/98	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	100	<	U		1
17WW01	17WW01-FEB2007	2/20/07	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	400				1
17WW01	17WW01-FEB2007FD	2/20/07	FD	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	100				1
17WW02	17WW02-980723	7/23/98	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	100	<	U		1
17WW02	17WW02-FEB2007	2/22/07	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	60				1
17WW02	17WW02-FEB2007FD	2/22/07	FD	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	50				1
17WW03	17WW03-980722	7/22/98	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	100	<	U		1
17WW04	17WW04-980723	7/23/98	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	100	<	U		1
17WW06	17WW06-980722	7/22/98	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	100	<	U		1
17WW06	17WW06-FEB2007	2/23/07	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	5	U	U		1
17WW08	17WW08-980721	7/21/98	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	100	<	U		1
17WW10	17WW10-980721	7/21/98	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	100	<	U		1
17WW10	17WW10-FEB2007	2/21/07	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	300				1
17WW11	17WW11-980721	7/21/98	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	100	<	U		1

Table A-2
Summary of Shallow GW Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW12	17WW12-980721	7/21/98	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	100	<	U		1
17WW12	17WW12-FEB2007	2/21/07	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	200				1
130	17WW130-FEB2007	2/23/07	REG	GEN CHEMISTRY	Nitrite	µg/L	3	U	UJL	02B	1
17WW01	17WW01-FEB2007FD	2/20/07	FD	GEN CHEMISTRY	Nitrite	µg/L	20	B	J	15	1
17WW01	17WW01-FEB2007	2/20/07	REG	GEN CHEMISTRY	Nitrite	µg/L	20	B	J	15	1
17WW01	17WW01-030409	3/4/09	REG	GEN CHEMISTRY	Nitrite	µg/L	1000	U	U		1
17WW02	17WW02-950523	5/23/95	REG	GEN CHEMISTRY	Nitrite	µg/L	40				1
17WW02	17WW02-FEB2007	2/22/07	REG	GEN CHEMISTRY	Nitrite	µg/L	3	U	U		1
17WW02	17WW02-FEB2007FD	2/22/07	FD	GEN CHEMISTRY	Nitrite	µg/L	3	U	U		1
17WW02	17WW02-030509	3/5/09	REG	GEN CHEMISTRY	Nitrite	µg/L	500	U	U		1
17WW03	17WW03-950522	5/22/95	REG	GEN CHEMISTRY	Nitrite	µg/L	40				1
17WW03	17WW03-030509	3/5/09	REG	GEN CHEMISTRY	Nitrite	µg/L	500	U	U		1
17WW04	17WW04-950525	5/25/95	REG	GEN CHEMISTRY	Nitrite	µg/L	50				1
17WW06	17WW06-950523	5/23/95	REG	GEN CHEMISTRY	Nitrite	µg/L	60				1
17WW06	17WW06-FEB2007	2/23/07	REG	GEN CHEMISTRY	Nitrite	µg/L	3	U	U		1
17WW06	17WW06-030509	3/5/09	REG	GEN CHEMISTRY	Nitrite	µg/L	1000	U	U		1
17WW10	17WW10-FEB2007	2/21/07	REG	GEN CHEMISTRY	Nitrite	µg/L	3	U	U		1
17WW12	17WW12-FEB2007	2/21/07	REG	GEN CHEMISTRY	Nitrite	µg/L	200				1
130	130-FEB2007	2/23/07	REG	FIELD TESTS	Ferrous iron	µg/L	60				1
130	17WW130-FEB2007	2/23/07	REG	FIELD TESTS	Ferrous iron	µg/L	60				1
17WW01	17WW01-FEB2007	2/20/07	REG	FIELD TESTS	Ferrous iron	µg/L	2980				1
17WW01	17WW01-030409	3/4/09	REG	FIELD TESTS	Ferrous Iron	µg/L	2800				1
17WW02	17WW02-FEB2007	2/22/07	REG	FIELD TESTS	Ferrous iron	µg/L	30				1
17WW02	17WW02-030509	3/5/09	REG	FIELD TESTS	Ferrous Iron	µg/L	320				1
17WW03	17WW03-030509	3/5/09	REG	FIELD TESTS	Ferrous Iron	µg/L	210				1
17WW06	17WW06-FEB2007	2/23/07	REG	FIELD TESTS	Ferrous iron	µg/L	130				1
17WW06	17WW06-030509	3/5/09	REG	FIELD TESTS	Ferrous Iron	µg/L	730				1
17WW10	17WW10-FEB2007	2/21/07	REG	FIELD TESTS	Ferrous iron	µg/L	1910				1
17WW12	17WW12-FEB2007	2/21/07	REG	FIELD TESTS	Ferrous iron	µg/L	3880				1
130	PM-MW130-930516	5/16/93	REG	GEN CHEMISTRY	Sulfate	µg/L	138000				1
130	PM-MW130-980721	7/21/98	REG	GEN CHEMISTRY	Sulfate	µg/L	210000				1
130	PM-MW130-980721FD	7/21/98	FD	GEN CHEMISTRY	Sulfate	µg/L	210000				1
130	17WW130-FEB2007	2/23/07	REG	GEN CHEMISTRY	Sulfate	µg/L	173000				1
17WW01	17WW01-930613	6/13/93	REG	GEN CHEMISTRY	Sulfate	µg/L	80300				1
17WW01	17WW01-980722	7/22/98	REG	GEN CHEMISTRY	Sulfate	µg/L	38000				1
17WW01	17WW01-FEB2007FD	2/20/07	FD	GEN CHEMISTRY	Sulfate	µg/L	107000				1
17WW01	17WW01-FEB2007	2/20/07	REG	GEN CHEMISTRY	Sulfate	µg/L	89000				1

Table A-2
Summary of Shallow GW Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW01	17WW01-030409	3/4/09	REG	GEN CHEMISTRY	Sulfate	µg/L	90000				1
17WW02	17WW02-950523	5/23/95	REG	GEN CHEMISTRY	Sulfate	µg/L	502000				1
17WW02	17WW02-980723	7/23/98	REG	GEN CHEMISTRY	Sulfate	µg/L	190000				1
17WW02	17WW02-FEB2007FD	2/22/07	FD	GEN CHEMISTRY	Sulfate	µg/L	130000				1
17WW02	17WW02-FEB2007	2/22/07	REG	GEN CHEMISTRY	Sulfate	µg/L	123000				1
17WW02	17WW02-030509	3/5/09	REG	GEN CHEMISTRY	Sulfate	µg/L	124000				1
17WW03	17WW03-950522	5/22/95	REG	GEN CHEMISTRY	Sulfate	µg/L	32000				1
17WW03	17WW03-980722	7/22/98	REG	GEN CHEMISTRY	Sulfate	µg/L	15000				1
17WW03	17WW03-030509	3/5/09	REG	GEN CHEMISTRY	Sulfate	µg/L	44800				1
17WW04	17WW04-950525	5/25/95	REG	GEN CHEMISTRY	Sulfate	µg/L	8100				1
17WW04	17WW04-980723	7/23/98	REG	GEN CHEMISTRY	Sulfate	µg/L	9900				1
17WW06	17WW06-950523	5/23/95	REG	GEN CHEMISTRY	Sulfate	µg/L	111000				1
17WW06	17WW06-980722	7/22/98	REG	GEN CHEMISTRY	Sulfate	µg/L	97000				1
17WW06	17WW06-FEB2007	2/23/07	REG	GEN CHEMISTRY	Sulfate	µg/L	92000				1
17WW06	17WW06-030509	3/5/09	REG	GEN CHEMISTRY	Sulfate	µg/L	111000				1
17WW08	17WW08-980721	7/21/98	REG	GEN CHEMISTRY	Sulfate	µg/L	90000				1
17WW10	17WW10-980721	7/21/98	REG	GEN CHEMISTRY	Sulfate	µg/L	130000				1
17WW10	17WW10-FEB2007	2/21/07	REG	GEN CHEMISTRY	Sulfate	µg/L	142000				1
17WW11	17WW11-980721	7/21/98	REG	GEN CHEMISTRY	Sulfate	µg/L	110000				1
17WW12	17WW12-980721	7/21/98	REG	GEN CHEMISTRY	Sulfate	µg/L	16000				1
17WW12	17WW12-FEB2007	2/21/07	REG	GEN CHEMISTRY	Sulfate	µg/L	144000				1
18WW10	18WW10-031108	3/11/08	REG	GEN CHEMISTRY	Sulfate	µg/L	30200				1
130	17WW130-FEB2007	2/23/07	REG	GEN CHEMISTRY	Sulfide	µg/L	200	UB	U		1
17WW01	17WW01-FEB2007FD	2/20/07	FD	GEN CHEMISTRY	Sulfide	µg/L	200	U	U		1
17WW01	17WW01-FEB2007	2/20/07	REG	GEN CHEMISTRY	Sulfide	µg/L	200	U	U		1
17WW01	17WW01-030409	3/4/09	REG	GEN CHEMISTRY	Sulfide	µg/L	500	U	U		1
17WW02	17WW02-FEB2007	2/22/07	REG	GEN CHEMISTRY	Sulfide	µg/L	200	UB	U		1
17WW02	17WW02-FEB2007FD	2/22/07	FD	GEN CHEMISTRY	Sulfide	µg/L	200	UB	U		1
17WW02	17WW02-030509	3/5/09	REG	GEN CHEMISTRY	Sulfide	µg/L	500	U	U		1
17WW03	17WW03-030509	3/5/09	REG	GEN CHEMISTRY	Sulfide	µg/L	500	U	U		1
17WW06	17WW06-FEB2007	2/23/07	REG	GEN CHEMISTRY	Sulfide	µg/L	200	UB	U		1
17WW06	17WW06-030509	3/5/09	REG	GEN CHEMISTRY	Sulfide	µg/L	500	U	U		1
17WW10	17WW10-FEB2007	2/21/07	REG	GEN CHEMISTRY	Sulfide	µg/L	200	U	U		1
17WW12	17WW12-FEB2007	2/21/07	REG	GEN CHEMISTRY	Sulfide	µg/L	200	U	U		1
130	17WW130-FEB2007	2/23/07	REG	GASES	Methane	µg/L	0.51				1
17WW01	17WW01-FEB2007FD	2/20/07	FD	GASES	Methane	µg/L	10.1				1
17WW01	17WW01-FEB2007	2/20/07	REG	GASES	Methane	µg/L	9.73				1

Table A-2
Summary of Shallow GW Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW01	17WW01-030409	3/4/09	REG	GASES	Methane	µg/L	66.7				1
17WW02	17WW02-FEB2007	2/22/07	REG	GASES	Methane	µg/L	7.48				1
17WW02	17WW02-FEB2007FD	2/22/07	FD	GASES	Methane	µg/L	5.95				1
17WW02	17WW02-030509	3/5/09	REG	GASES	Methane	µg/L	5.1				1
17WW03	17WW03-030509	3/5/09	REG	GASES	Methane	µg/L	19				1
17WW06	17WW06-FEB2007	2/23/07	REG	GASES	Methane	µg/L	1.79				1
17WW06	17WW06-030509	3/5/09	REG	GASES	Methane	µg/L	9.16				1
17WW10	17WW10-FEB2007	2/21/07	REG	GASES	Methane	µg/L	20.9				1
17WW12	17WW12-FEB2007	2/21/07	REG	GASES	Methane	µg/L	57.1				1
130	17WW130-FEB2007	2/23/07	REG	GASES	Ethane	µg/L	0.6	U	U		1
17WW01	17WW01-FEB2007FD	2/20/07	FD	GASES	Ethane	µg/L	0.6	U	U		1
17WW01	17WW01-FEB2007	2/20/07	REG	GASES	Ethane	µg/L	0.6	U	U		1
17WW01	17WW01-030409	3/4/09	REG	GASES	Ethane	µg/L	1	U	U		1
17WW02	17WW02-FEB2007	2/22/07	REG	GASES	Ethane	µg/L	0.6	U	U		1
17WW02	17WW02-FEB2007FD	2/22/07	FD	GASES	Ethane	µg/L	0.6	U	U		1
17WW02	17WW02-030509	3/5/09	REG	GASES	Ethane	µg/L	1	U	U		1
17WW03	17WW03-030509	3/5/09	REG	GASES	Ethane	µg/L	1	U	U		1
17WW06	17WW06-FEB2007	2/23/07	REG	GASES	Ethane	µg/L	0.6	U	U		1
17WW06	17WW06-030509	3/5/09	REG	GASES	Ethane	µg/L	1	U	U		1
17WW10	17WW10-FEB2007	2/21/07	REG	GASES	Ethane	µg/L	0.6	U	U		1
17WW12	17WW12-FEB2007	2/21/07	REG	GASES	Ethane	µg/L	0.6	U	U		1
130	17WW130-FEB2007	2/23/07	REG	GASES	Ethylene	µg/L	0.8	U	U		1
17WW01	17WW01-FEB2007FD	2/20/07	FD	GASES	Ethylene	µg/L	0.8	U	U		1
17WW01	17WW01-FEB2007	2/20/07	REG	GASES	Ethylene	µg/L	0.8	U	U		1
17WW01	17WW01-030409	3/4/09	REG	GASES	Ethylene	µg/L	1	U	U		1
17WW02	17WW02-FEB2007	2/22/07	REG	GASES	Ethylene	µg/L	0.8	U	U		1
17WW02	17WW02-FEB2007FD	2/22/07	FD	GASES	Ethylene	µg/L	0.8	U	U		1
17WW02	17WW02-030509	3/5/09	REG	GASES	Ethylene	µg/L	1	U	U		1
17WW03	17WW03-030509	3/5/09	REG	GASES	Ethylene	µg/L	1	U	U		1
17WW06	17WW06-FEB2007	2/23/07	REG	GASES	Ethylene	µg/L	0.8	U	U		1
17WW06	17WW06-030509	3/5/09	REG	GASES	Ethylene	µg/L	1	U	U		1
17WW10	17WW10-FEB2007	2/21/07	REG	GASES	Ethylene	µg/L	0.8	U	U		1
17WW12	17WW12-FEB2007	2/21/07	REG	GASES	Ethylene	µg/L	0.8	U	U		1
130	PM-MW130-930516	5/16/93	REG	GEN CHEMISTRY	Chloride	µg/L	1450000				1
130	PM-MW130-980721FD	7/21/98	FD	GEN CHEMISTRY	Chloride	µg/L	1600000				1
130	PM-MW130-980721	7/21/98	REG	GEN CHEMISTRY	Chloride	µg/L	1480000		D		1
130	PM-MW130-990120	1/20/99	REG	GEN CHEMISTRY	Chloride	µg/L	1340000		D		1

Table A-2
Summary of Shallow GW Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
130	PM-MW130-060523	5/23/06	REG	GEN CHEMISTRY	Chloride	µg/L	991000				1
130	17WW130-FEB2007	2/23/07	REG	GEN CHEMISTRY	Chloride	µg/L	1030000				1
17WW01	17WW01-930613	6/13/93	REG	GEN CHEMISTRY	Chloride	µg/L	1091300				1
17WW01	17WW01-980722	7/22/98	REG	GEN CHEMISTRY	Chloride	µg/L	868000				1
17WW01	17WW01-FEB2007FD	2/20/07	FD	GEN CHEMISTRY	Chloride	µg/L	1310000				1
17WW01	17WW01-FEB2007	2/20/07	REG	GEN CHEMISTRY	Chloride	µg/L	1250000				1
17WW02	17WW02-950523	5/23/95	REG	GEN CHEMISTRY	Chloride	µg/L	623000				1
17WW02	17WW02-980723	7/23/98	REG	GEN CHEMISTRY	Chloride	µg/L	1160000				1
17WW02	17WW02-FEB2007	2/22/07	REG	GEN CHEMISTRY	Chloride	µg/L	994000				1
17WW02	17WW02-FEB2007FD	2/22/07	FD	GEN CHEMISTRY	Chloride	µg/L	969000				1
17WW02	17WW02-030509	3/5/09	REG	GEN CHEMISTRY	Chloride	µg/L	817000				1
17WW03	17WW03-950522	5/22/95	REG	GEN CHEMISTRY	Chloride	µg/L	741000				1
17WW03	17WW03-980722	7/22/98	REG	GEN CHEMISTRY	Chloride	µg/L	624000				1
17WW03	17WW03-030509	3/5/09	REG	GEN CHEMISTRY	Chloride	µg/L	794000				1
17WW04	17WW04-950525	5/25/95	REG	GEN CHEMISTRY	Chloride	µg/L	214000				1
17WW04	17WW04-980723	7/23/98	REG	GEN CHEMISTRY	Chloride	µg/L	254000				1
17WW06	17WW06-950523	5/23/95	REG	GEN CHEMISTRY	Chloride	µg/L	1060000				1
17WW06	17WW06-980722	7/22/98	REG	GEN CHEMISTRY	Chloride	µg/L	1030000				1
17WW06	17WW06-FEB2007	2/23/07	REG	GEN CHEMISTRY	Chloride	µg/L	1110000				1
17WW06	17WW06-030509	3/5/09	REG	GEN CHEMISTRY	Chloride	µg/L	1040000				1
17WW08	17WW08-980721	7/21/98	REG	GEN CHEMISTRY	Chloride	µg/L	653000				1
17WW10	17WW10-980721	7/21/98	REG	GEN CHEMISTRY	Chloride	µg/L	1050000				1
17WW10	17WW10-FEB2007	2/21/07	REG	GEN CHEMISTRY	Chloride	µg/L	1030000				1
17WW11	17WW11-980721	7/21/98	REG	GEN CHEMISTRY	Chloride	µg/L	1160000				1
17WW12	17WW12-980721	7/21/98	REG	GEN CHEMISTRY	Chloride	µg/L	324000				1
17WW12	17WW12-FEB2007	2/21/07	REG	GEN CHEMISTRY	Chloride	µg/L	305000				1
18WW10	18WW10-031108	3/11/08	REG	GEN CHEMISTRY	Chloride	µg/L	265000				1
18WW10	18WW10-092508	9/25/08	REG	GEN CHEMISTRY	Chloride	µg/L	245000				1
130	17WW130-FEB2007	2/23/07	REG	GEN CHEMISTRY	Total Organic Carbon	µg/L	6000				1
17WW01	17WW01-FEB2007FD	2/20/07	FD	GEN CHEMISTRY	Total Organic Carbon	µg/L	5000				1
17WW01	17WW01-FEB2007	2/20/07	REG	GEN CHEMISTRY	Total Organic Carbon	µg/L	4000				1
17WW01	17WW01-030409	3/4/09	REG	GEN CHEMISTRY	Total Organic Carbon	µg/L	6600				1
17WW02	17WW02-FEB2007	2/22/07	REG	GEN CHEMISTRY	Total Organic Carbon	µg/L	3000				1
17WW02	17WW02-FEB2007FD	2/22/07	FD	GEN CHEMISTRY	Total Organic Carbon	µg/L	3000				1
17WW02	17WW02-030509	3/5/09	REG	GEN CHEMISTRY	Total Organic Carbon	µg/L	5670				1
17WW03	17WW03-030509	3/5/09	REG	GEN CHEMISTRY	Total Organic Carbon	µg/L	4170				1
17WW06	17WW06-FEB2007	2/23/07	REG	GEN CHEMISTRY	Total Organic Carbon	µg/L	4000				1

Table A-2
Summary of Shallow GW Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW06	17WW06-030509	3/5/09	REG	GEN CHEMISTRY	Total Organic Carbon	µg/L	5020				1
17WW10	17WW10-FEB2007	2/21/07	REG	GEN CHEMISTRY	Total Organic Carbon	µg/L	4000				1
17WW12	17WW12-FEB2007	2/21/07	REG	GEN CHEMISTRY	Total Organic Carbon	µg/L	4000				1
130	PM-MW130-930516	5/16/93	REG	GEN CHEMISTRY	pH	STD UNIT	6.69				1
130	130-FEB2007	2/23/07	REG	FIELD TESTS	pH	STD UNIT	6.87				1
130	17WW130-FEB2007	2/23/07	REG	GEN CHEMISTRY	pH	STD UNIT	6.7				1
130	MW130-120407	12/4/07	REG	FIELD TESTS	pH	STD UNIT	6.82				1
17WW01	17WW01-930613	6/13/93	REG	GEN CHEMISTRY	pH	STD UNIT	6.12				1
17WW01	17WW01-FEB2007	2/20/07	REG	FIELD TESTS	pH	STD UNIT	5.88				1
17WW01	17WW01-FEB2007FD	2/20/07	FD	GEN CHEMISTRY	pH	STD UNIT	5.9				1
17WW01	17WW01-FEB2007	2/20/07	REG	GEN CHEMISTRY	pH	STD UNIT	5.9				1
17WW01	17WW01-030409	3/4/09	REG	FIELD TESTS	pH	STD UNIT	5.83				1
17WW02	17WW02-FEB2007	2/22/07	REG	FIELD TESTS	pH	STD UNIT	6.59				1
17WW02	17WW02-FEB2007	2/22/07	REG	GEN CHEMISTRY	pH	STD UNIT	6.8				1
17WW02	17WW02-FEB2007FD	2/22/07	FD	GEN CHEMISTRY	pH	STD UNIT	6.8				1
17WW02	17WW02-030509	3/5/09	REG	FIELD TESTS	pH	STD UNIT	6.31				1
17WW03	17WW03-030509	3/5/09	REG	FIELD TESTS	pH	STD UNIT	5.83				1
17WW04	17WW04-120507	12/5/07	REG	FIELD TESTS	pH	STD UNIT	6.12				1
17WW04	17WW04-030209	3/2/09	REG	FIELD TESTS	pH	STD UNIT	5.91				1
17WW06	17WW06-FEB2007	2/23/07	REG	FIELD TESTS	pH	STD UNIT	6.62				1
17WW06	17WW06-FEB2007	2/23/07	REG	GEN CHEMISTRY	pH	STD UNIT	8.2				1
17WW06	17WW06-120507	12/4/07	REG	FIELD TESTS	pH	STD UNIT	6.89				1
17WW06	17WW06-030509	3/5/09	REG	FIELD TESTS	pH	STD UNIT	6.34				1
17WW08	17WW08-022509	2/25/09	REG	FIELD TESTS	pH	STD UNIT	7.51				1
17WW10	17WW10-FEB2007	2/21/07	REG	FIELD TESTS	pH	STD UNIT	6.15				1
17WW10	17WW10-FEB2007	2/21/07	REG	GEN CHEMISTRY	pH	STD UNIT	6				1
17WW10	17WW10-120507	12/5/07	REG	FIELD TESTS	pH	STD UNIT	6.29				1
17WW10	17WW10-022609	2/26/09	REG	FIELD TESTS	pH	STD UNIT	6.01				1
17WW11	17WW11-022609	2/26/09	REG	FIELD TESTS	pH	STD UNIT	5.89				1
17WW12	17WW12-FEB2007	2/21/07	REG	FIELD TESTS	pH	STD UNIT	6				1
17WW12	17WW12-FEB2007	2/21/07	REG	GEN CHEMISTRY	pH	STD UNIT	5.6				1
17WW12	17WW12-022609	2/26/09	REG	FIELD TESTS	pH	STD UNIT	5.74				1
17WW13	17WW13-030309	3/3/09	REG	FIELD TESTS	pH	STD UNIT	6.37				1
17WW14	17WW14-022509	2/25/09	REG	FIELD TESTS	pH	STD UNIT	6.13				1
130	17WW130-FEB2007	2/23/07	REG	DHE	Dehalococcoides	cells/ml	35				1
17WW01	17WW01-FEB2007FD	2/20/07	FD	DHE	Dehalococcoides	cells/ml	10	U	U		1
17WW01	17WW01-FEB2007	2/20/07	REG	DHE	Dehalococcoides	cells/ml	10	U	U		1

Table A-2
Summary of Shallow GW Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW01	17WW01-030409	3/4/09	REG	DHE	Dehalococcoides	cells/ml	10	U			1
17WW02	17WW02-FEB2007FD	2/22/07	FD	DHE	Dehalococcoides	cells/ml	41				1
17WW02	17WW02-FEB2007	2/22/07	REG	DHE	Dehalococcoides	cells/ml	10	U	U		1
17WW02	17WW02-030509	3/5/09	REG	DHE	Dehalococcoides	cells/ml	10	U			1
17WW06	17WW06-FEB2007	2/23/07	REG	DHE	Dehalococcoides	cells/ml	10	U	U		1
17WW10	17WW10-FEB2007	2/21/07	REG	DHE	Dehalococcoides	cells/ml	50				1
17WW12	17WW12-FEB2007	2/21/07	REG	DHE	Dehalococcoides	cells/ml	10	U	U		1

Notes:

µg/L - micrograms per liter
cells/ml - cells per milliliter
DF - dilution factor
FD - field duplicate
mV - millivolts
Qual - data qualifier applied by the laboratory
RC - reason code
REG - regular sample
STD UNIT - standard unit
VQ - data qualifier applied by the validator

Data Qualifiers

<	Same as "U"
B	The concentration reported was detected in an associated blank within 5X/10X the blank concentratio
D	Sample was diluted and reanalyzed
J	The analyte was positively identified; the reported value is the estimated concentration of the constituent detecte
L	Result may be biased low
U	Not detected. The analyte was analyzed for, but not detected above the associated reporting limi

Reason Codes

02B	Analysis
15	Quantitation

Table A-3
Preliminary Screening Scores for Anaerobic Degradation
LHAAP-17, Burning Ground 2, Flashing Area, Group 2

Analytical Parameters and Weighting for Preliminary Screening for Anaerobic Biodegradation Processes (EPA/600/R-98/128)				17WW01	17WW02	17WW03	17WW06	17WW10	17WW12	17WW16	17WW17
Analysis	**Concentration in Most Contaminated Zone**	**Interpretation**	**Value**	**Points Assigned**	**Points Assigned**	**Points Assigned**	**Points Assigned**	**Points Assigned**	**Points Assigned**	**Points Assigned**	**Points Assigned**
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	3	3	0	NT	3	3	3	3	NT
Oxygen*	>5 mg/L	Not tolerated; however, VC may be oxidized aerobically	-3	0	0	NT	0	0	0	0	NT
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	2	2	2	2	2	2	2	2	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	3	3	0	NT	0	3	3	0	NT
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	2	0	0	0	0	0	0	0	2
Sulfide*	>1 mg/L	Reductive pathway possible	3	0	0	0	0	0	0	0	0
Methane*	<0.5 mg/L >0.5 mg/L	VC oxidizes Ultimate reductive daughter product, VC Accumulates	0 3	0	0	0	0	0	0	3	0
Oxidation Reduction Potential* (ORP) against Ag/AgCl electrode	<50 millivolts (mV) <-100mV	Reductive pathway possible Reductive pathway likely	1 2	1	0	NT	1	1	1	2	NT
pH*	5 < pH < 9 5 > pH >9	Optimal range for reductive pathway Outside optimal range for reductive pathway	0 -2	0	0	NT	0	0	0	-2	NT
TOC	> 20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	2	0	0	0	0	0	0	0	0
Temperature*	> 20°C	At T >20°C biochemical process is accelerated	1	0	0	NT	0	0	0	0	NT
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	1	NE	NE	NT	NE	NE	NE	NE	NT
Alkalinity	>2x background	Results from interaction between CO2 and aquifer minerals	1	NE	NE	NT	NE	NE	NE	NE	NE
Chloride*	>2x background	Daughter product of organic chlorine	2	NE	NE	NE	NE	NE	NE	NE	NE
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	3	NT	NT	NT	NT	NT	NT	NT	NT
Hydrogen	<1 nM	VC oxidized	0	NT	NT	NT	NT	NT	NT	NT	NT
Volatile Fatty Acids	> 0.1 mg/L	Intermediates resulting from biodegradation of more complex compounds; carbon and energy source	2	NT	NT	NT	NT	NT	NT	NT	NT
BTEX*	> 0.1 mg/L	Carbon and energy source; drives dechlorination	2	0	0	0	0	0	0	0	0
Tetrachloroethene		Material released	0	0	0	0	0	0	0	0	0
Trichloroethene*		Material released Daughter product of PCE	0 2a	0	0	0	0	0	0	0	0
DCE*		Material released Daughter product of TCE If cis is > 80% of total DCE it is likely a daughter product 1,1-DCE can be chemical reaction product of TCA	0 2a	2	2	2	2	0	0	0	2
VC*		Material released Daughter product of DCE	0 2a	0	0	0	0	0	0	0	0
1,1,1-Trichloroethane*		Material released	0	0	0	0	0	0	0	0	0
DCA		Daughter product of TCA under reducing conditions	2	0	0	2	0	0	0	0	2
Carbon Tetrachloride		Material released	0	0	0	0	0	0	0	0	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	2	0	0	0	0	0	0	0	0
Ethene/Ethane	>0.01mg/L >0.1 mg/L	Daughter product of VC/ethene	2 3	0	0	0	0	0	0	0	0
Chloroform		Material released Daughter product of Carbon Tetrachloride	0 2	2	0	0	0	0	0	0	0
Dichloromethane (Methylene Chloride)		Material released Daughter product of Chloroform	0 2	0	0	0	2	0	0	0	2
			Totals	13	4	6	10	9	9	8	10
			TCE (µg/L)	6090	867	12.8	176	< 0.25	< 0.25	< 0.25	10.8

* - Required Analysis
a - points awarded only if it can be shown that the compound is a daughter product (not a source constituent)
NT - not tested NE - not evaluated (no background for comparison)

Table A-4
Summary of Natural Attenuation Rates and Estimated Cleanup Times
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Monitoring Well	Attenuation Rate Constant (day^{-1})	Attenuation Half-Life		Most Recent Concentration		Target Concentration (µg/L)	Estimated Cleanup Time (years)
		(days)	(years)	Date	(µg/L)		
Perchlorate							
130	0.000862	804	2.2	3/5/09	1,700	72	10
17WW03	0.00124	559	1.5	3/5/09	< 0.44	72	Complete
17WW04	0.000512	1,354	3.7	3/2/09	< 0.22	72	Complete
17WW06	0.00124	559	1.5	3/5/09	74,000	72	15
17WW07	0.00144	481	1.3	2/25/09	< 0.22	72	Complete
17WW08	0.00213	325	0.89	2/25/09	< 0.22	72	Complete
17WW10	0.00194	357	0.98	2/26/09	< 0.55	72	Complete
17WW12	0.000726	955	2.6	2/26/09	< 0.22	72	Complete
Trichloroethene (TCE)							
17WW04	0.000526	1,318	3.6	3/2/09	0.914	5	Complete
17WW06	0.0000836	8,291	23	3/5/09	176	5	117
17WW17	0.00534	130	0.36	3/4/09	10.5	5	0.38
1,1-Dichloroethene (1,1-DCE)							
17WW04	0.000696	996	2.7	3/2/09	< 0.5	7	Complete
1,2-Dichloroethane (1,2-DCA)							
130	0.000418	1,658	4.5	3/4/09	4.29	5	Complete
17WW01	0.000563	1,231	3.4	3/4/09	35.8	5	10
17WW06	0.000168	4,126	11	3/5/09	5.68	5	2.1

Table A-4
Summary of Natural Attenuation Rates and Estimated Cleanup Times
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Monitoring Well	Attenuation Rate Constant (day^{-1})	Attenuation Half-Life		Most Recent Concentration		Target Concentration (µg/L)	Estimated Cleanup Time (years)
		(days)	(years)	Date	(µg/L)		
Methylene Chloride (MC)							
17WW07	0.00101	686	1.9	2/25/09	< 0.25	5	Complete
17WW17	0.0183	38	0.10	3/4/09	< 0.25	5	Complete

Notes:
µg/L - micrograms per liter

Table A-5
Estimated Cleanup Times Using Distance-Dependent Attenuation Rates
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Monitoring Well	Attenuation Rate Constant (day-1)	Attenuation Half-life (days)	Attenuation Half-life (years)	Current Concentration (µg/L)	Date of Most Recent Result	Target Concentration (µg/L)	Estimated Cleanup Time (years)
Perchlorate							
17WW01	0.00146	475	1.30	56,000	3/4/09	72	12
17WW02	0.00146	475	1.30	160,000	3/5/09	72	14
Trichloroethene (TCE)							
17WW01	0.00347	200	0.55	6,090	3/4/09	5	5.6
17WW02	0.00347	200	0.55	867	3/5/09	5	4.1
17WW06	0.00347	200	0.55	176	3/5/09	5	2.8
130	0.00347	200	0.55	31.1	3/4/09	5	1.4

Notes:

µg/L - micrograms per liter

Table A-6
Summary of Intermediate Groundwater Analytical Results and Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW07	17WW07-000921	9/21/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	*160*				1
17WW07	17WW07-010201	2/1/01	REG	GEN CHEMISTRY	Perchlorate	µg/L	4	<	U		1
17WW07	17WW07-020314	3/14/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.958	U	U		1
17WW07	17WW07-020920	9/20/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	1.45	U	U		1
17WW07	17WW07-040903	9/3/04	REG	GEN CHEMISTRY	Perchlorate	µg/L	1	U	U		1
17WW07	17WW07-022509	2/25/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.22	U	U		1
17WW09	17WW09-000919	9/19/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.85	<	U		1
17WW09	17WW09-020313	3/13/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	83.6				1
17WW09	17WW09-020918	9/18/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	1.45	U	U		1
17WW09	17WW09-040902	9/2/04	REG	GEN CHEMISTRY	Perchlorate	µg/L	1	U	U		1
17WW09	17WW09-022609	2/26/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.11	U	U		1
17WW11	17WW11-000919	9/19/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	1.7	<	U		1
17WW11	17WW11-020315	3/15/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.958	U	U		1
17WW11	17WW11-020919	9/19/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	1.45	U	U		1
17WW11	17WW11-040903	9/3/04	REG	GEN CHEMISTRY	Perchlorate	µg/L	-99	U	U		1
17WW11	17WW11-022609	2/26/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	*290*				1
17WW11	17WW11-033009	3/30/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	*990*				1
17WW15	17WW15-040902	9/2/04	REG	GEN CHEMISTRY	Perchlorate	µg/L	1	U	U		1
17WW15	17WW15-022609	2/26/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.11	U	U		1
17WW17	17WW17-030409	3/4/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.22	U	U		1
17WW18	17WW18-030309	3/3/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.44	U	U		1
18WW11	18WW11-031108	3/11/08	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.988	J	J	15	1
18WW11	18WW11-092508	9/25/08	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.5	U	U		1
17WW07	17WW07-980722	7/22/98	REG	VOLATILES	Trichloroethene	µg/L	1.7		J		1
17WW07	17WW07-990311	3/11/99	REG	VOLATILES	Trichloroethene	µg/L	1	<	U		1
17WW07	17WW07-040903	9/3/04	REG	VOLATILES	Trichloroethene	µg/L	5	U	U		1
17WW07	17WW07-022509	2/25/09	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
17WW09	17WW09-980721	7/21/98	REG	VOLATILES	Trichloroethene	µg/L	1	<	U		1
17WW09	17WW09-040902	9/2/04	REG	VOLATILES	Trichloroethene	µg/L	5	U	U		1
17WW09	17WW09-022609	2/26/09	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
17WW11	17WW11-980721	7/21/98	REG	VOLATILES	Trichloroethene	µg/L	1	<	U		1
17WW11	17WW11-040903	9/3/04	REG	VOLATILES	Trichloroethene	µg/L	1	J	J	15	1
17WW11	17WW11-022609	2/26/09	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1

Table A-6
Summary of Intermediate Groundwater Analytical Results and Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW15	17WW15-040902	9/2/04	REG	VOLATILES	Trichloroethene	µg/L	5	U	U		1
17WW15	17WW15-022609	2/26/09	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
17WW17	17WW17-021908	2/19/08	REG	VOLATILES	Trichloroethene	µg/L	*56.6*				1
17WW17	17WW17-031408	3/14/08	REG	VOLATILES	Trichloroethene	µg/L	*112*				1
17WW17	17WW17-030409	3/4/09	REG	VOLATILES	Trichloroethene	µg/L	*10.8*				1
17WW18	17WW18-100808	10/8/08	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
17WW18	17WW18-030309	3/3/09	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
18WW11	18WW11-031108	3/11/08	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
18WW11	18WW11-092508	9/25/08	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
17WW07	17WW07-980722	7/22/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	2	<	U		1
17WW07	17WW07-990311	3/11/99	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
17WW07	17WW07-040903	9/3/04	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	5	U	U		1
17WW07	17WW07-022509	2/25/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW09	17WW09-980721	7/21/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
17WW09	17WW09-040902	9/2/04	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	5	U	U		1
17WW09	17WW09-022609	2/26/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW11	17WW11-022609	2/26/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW15	17WW15-040902	9/2/04	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	5	U	U		1
17WW15	17WW15-022609	2/26/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW17	17WW17-021908	2/19/08	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	6.62				1
17WW17	17WW17-031408	3/14/08	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	26.4				1
17WW17	17WW17-030409	3/4/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	46				1
17WW18	17WW18-100808	10/8/08	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW18	17WW18-030309	3/3/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
18WW11	18WW11-031108	3/11/08	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
18WW11	18WW11-092508	9/25/08	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW07	17WW07-980722	7/22/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	2	<	U		1
17WW07	17WW07-990311	3/11/99	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
17WW07	17WW07-040903	9/3/04	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	5	U	U		1
17WW07	17WW07-022509	2/25/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW09	17WW09-980721	7/21/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
17WW09	17WW09-040902	9/2/04	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	5	U	U		1
17WW09	17WW09-022609	2/26/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1

Table A-6
Summary of Intermediate Groundwater Analytical Results and Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW11	17WW11-022609	2/26/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW15	17WW15-040902	9/2/04	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	5	U	U		1
17WW15	17WW15-022609	2/26/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW17	17WW17-021908	2/19/08	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.328	J	J	15	1
17WW17	17WW17-031408	3/14/08	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.698	J	J	15	1
17WW17	17WW17-030409	3/4/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.497	J	J	15	1
17WW18	17WW18-100808	10/8/08	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW18	17WW18-030309	3/3/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
18WW11	18WW11-031108	3/11/08	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
18WW11	18WW11-092508	9/25/08	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW07	17WW07-980722	7/22/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	2	<	U		1
17WW07	17WW07-990311	3/11/99	REG	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
17WW07	17WW07-040903	9/3/04	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	U	U		1
17WW07	17WW07-022509	2/25/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW09	17WW09-980721	7/21/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
17WW09	17WW09-040902	9/2/04	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	U	U		1
17WW09	17WW09-022609	2/26/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW11	17WW11-022609	2/26/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW15	17WW15-040902	9/2/04	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	U	U		1
17WW15	17WW15-022609	2/26/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW17	17WW17-021908	2/19/08	REG	VOLATILES	1,1-Dichloroethene	µg/L	2.68				1
17WW17	17WW17-031408	3/14/08	REG	VOLATILES	1,1-Dichloroethene	µg/L	5.87				1
17WW17	17WW17-030409	3/4/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	1.92				1
17WW18	17WW18-100808	10/8/08	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW18	17WW18-030309	3/3/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
18WW11	18WW11-031108	3/11/08	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
18WW11	18WW11-092508	9/25/08	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW07	17WW07-980722	7/22/98	REG	VOLATILES	Vinyl chloride	µg/L	2	<	U		1
17WW07	17WW07-990311	3/11/99	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
17WW07	17WW07-040903	9/3/04	REG	VOLATILES	Vinyl chloride	µg/L	5	U	U		1
17WW07	17WW07-022509	2/25/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW09	17WW09-980721	7/21/98	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
17WW09	17WW09-040902	9/2/04	REG	VOLATILES	Vinyl chloride	µg/L	5	U	U		1

Table A-6
Summary of Intermediate Groundwater Analytical Results and Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW09	17WW09-022609	2/26/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW11	17WW11-022609	2/26/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW15	17WW15-040902	9/2/04	REG	VOLATILES	Vinyl chloride	µg/L	5	U	U		1
17WW15	17WW15-022609	2/26/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW17	17WW17-021908	2/19/08	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW17	17WW17-031408	3/14/08	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW17	17WW17-030409	3/4/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW18	17WW18-100808	10/8/08	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW18	17WW18-030309	3/3/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
18WW11	18WW11-031108	3/11/08	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
18WW11	18WW11-092508	9/25/08	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW07	17WW07-980722	7/22/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	2	<	U		1
17WW07	17WW07-990311	3/11/99	REG	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
17WW07	17WW07-040903	9/3/04	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	U	UJ	05B	1
17WW07	17WW07-022509	2/25/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW09	17WW09-980721	7/21/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
17WW09	17WW09-040902	9/2/04	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	U	UJ	05B	1
17WW09	17WW09-022609	2/26/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW11	17WW11-022609	2/26/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW15	17WW15-040902	9/2/04	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	U	UJ	05B	1
17WW15	17WW15-022609	2/26/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW17	17WW17-021908	2/19/08	REG	VOLATILES	1,2-Dichloroethane	µg/L	1.87				1
17WW17	17WW17-031408	3/14/08	REG	VOLATILES	1,2-Dichloroethane	µg/L	2.52				1
17WW17	17WW17-030409	3/4/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.274	J	J	15	1
17WW18	17WW18-100808	10/8/08	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW18	17WW18-030309	3/3/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
18WW11	18WW11-031108	3/11/08	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
18WW11	18WW11-092508	9/25/08	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW07	17WW07-980722	7/22/98	REG	VOLATILES	Methylene chloride	µg/L	*150*				1
17WW07	17WW07-990311	3/11/99	REG	VOLATILES	Methylene chloride	µg/L	1	<	U		1
17WW07	17WW07-040903	9/3/04	REG	VOLATILES	Methylene chloride	µg/L	5	U	U		1
17WW07	17WW07-022509	2/25/09	REG	VOLATILES	Methylene chloride	µg/L	0.25	U	U		1
17WW09	17WW09-980721	7/21/98	REG	VOLATILES	Methylene chloride	µg/L	1.4				1

Table A-6
Summary of Intermediate Groundwater Analytical Results and Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW09	17WW09-040902	9/2/04	REG	VOLATILES	Methylene chloride	µg/L	5	U	U		1
17WW09	17WW09-022609	2/26/09	REG	VOLATILES	Methylene chloride	µg/L	0.25	U	U		1
17WW11	17WW11-022609	2/26/09	REG	VOLATILES	Methylene chloride	µg/L	0.25	U	U		1
17WW15	17WW15-040902	9/2/04	REG	VOLATILES	Methylene chloride	µg/L	5	U	U		1
17WW15	17WW15-022609	2/26/09	REG	VOLATILES	Methylene chloride	µg/L	0.25	U	U		1
17WW17	17WW17-021908	2/19/08	REG	VOLATILES	Methylene chloride	µg/L	*1040*				1
17WW17	17WW17-031408	3/14/08	REG	VOLATILES	Methylene chloride	µg/L	*30.2*				1
17WW17	17WW17-030409	3/4/09	REG	VOLATILES	Methylene chloride	µg/L	0.25	U	U		1
17WW18	17WW18-100808	10/8/08	REG	VOLATILES	Methylene chloride	µg/L	0.25	U	U		1
17WW18	17WW18-030309	3/3/09	REG	VOLATILES	Methylene chloride	µg/L	0.25	U	U		1
18WW11	18WW11-031108	3/11/08	REG	VOLATILES	Methylene chloride	µg/L	0.25	U	U		1
18WW11	18WW11-092508	9/25/08	REG	VOLATILES	Methylene chloride	µg/L	0.25	U	U		1
17WW07	17WW07-022509	2/25/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	150				1
17WW09	17WW09-022609	2/26/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	780				1
17WW11	17WW11-022609	2/26/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	1900				1
17WW15	17WW15-022609	2/26/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	3840				1
17WW17	17WW17-021908	2/19/08	REG	FIELD TESTS	Dissolved Oxygen	µg/L	2220				1
17WW17	17WW17-030409	3/4/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	840				1
17WW18	17WW17-100808	10/8/08	REG	FIELD TESTS	Dissolved Oxygen	µg/L	480				1
17WW18	17WW18-030309	3/3/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	710				1
17WW07	17WW07-022509	2/25/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	-228.7				1
17WW09	17WW09-022609	2/26/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	-1.9				1
17WW11	17WW11-022609	2/26/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	142.9				1
17WW15	17WW15-022609	2/26/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	45.2				1
17WW17	17WW17-021908	2/19/08	REG	FIELD TESTS	Oxygen Reduction Potential	mV	-24.9				1
17WW17	17WW17-030409	3/4/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	-16.5				1
17WW18	17WW17-100808	10/8/08	REG	FIELD TESTS	Oxygen Reduction Potential	mV	-52.1				1
17WW18	17WW18-030309	3/3/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	-6				1
17WW17	17WW17-030409	3/4/09	REG	GEN CHEMISTRY	Nitrate	µg/L	200	U	U		1
17WW17	17WW17-030409	3/4/09	REG	GEN CHEMISTRY	Nitrite	µg/L	200	U	U		1
17WW17	17WW17-030409	3/4/09	REG	FIELD TESTS	Ferrous Iron	µg/L	2110				1
17WW07	17WW07-980722	7/22/98	REG	GEN CHEMISTRY	Sulfate	µg/L	17000				1
17WW09	17WW09-980721	7/21/98	REG	GEN CHEMISTRY	Sulfate	µg/L	500000				1

Table A-6
Summary of Intermediate Groundwater Analytical Results and Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW11	17WW11-980721	7/21/98	REG	GEN CHEMISTRY	Sulfate	µg/L	110000				1
17WW17	17WW17-030409	3/4/09	REG	GEN CHEMISTRY	Sulfate	µg/L	3500				1
18WW11	18WW11-031108	3/11/08	REG	GEN CHEMISTRY	Sulfate	µg/L	500	U	U		1
17WW17	17WW17-030409	3/4/09	REG	GEN CHEMISTRY	Sulfide	µg/L	500	U	U		1
17WW17	17WW17-030409	3/4/09	REG	GASES	Methane	µg/L	201				1
17WW17	17WW17-030409	3/4/09	REG	GASES	Ethane	µg/L	1	U	U		1
17WW17	17WW17-030409	3/4/09	REG	GASES	Ethylene	µg/L	3.27	J	J	15	1
17WW07	17WW07-980722	7/22/98	REG	GEN CHEMISTRY	Chloride	µg/L	229000				1
17WW09	17WW09-980721	7/21/98	REG	GEN CHEMISTRY	Chloride	µg/L	118000				1
17WW11	17WW11-980721	7/21/98	REG	GEN CHEMISTRY	Chloride	µg/L	1160000				1
18WW11	LH-18WW11-1896	3/7/07	REG	GEN CHEMISTRY	Chloride	µg/L	130000				1
18WW11	18WW11-091507	9/15/07	REG	GEN CHEMISTRY	Chloride	µg/L	115000				1
18WW11	18WW11-031108	3/11/08	REG	GEN CHEMISTRY	Chloride	µg/L	146000				1
18WW11	18WW11-092508	9/25/08	REG	GEN CHEMISTRY	Chloride	µg/L	132000				1
17WW17	17WW17-030409	3/4/09	REG	GEN CHEMISTRY	Total Organic Carbon	µg/L	1810				1
17WW07	17WW07-022509	2/25/09	REG	FIELD TESTS	pH	Std Units	7.7				1
17WW09	17WW09-022609	2/26/09	REG	FIELD TESTS	pH	Std Units	6.29				1
17WW11	17WW11-022609	2/26/09	REG	FIELD TESTS	pH	Std Units	5.89				1
17WW15	17WW15-022609	2/26/09	REG	FIELD TESTS	pH	Std Units	6.62				1
17WW17	17WW17-021908	2/19/08	REG	FIELD TESTS	pH	Std Units	6.3				1
17WW17	17WW17-030409	3/4/09	REG	FIELD TESTS	pH	Std Units	6.15				1
17WW18	17WW17-100808	10/8/08	REG	FIELD TESTS	pH	Std Units	6.01				1
17WW18	17WW18-030309	3/3/09	REG	FIELD TESTS	pH	Std Units	6.05				1
17WW17	17WW17-030409	3/4/09	REG	DHE	Dehalococcoides	cells/ml	10	U			1

Notes:

µg/L - micrograms per liter
DF - dilution factor
FD - field duplicate
Qual - data qualifier applied by the laboratory
RC - reason code
REG - regular sample
VQ - data qualifier applied by the validator

Data Qualifiers

<	Same as "U"
J	The analyte was positively identified; the reported value is the estimated concentration of the constituent detected
U	Not detected. The analyte was analyzed for, but not detected above the associated reporting limit

Reason Codes

05B	Compound % deviation QC criteria not met
15	Quantitation

Table A-7
Summary of Deep Groundwater Analytical Results and Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW05	17WW05-000928	9/28/00	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.85	<	U		1
17WW05	17WW05-020316	3/16/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.958	U	U		1
17WW05	17WW05-020923	9/23/02	REG	GEN CHEMISTRY	Perchlorate	µg/L	65				1
17WW05	17WW05-040907	9/7/04	REG	GEN CHEMISTRY	Perchlorate	µg/L	*1200*				1
17WW05	17WW05-FEB2007	2/23/07	REG	GEN CHEMISTRY	Perchlorate	µg/L	4	U	U		1
17WW05	17WW05-120407	12/4/07	REG	GEN CHEMISTRY	Perchlorate	µg/L	4.71				1
17WW05	17WW05-022509	2/25/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.55	U	U		1
17WW16	17WW16-040914	9/14/04	REG	GEN CHEMISTRY	Perchlorate	µg/L	1	U	UJ	02B	1
17WW16	17WW16-022609	2/26/09	REG	GEN CHEMISTRY	Perchlorate	µg/L	0.44	U	U		1
17WW05	17WW05-950525	5/25/95	REG	VOLATILES	Trichloroethene	µg/L	5	<	U		1
17WW05	17WW05-980722	7/22/98	REG	VOLATILES	Trichloroethene	µg/L	1	<	U		1
17WW05	17WW05-980722FD	7/22/98	FD	VOLATILES	Trichloroethene	µg/L	1	<	U		1
17WW05	17WW05-040907	9/7/04	REG	VOLATILES	Trichloroethene	µg/L	5	U	U		1
17WW05	17WW05-FEB2007	2/23/07	REG	VOLATILES	Trichloroethene	µg/L	0.63	U	U		1
17WW05	17WW05-120407	12/4/07	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
17WW05	17WW05-022509	2/25/09	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
17WW16	17WW16-040914	9/14/04	REG	VOLATILES	Trichloroethene	µg/L	5	U	U		1
17WW16	17WW16-FEB2007	2/22/07	REG	VOLATILES	Trichloroethene	µg/L	0.63	U	U		1
17WW16	17WW16-022609	2/26/09	REG	VOLATILES	Trichloroethene	µg/L	0.25	U	U		1
17WW05	17WW05-980722	7/22/98	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
17WW05	17WW05-980722FD	7/22/98	FD	VOLATILES	cis-1,2-Dichloroethene	µg/L	1	<	U		1
17WW05	17WW05-040907	9/7/04	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	5	U	U		1
17WW05	17WW05-FEB2007	2/23/07	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.83	U	U		1
17WW05	17WW05-120407	12/4/07	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW05	17WW05-022509	2/25/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW16	17WW16-040914	9/14/04	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	5	U	U		1
17WW16	17WW16-FEB2007	2/22/07	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.83	U	U		1
17WW16	17WW16-022609	2/26/09	REG	VOLATILES	cis-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW05	17WW05-980722	7/22/98	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
17WW05	17WW05-980722FD	7/22/98	FD	VOLATILES	trans-1,2-Dichloroethene	µg/L	1	<	U		1
17WW05	17WW05-040907	9/7/04	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	5	U	U		1
17WW05	17WW05-FEB2007	2/23/07	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.75	U	U		1
17WW05	17WW05-120407	12/4/07	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW05	17WW05-022509	2/25/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1

Table A-7
Summary of Deep Groundwater Analytical Results and Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW16	17WW16-040914	9/14/04	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	5	U	U		1
17WW16	17WW16-FEB2007	2/22/07	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.75	U	U		1
17WW16	17WW16-022609	2/26/09	REG	VOLATILES	trans-1,2-Dichloroethene	µg/L	0.25	U	U		1
17WW05	17WW05-950525	5/25/95	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	<	U		1
17WW05	17WW05-980722	7/22/98	REG	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
17WW05	17WW05-980722FD	7/22/98	FD	VOLATILES	1,1-Dichloroethene	µg/L	1	<	U		1
17WW05	17WW05-040907	9/7/04	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	U	U		1
17WW05	17WW05-FEB2007	2/23/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.68	U	U		1
17WW05	17WW05-120407	12/4/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW05	17WW05-022509	2/25/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW16	17WW16-040914	9/14/04	REG	VOLATILES	1,1-Dichloroethene	µg/L	5	U	U		1
17WW16	17WW16-FEB2007	2/22/07	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.68	U	U		1
17WW16	17WW16-022609	2/26/09	REG	VOLATILES	1,1-Dichloroethene	µg/L	0.5	U	U		1
17WW05	17WW05-950525	5/25/95	REG	VOLATILES	Vinyl chloride	µg/L	10	<	U		1
17WW05	17WW05-980722	7/22/98	REG	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
17WW05	17WW05-980722FD	7/22/98	FD	VOLATILES	Vinyl chloride	µg/L	1	<	U		1
17WW05	17WW05-040907	9/7/04	REG	VOLATILES	Vinyl chloride	µg/L	5	U	U		1
17WW05	17WW05-FEB2007	2/23/07	REG	VOLATILES	Vinyl chloride	µg/L	0.32	U	U		1
17WW05	17WW05-120407	12/4/07	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW05	17WW05-022509	2/25/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW16	17WW16-040914	9/14/04	REG	VOLATILES	Vinyl chloride	µg/L	5	U	U		1
17WW16	17WW16-FEB2007	2/22/07	REG	VOLATILES	Vinyl chloride	µg/L	0.32	U	U		1
17WW16	17WW16-022609	2/26/09	REG	VOLATILES	Vinyl chloride	µg/L	0.25	U	U		1
17WW05	17WW05-950525	5/25/95	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	<	U		1
17WW05	17WW05-980722	7/22/98	REG	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
17WW05	17WW05-980722FD	7/22/98	FD	VOLATILES	1,2-Dichloroethane	µg/L	1	<	U		1
17WW05	17WW05-040907	9/7/04	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	U	UJ	05B	1
17WW05	17WW05-FEB2007	2/23/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.53	U	U		1
17WW05	17WW05-120407	12/4/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW05	17WW05-022509	2/25/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW16	17WW16-040914	9/14/04	REG	VOLATILES	1,2-Dichloroethane	µg/L	5	U	U		1
17WW16	17WW16-FEB2007	2/22/07	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.53	U	U		1
17WW16	17WW16-022609	2/26/09	REG	VOLATILES	1,2-Dichloroethane	µg/L	0.25	U	U		1
17WW05	17WW05-950525	5/25/95	REG	VOLATILES	Methylene chloride	µg/L	10	<	U		1

Table A-7
Summary of Deep Groundwater Analytical Results and Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW05	17WW05-980722	7/22/98	REG	VOLATILES	Methylene chloride	µg/L	1	<	U		1
17WW05	17WW05-980722FD	7/22/98	FD	VOLATILES	Methylene chloride	µg/L	1	<	U		1
17WW05	17WW05-040907	9/7/04	REG	VOLATILES	Methylene chloride	µg/L	5	U	U		1
17WW05	17WW05-FEB2007	2/23/07	REG	VOLATILES	Methylene chloride	µg/L	0.67	U	U		1
17WW05	17WW05-120407	12/4/07	REG	VOLATILES	Methylene chloride	µg/L	0.25	U	U		1
17WW05	17WW05-022509	2/25/09	REG	VOLATILES	Methylene chloride	µg/L	0.25	U	U		1
17WW16	17WW16-040914	9/14/04	REG	VOLATILES	Methylene chloride	µg/L	5	U	U		1
17WW16	17WW16-FEB2007	2/22/07	REG	VOLATILES	Methylene chloride	µg/L	0.67	U	U		1
17WW16	17WW16-022609	2/26/09	REG	VOLATILES	Methylene chloride	µg/L	0.25	U	U		1
17WW05	17WW05-FEB2007	2/23/07	REG	FIELD TESTS	Dissolved Oxygen	µg/L	530				1
17WW05	17WW05-120407	12/4/07	REG	FIELD TESTS	Dissolved Oxygen	µg/L	730				1
17WW05	17WW05-022509	2/25/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	570				1
17WW16	17WW16-FEB2007	2/22/07	REG	FIELD TESTS	Dissolved Oxygen	µg/L	390				1
17WW16	17WW16-022609	2/26/09	REG	FIELD TESTS	Dissolved Oxygen	µg/L	960				1
17WW05	17WW05-FEB2007	2/23/07	REG	FIELD TESTS	Oxygen Reduction Potential	mV	106.1				1
17WW05	17WW05-120407	12/4/07	REG	FIELD TESTS	Oxygen Reduction Potential	mV	-127.3				1
17WW05	17WW05-022509	2/25/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	88.3				1
17WW16	17WW16-FEB2007	2/22/07	REG	FIELD TESTS	Oxygen Reduction Potential	mV	-262.3				1
17WW16	17WW16-022609	2/26/09	REG	FIELD TESTS	Oxygen Reduction Potential	mV	-155.1				1
17WW05	17WW05-FEB2007	2/23/07	REG	GEN CHEMISTRY	Nitrate	µg/L	5	U	U		1
17WW16	17WW16-FEB2007	2/22/07	REG	GEN CHEMISTRY	Nitrate	µg/L	300				1
17WW05	17WW05-980722	7/22/98	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	100	<	U		1
17WW05	17WW05-980722FD	7/22/98	FD	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	100	<	U		1
17WW05	17WW05-FEB2007	2/23/07	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	5	U	U		1
17WW16	17WW16-FEB2007	2/22/07	REG	GEN CHEMISTRY	Nitrate / Nitrite	µg/L	300				1
17WW05	17WW05-950525	5/25/95	REG	GEN CHEMISTRY	Nitrite	µg/L	50				1
17WW05	17WW05-FEB2007	2/23/07	REG	GEN CHEMISTRY	Nitrite	µg/L	3	U	U		1
17WW16	17WW16-FEB2007	2/22/07	REG	GEN CHEMISTRY	Nitrite	µg/L	3	U	U		1
17WW05	17WW05-FEB2007	2/23/07	REG	FIELD TESTS	Ferrous iron	µg/L	70				1
17WW16	17WW16-FEB2007	2/22/07	REG	FIELD TESTS	Ferrous iron	µg/L	30				1
17WW05	17WW05-950525	5/25/95	REG	GEN CHEMISTRY	Sulfate	µg/L	4600				1
17WW05	17WW05-980722	7/22/98	REG	GEN CHEMISTRY	Sulfate	µg/L	7000				1
17WW05	17WW05-980722FD	7/22/98	FD	GEN CHEMISTRY	Sulfate	µg/L	7600				1
17WW05	17WW05-FEB2007	2/23/07	REG	GEN CHEMISTRY	Sulfate	µg/L	34000				1

Table A-7
Summary of Deep Groundwater Analytical Results and Geochemical Indicators
LHAAP-17, Burning Ground 2 / Flashing Area, Group 2

Location	Sample	Date	Purpose	Test Group	Parameter	Units	Result	Qual	VQ	RC	DF
17WW16	17WW16-FEB2007	2/22/07	REG	GEN CHEMISTRY	Sulfate	µg/L	44000				1
17WW05	17WW05-FEB2007	2/23/07	REG	GEN CHEMISTRY	Sulfide	µg/L	200	UB	U		1
17WW16	17WW16-FEB2007	2/22/07	REG	GEN CHEMISTRY	Sulfide	µg/L	200	UB	U		1
17WW05	17WW05-FEB2007	2/23/07	REG	GASES	Methane	µg/L	349				1
17WW16	17WW16-FEB2007	2/22/07	REG	GASES	Methane	µg/L	804				1
17WW05	17WW05-FEB2007	2/23/07	REG	GASES	Ethane	µg/L	0.6	U	U		1
17WW16	17WW16-FEB2007	2/22/07	REG	GASES	Ethane	µg/L	1.7				1
17WW05	17WW05-FEB2007	2/23/07	REG	GASES	Ethylene	µg/L	0.8	U	U		1
17WW16	17WW16-FEB2007	2/22/07	REG	GASES	Ethylene	µg/L	2.1				1
17WW05	17WW05-950525	5/25/95	REG	GEN CHEMISTRY	Chloride	µg/L	158000				1
17WW05	17WW05-980722	7/22/98	REG	GEN CHEMISTRY	Chloride	µg/L	220000				1
17WW05	17WW05-980722FD	7/22/98	FD	GEN CHEMISTRY	Chloride	µg/L	207000				1
17WW05	17WW05-FEB2007	2/23/07	REG	GEN CHEMISTRY	Chloride	µg/L	174000				1
17WW16	17WW16-FEB2007	2/22/07	REG	GEN CHEMISTRY	Chloride	µg/L	216000				1
17WW05	17WW05-FEB2007	2/23/07	REG	GEN CHEMISTRY	Total Organic Carbon	µg/L	3000				1
17WW16	17WW16-FEB2007	2/22/07	REG	GEN CHEMISTRY	Total Organic Carbon	µg/L	14000				1
17WW05	17WW05-FEB2007	2/23/07	REG	FIELD TESTS	pH	STD UNIT	8.24				1
17WW05	17WW05-FEB2007	2/23/07	REG	GEN CHEMISTRY	pH	STD UNIT	8.2				1
17WW05	17WW05-120407	12/4/07	REG	FIELD TESTS	pH	STD UNIT	8.35				1
17WW05	17WW05-022509	2/25/09	REG	FIELD TESTS	pH	STD UNIT	8.25				1
17WW16	17WW16-FEB2007	2/22/07	REG	FIELD TESTS	pH	STD UNIT	11.31				1
17WW16	17WW16-FEB2007	2/22/07	REG	GEN CHEMISTRY	pH	STD UNIT	11.2				1
17WW16	17WW16-022609	2/26/09	REG	FIELD TESTS	pH	STD UNIT	10.25				1
17WW05	17WW05-FEB2007	2/23/07	REG	DHE	Dehalococcoides	cells/ml	10	U	U		1
17WW16	17WW16-FEB2007	2/22/07	REG	DHE	Dehalococcoides	cells/ml	10	U	U		1

Notes:

µg/L - micrograms per liter
DF - dilution factor
FD - field duplicate
Qual - data qualifier applied by the laboratory
RC - reason code
REG - regular sample
VQ - data qualifier applied by the validator

Data Qualifiers

<	Same as "U"
B	The concentration reported was detected in an associated blank within 5X/10X the blank concentration
J	The analyte was positively identified; the reported value is the estimated concentration of the constituent detecte
U	Not detected. The analyte was analyzed for, but not detected above the associated reporting limi

Reason Codes

02B	Analysis
05B	Compound % deviation QC criteria not met

Figures

00089313

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY
Houston, TX	B. Lu 06/13/07	L. Zeng 06/13/07	S. Watson 04/15/10

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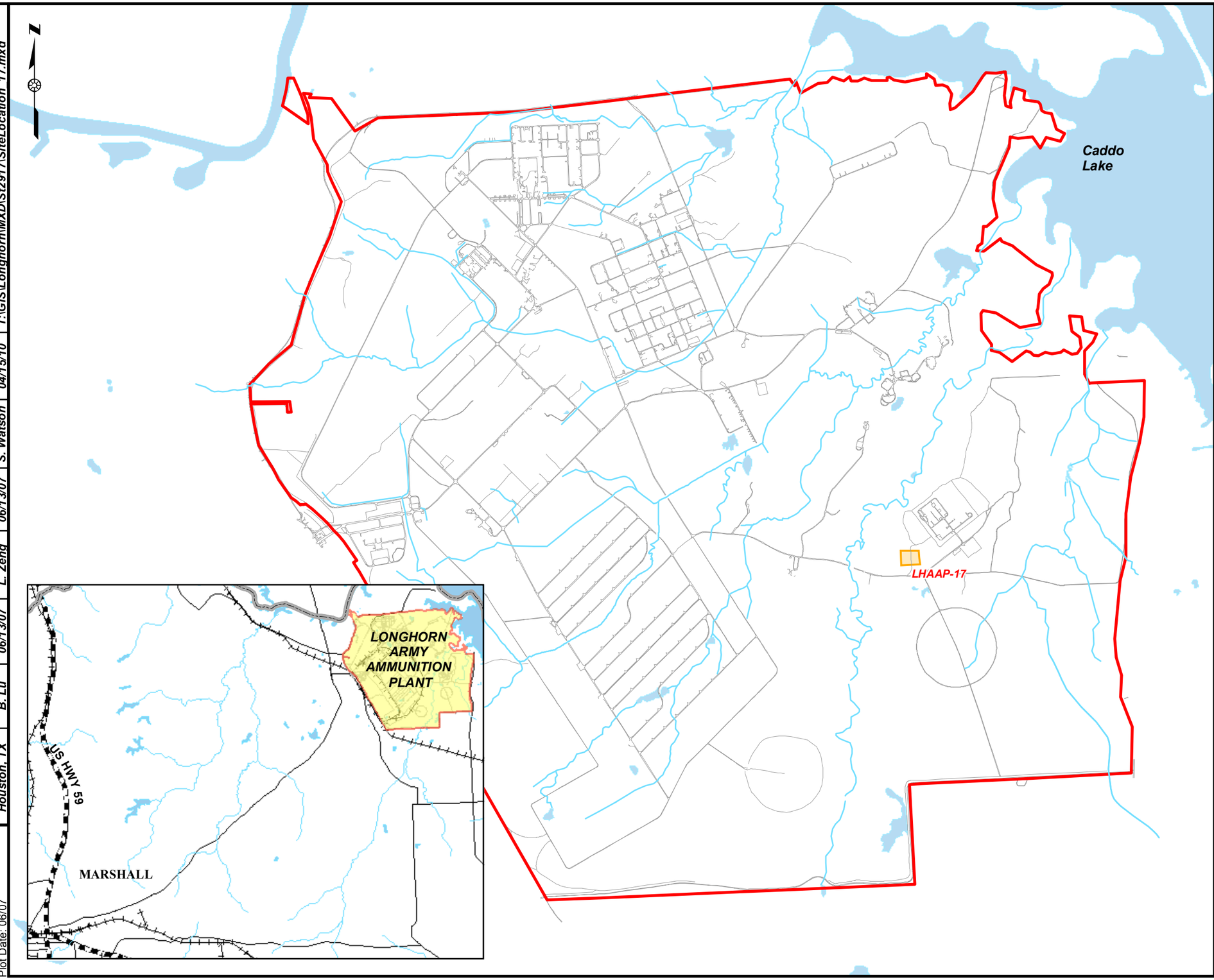
Plot Date: 06/07



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TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE A-1

SITE LOCATION MAP
LHAAP-17

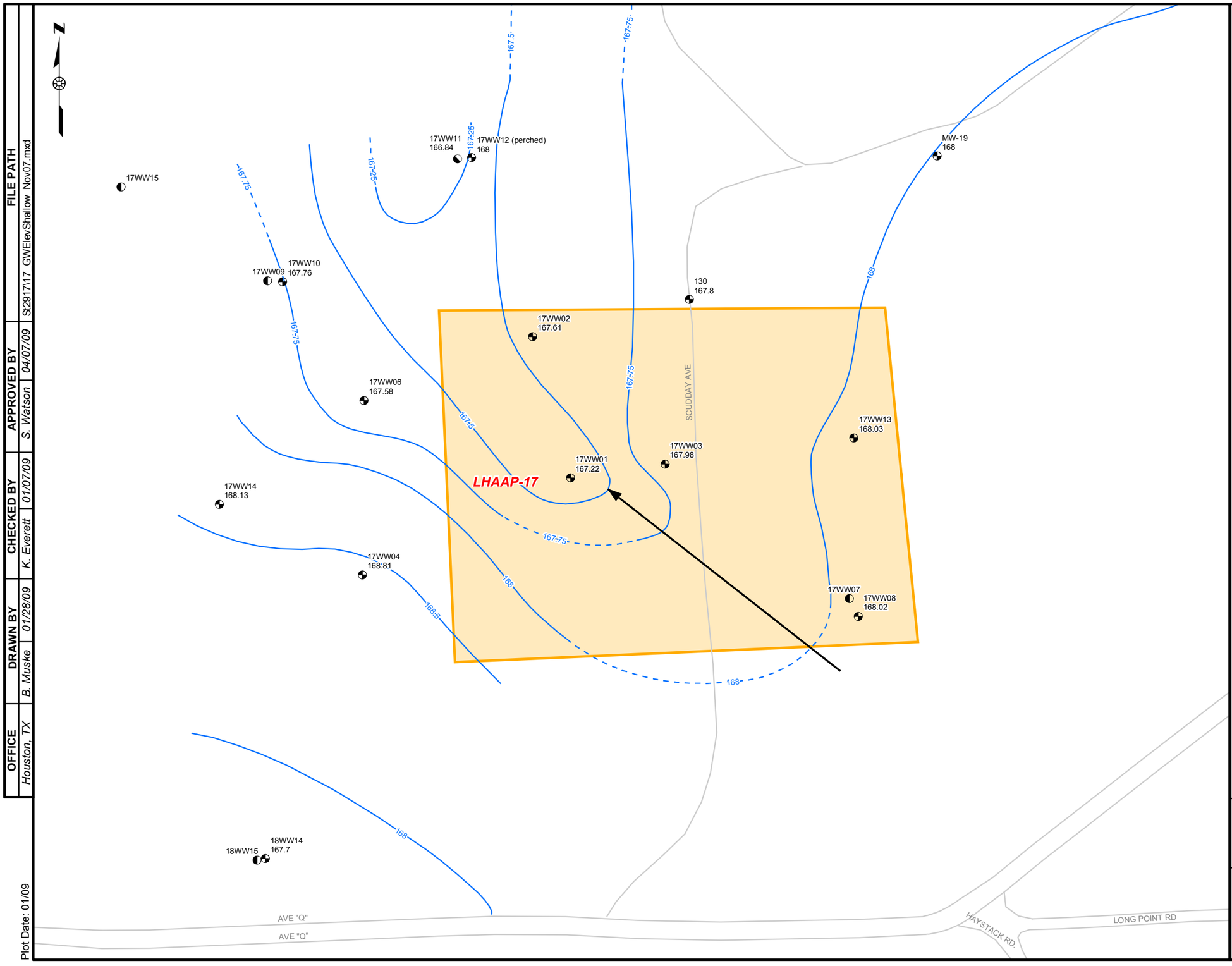
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00089314

FILE PATH	
	St2917\17 GWElevShallow Nov07.mxd

	APPROVED BY	CHECKED BY	DRAWN BY	OFFICE
	S. Watson	K. Everett	B. Muske	Houston, TX
	04/07/09	01/07/09	01/28/09	

Plot Date: 01/09



LEGEND

- Shallow Monitoring Well
- Shallow/Intermediate Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- Shallow Groundwater Flow Direction
- Shallow Groundwater Elevation Contour
- Inferred Shallow Groundwater Elevation Contour
- Stream
- Road
- Former Building or Concrete Slab
- Site

NOTE:

1. Groundwater elevation contours based on water levels measured in November 2007 at LHAAP-17 and LHAAP-18/24.

2. 17WW12 is considered to be screened in a perched zone.

3. LHAAP-18/24 and associated wells are not depicted on this map.

0 50 100 200 Feet

Shaw®

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TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE A-2
GROUNDWATER ELEVATION MAP
(SHALLOW ZONE)
LHAAP-17

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Figure A-3
Perchlorate in Shallow Groundwater
LHAAP-17

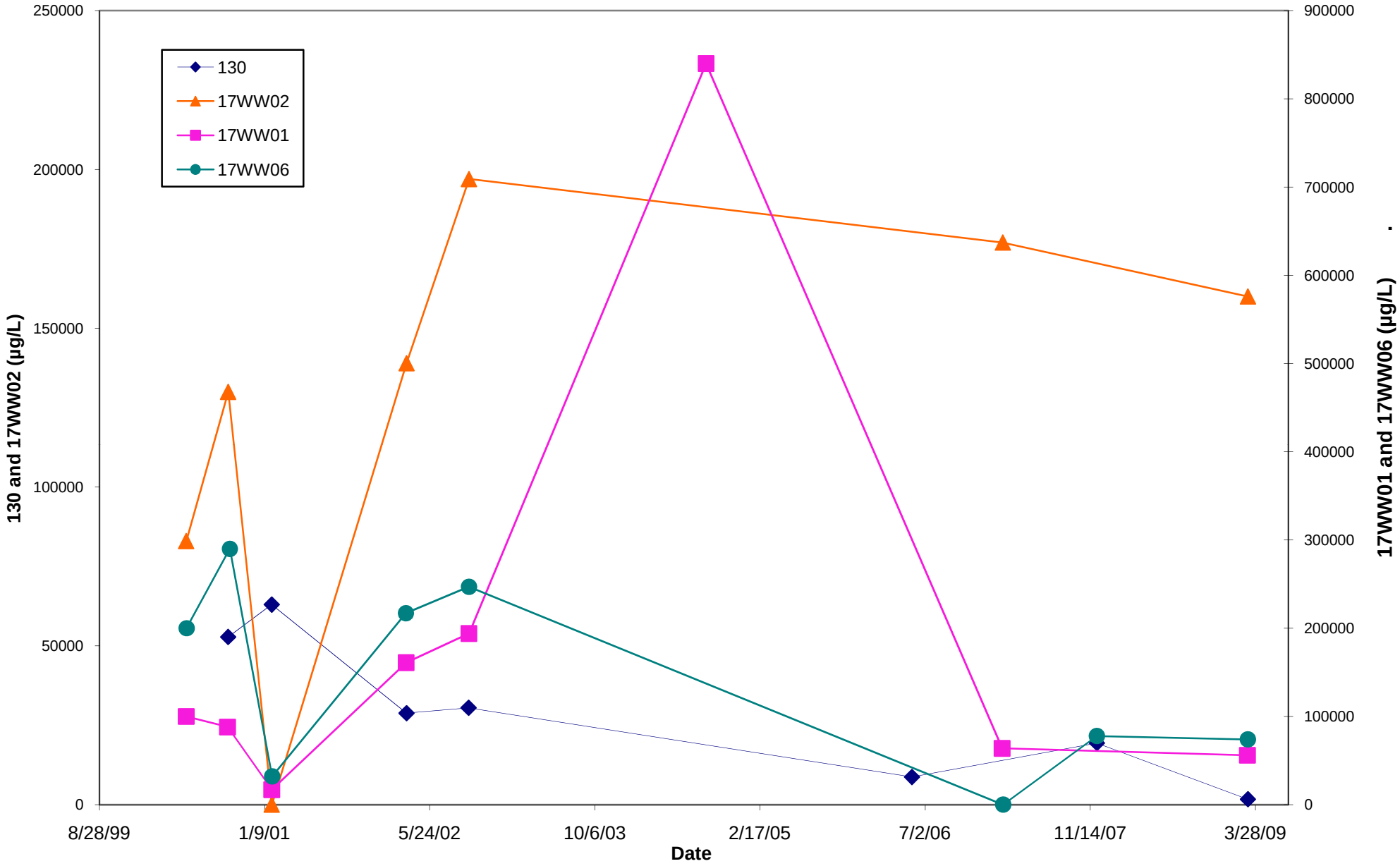


Figure A-4
TCE in Shallow Groundwater
LHAAP-17

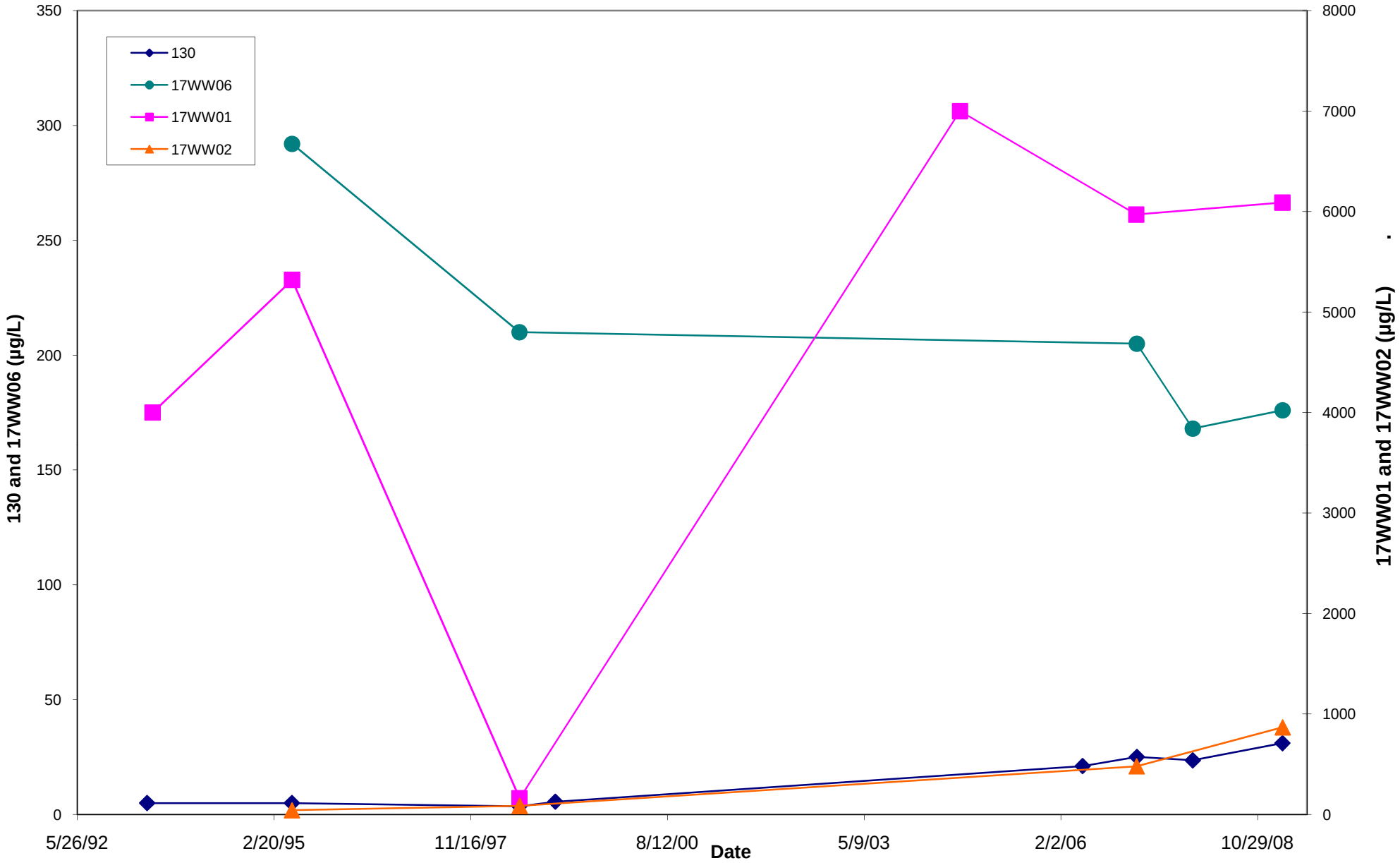


Figure A-5
1,1-DCE in Shallow Groundwater
LHAAP-17

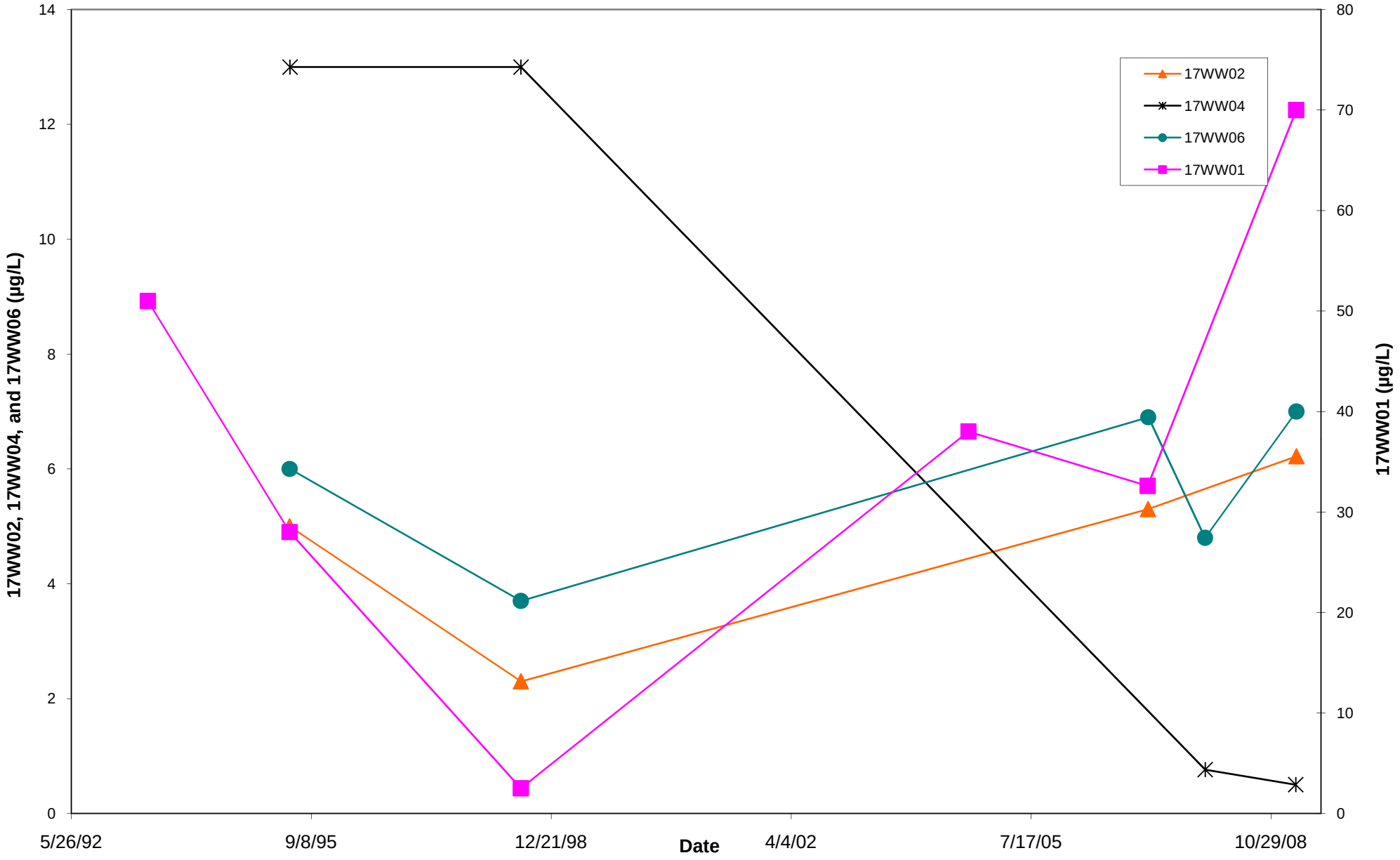


Figure A-6
1,2-DCA in Shallow Groundwater
LHAAP-17

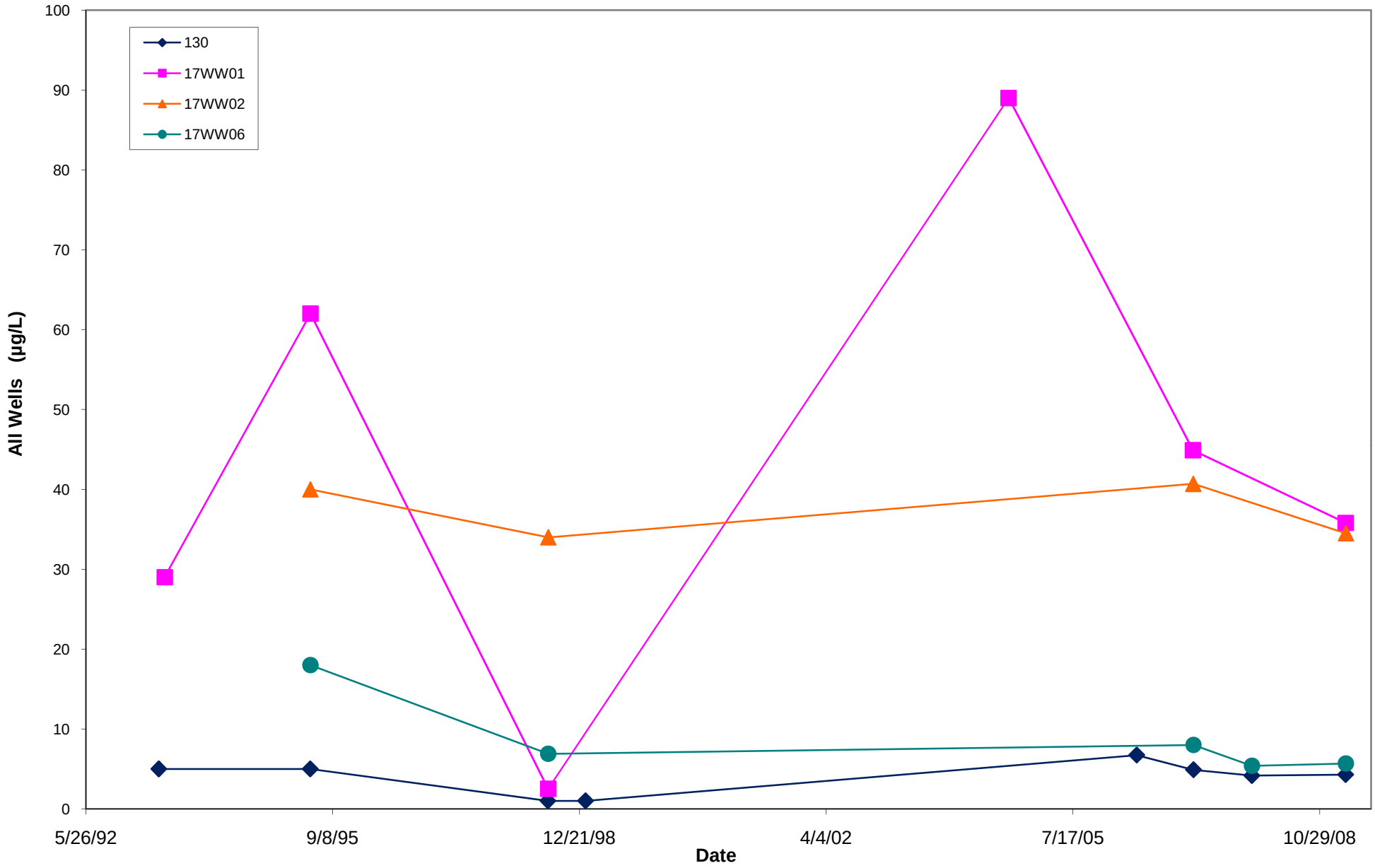


Figure A-7
Natural Attenuation Rates for Perchlorate
LHAAP-17

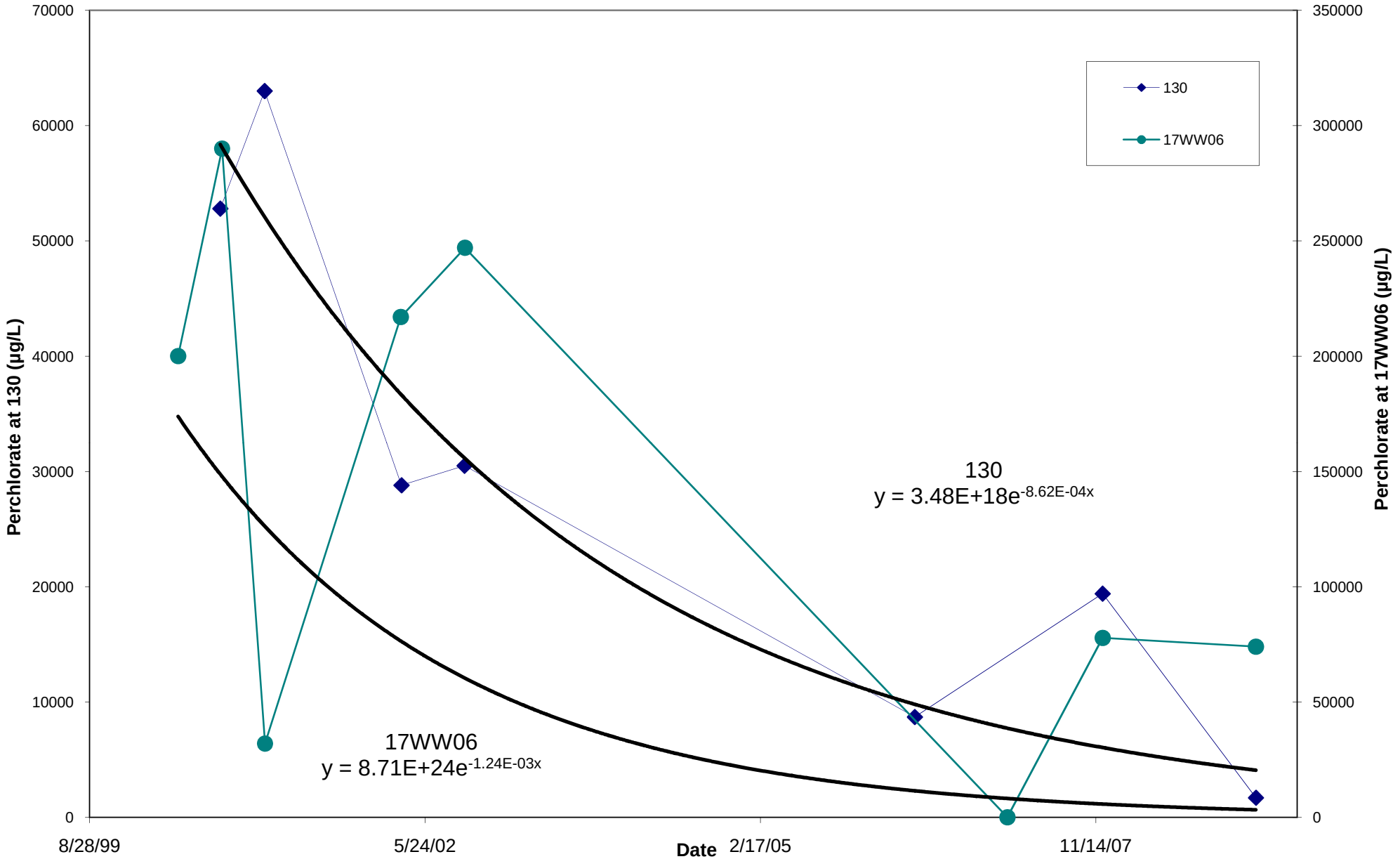


Figure A-8
Natural Attenuation Rate for TCE in Monitoring Well 17WW06
LHAAP-17

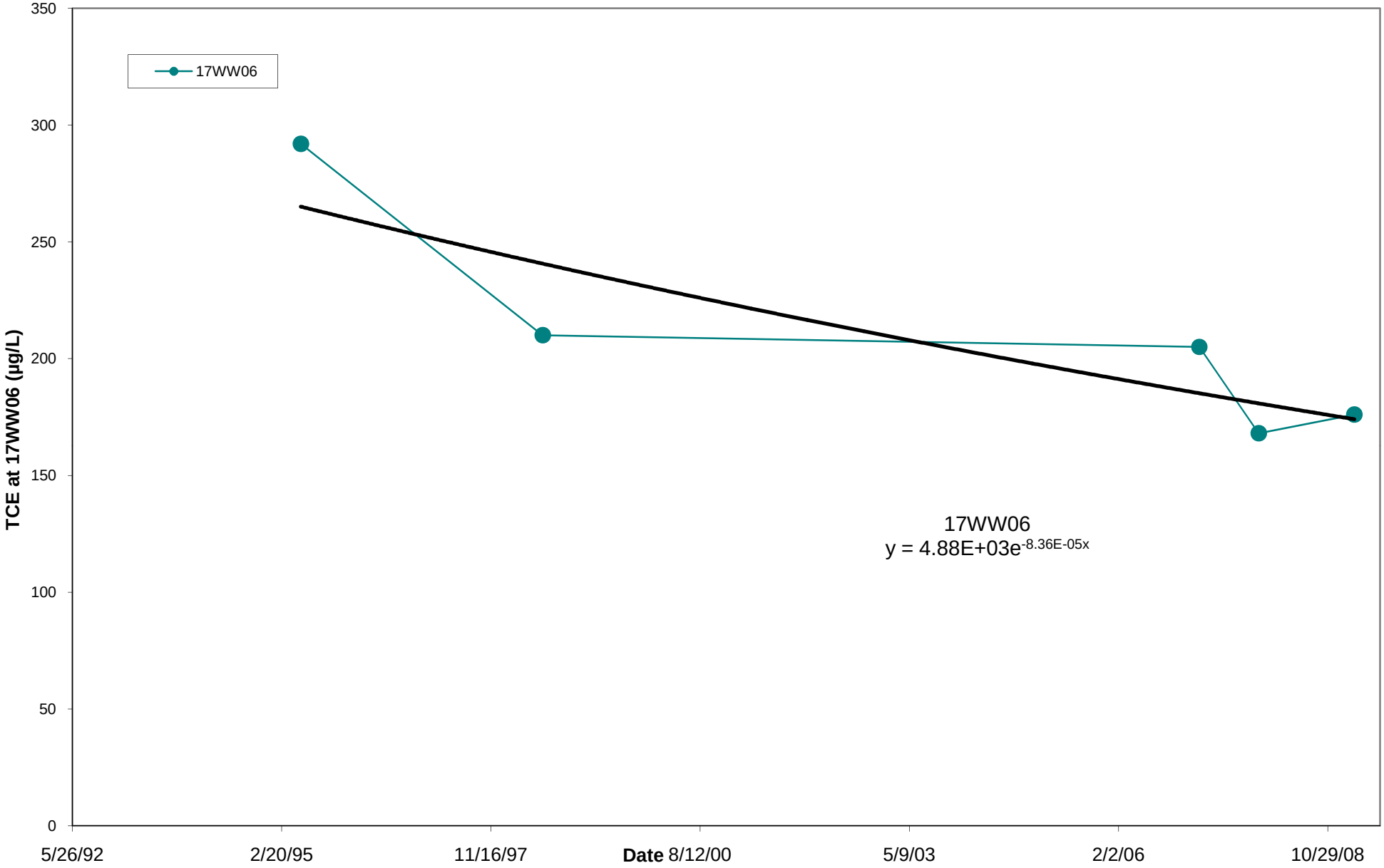


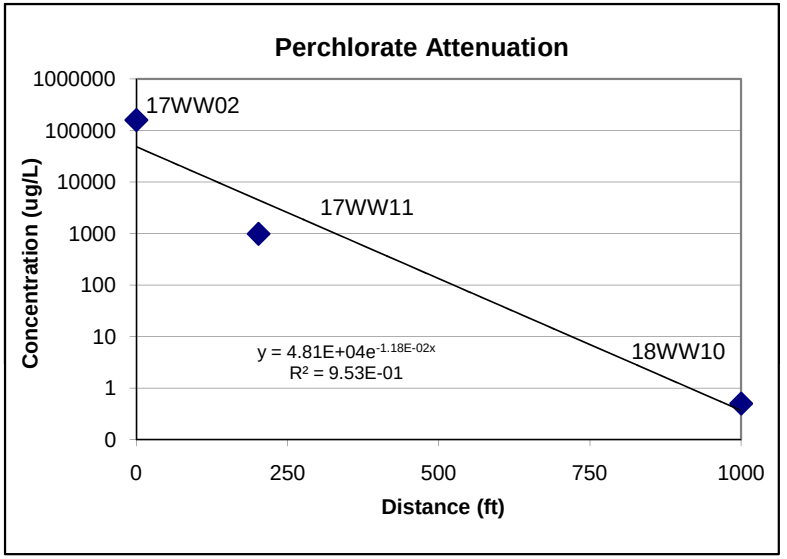
Figure A-9
Distance-Dependent Perchlorate Attenuation and Biodegradation Rates
LHAAP-17

Natural Attenuation Rate Calculation, Buscheck and Alcantar Equation,
Reference: Buscheck, T. E. and C. M. Alcantar (1995) Regression Techniques and Analytical Solutions to Demonstrate Intrinsic Biodegradation in Intrinsic Bioremediation, eds. R. E. Hinchee, J. T. Wilson, and D. C. Downey, Battelle Press, Columbus, OH.
Slope of exponential regression versus distance (k/v_x)

Location: LHAAP-17 Shallow Groundwater Perchlorate March 2009 Data

Monitoring Well	17WW02	17WW11	18WW10	Slope	R^2
Feet	**0**	**202**	**1000**	-0.0118	0.95
Concentration	**160000**	**990**	**0.5**		

Hydraulic Conductivity	**6.19** ft/day	Average from the 3 wells noted from RI (Jacobs, 2001) converted to ft/day
Groundwater Gradient	**0.005** ft/ft	A reasonable maximum determined from Figure A-2.
Total Porosity	**0.25** unitless	An assumed value.
Average groundwater velocity, v_x =	**0.124** ft/day	
	45.2 ft/year	



λ = $(v_c/4\alpha_x)\,([1+2\alpha_x(k/v_x)]^2 - 1)$

α_x = 5 % of flow field (distance separating two furthest wells)
50 ft
f_{oc} = **0.001** fraction organic carbon, default value.
K_{oc} = **73** L/kg
K_d = $K_{oc}f_{oc}$
0.073 L/kg
ρ_b = 1.7 kg/L bulk density default value
n = 0.25 total porosity
R = $1 + (\rho_b K_d/n)$ retardation factor
1.496
v_c = v_x/R
30.2 ft/year

Intrinsic Biodegradation		Natural Attenuation Rate		
$(v_c/4\alpha_x)$ =	0.1510 /yr			
(k/v_x) =	0.0118 /ft	k =	**0.5332** /year	0.0014598 /day
[1+2ax(k/vx)]	2.1800	half-life =	**1.3** years	
λ =	**0.5666** /year	λ/k =	**106%**	
Half-life	**1.2** years			

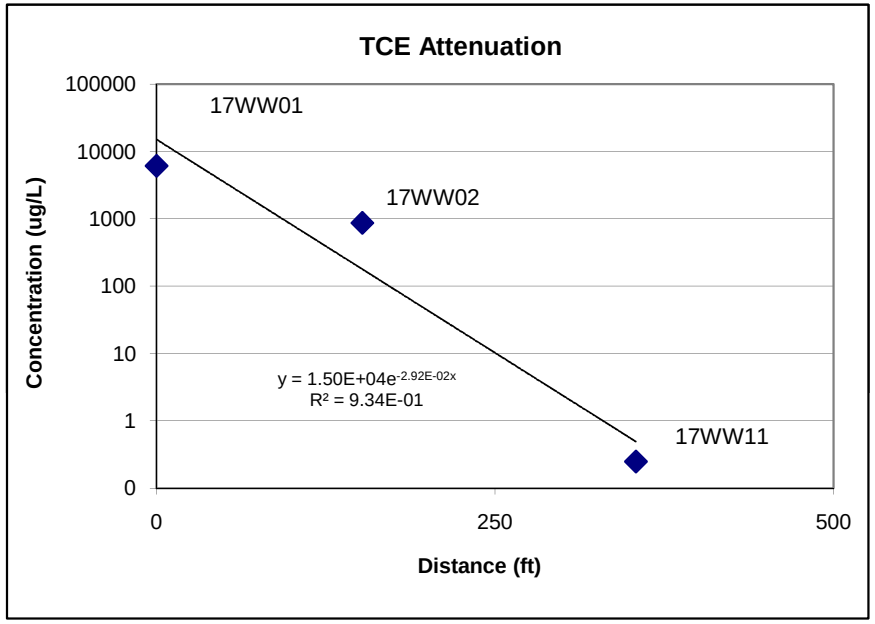
Figure A-10
Distance-Dependent TCE Attenuation and Biodegradation Rates
LHAAP-17

Natural Attenuation Rate Calculation, Buscheck and Alcantar Equation,
Reference: Buscheck, T. E. and C. M. Alcantar (1995) Regression Techniques and Analytical Solutions to Demonstrate Intrinsic Biodegradation in Intrinsic Bioremediation, eds. R. E. Hinchee, J. T. Wilson, and D. C. Downey, Battelle Press, Columbus, OH.
Slope of exponential regression versus distance (k/v_x)

Location: LHAAP-17 Shallow Groundwater TCE May 2009 Data

Monitoring Well	17WW01	17WW02	17WW11	Slope	R^2
Feet	**0**	**152**	**354**	-0.0292	0.93
Concentration	**6090**	**867**	**0.25**		

Hydraulic Conductivity	**5.94** ft/day	Average from the 3 wells noted from RI (Jacobs, 2001) converted to ft/day
Groundwater Gradient	**0.005** ft/ft	A reasonable maximum determined from Figure A-2.
Total Porosity	**0.25** unitless	Assumed
Average groundwater velocity, v_x =	**0.119** ft/day	
	43.4 ft/year	



λ = $(v_c/4\alpha_x)\,([1+2\alpha_x(k/v_x)]^2 - 1)$

α_x = 5 % of flow field (distance separating two furthest wells)
17.7 ft

f_{oc} = **0.001** fraction organic carbon, default value.

K_{oc} = **204** L/kg

K_d = $K_{oc}f_{oc}$
0.204 L/kg

ρ_b = 1.7 kg/L bulk density default value

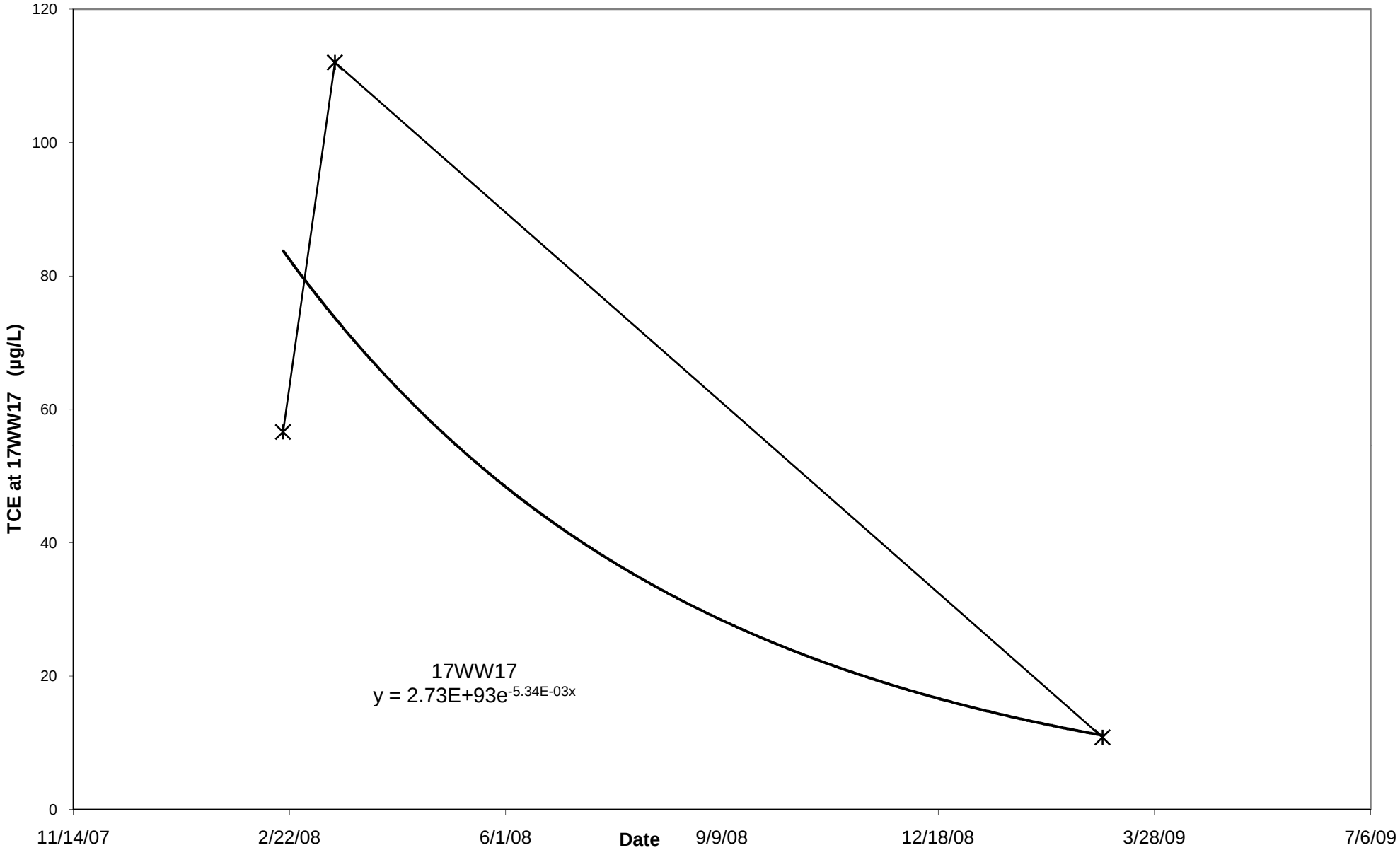
n = 0.25 total porosity

R = $1 + (\rho_b K_d/n)$ retardation factor
2.387

v_c = v_x/R
18.2 ft/year

Intrinsic Biodegradation		Natural Attenuation Rate		
$(v_c/4\alpha_x)$ =	0.2566 /yr			
(k/v_x) =	0.0292 /ft	k =	**1.266** /year	0.003469 /day
[1+2ax(k/vx)]	2.0337	half-life =	**0.5** years	
λ =	**0.805** /year	λ/k =	**64%**	
Half-life	**0.9** years			

Figure A-11
Natural Attenuation Rate for TCE in Monitoring Well 17WW17
LHAAP-17



Appendix B

Additional Investigation Data

APPENDIX B
ADDITIONAL INVESTIGATION DATA SUMMARY REPORT

FINAL
FEASIBILITY STUDY
LHAAP-17, BURNING GROUND 2/FLASHING AREA, GROUP 2
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared for

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Tulsa District
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Contract Number W912QR-04-D-0027
Task Order No. DS02

April 2010

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Acronyms and Abbreviations

µg/L	micrograms per liter
DCA	dichloroethane
FID	flame-ionization detector
LHAAP	Longhorn Army Ammunition Plant
MCL	maximum contaminant level
PID	photo-ionization detector
PVC	polyvinyl chloride
Shaw	Shaw Environmental, Inc.
TCE	trichloroethene
USACE	U.S. Army Corps of Engineers
VOC	volatile organic compound

1.0 Introduction

Shaw Environmental, Inc. (Shaw) performed additional sampling field investigation activities at the LHAAP-17 in February 2007, December 2007 through October 2008, and February/March 2009. The purpose of the sampling events was to evaluate the occurrence of natural attenuation within the shallow and intermediate groundwater zones and to define the horizontal and vertical extent of groundwater contamination at the former Burning Ground 2/Flashing Area (now designated LHAAP-17) at the former Longhorn Army Ammunition Plant (LHAAP) in Karnack, Texas.

1.1 Groundwater Sampling

In February 2007, eight wells were sampled (shallow wells 130, 17WW01, 17WW02, 17WW06, 17WW10, 17WW12, and intermediate wells 17WW05 and 17WW16). The groundwater samples were analyzed for explosives, monitored natural attenuation parameters, perchlorate, and volatile organic compounds (VOCs).

From December 2007 through October 2008, a total of eight groundwater samples were collected from seven monitoring wells at LHAAP-17. Shaw installed two monitoring wells (17WW17 and 17WW18) in the intermediate groundwater zone (52 feet and 54 feet total depth, respectively).

In December 2007, five groundwater samples were collected from the existing monitoring wells 17WW04, 17WW05, 17WW06, 17WW10, and MW-130. A previous investigation of the occurrence of natural attenuation for chemicals of concern (VOCs and perchlorate) in groundwater at LHAAP-17 was conducted in February 2007. Results of that investigation indicated that conditions were favorable and natural attenuation was occurring at the site. Therefore, the December 2007 analytical program included only chemicals of concern (VOCs and perchlorate) and monitored natural attenuation parameters.

In February 2008, one monitoring well (17WW17) was installed in the intermediate groundwater zone in the central portion of LHAAP-17 to delineate the vertical extent of VOC groundwater contamination at the site. A groundwater sample was collected from the newly installed well and analyzed for VOCs. In March 2008, one groundwater sample was collected from 17WW17 to confirm the delineation of the vertical extent of VOC groundwater contamination in the intermediate groundwater zone.

In September 2008, one additional monitoring well (17WW18) was installed in the intermediate groundwater zone to the northeastern portion of LHAAP-17, to further define the horizontal extent of groundwater contamination. One groundwater sample was collected from well 17WW18 and analyzed for VOCs.

In February 2009, several wells were sampled to evaluate the perchlorate and VOC plumes and to assess if historic metal contamination (1998 results) was due to sampling methodology (prior to low flow sampling). Due to an elevated reading in February 2009, an additional sample was collected from 17WW11 in March 2009.

A summary of the groundwater samples collected and their analytical results are summarized in **Tables B-1, B-2,** and **B-3**. The monitoring well locations are shown on **Figure B-1**.

2.0 Monitoring Well Installation

Monitoring wells were drilled and installed using a high-torque hollow stem auger drill rig. Each well was constructed with 4-inch-diameter, flush-joint threaded, schedule 40, polyvinyl chloride (PVC). Soil was collected continuously using a 5-foot-long, 2-inch-diameter, split barrel core sampler advanced with the drill bit. The soil in the samplers was field screened using a photo-ionization detector (PID) or flame-ionization detector (FID). Soil stratigraphy was described according to ASTM D2488-00, *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)* (ASTM International, 2003), and logged on U.S. Army Corps of Engineers (USACE) Engineering Form 1836 (Drilling Log) or equivalent. The monitoring wells were installed in accordance with Appendix D, Field Procedures, of the *Final Installation-Wide Work Plan* (Shaw, 2006).

The 4-inch-diameter monitoring wells were installed in the annulus of hollow-stem augers. The PVC well screen installed for each well was of 0.01-inch-slotted and 10 feet in length. A threaded PVC bottom cap was secured to the bottom of the screen interval. Solid PVC casing was installed from the top of the screen interval to approximately 3 feet above surface grade.

A filter pack consisting of clean silica sand (20-40 size) was placed in the auger-well annulus from approximately 0.5 feet below the well bottom to approximately 2 feet above the screen interval. A 3-foot-thick bentonite seal (pellets or chips) was placed above the sand filter pack and hydrated with potable water. The annular space from the top of the bentonite seal to the surface was filled with a bentonite-cement grout.

Procedures were followed to ensure that contamination in each of the groundwater zones remained isolated and does not have the potential to migrate to the other zones. Both wells were installed in the intermediate groundwater zone; therefore, the shallow groundwater zone was isolated using 12-inch-diameter steel casing. The casing was installed from near surface grade to the top of the first confining layer. Upon grouting and setting of the isolation casing, drilling proceeded into the intermediate zone.

The drilling equipment was decontaminated prior to arrival at the site and between well installations. Additional information on decontamination procedures can be found in Appendix D, Attachment 9, of the *Final Installation-Wide Work Plan* (Shaw, 2006). Core samplers were washed between sampling intervals in a detergent/water solution and double rinsed with potable tap water in clean buckets. The decontamination wastewater and the drill cuttings were containerized separately and transported to an assigned staging area for proper handling as discussed in Appendix D of the *Final Installation-Wide Work Plan* (Shaw, 2006).

Aboveground surface completions were constructed for each new monitoring well as described in Appendix D of the *Final Installation-Wide Work Plan* (Shaw, 2006). The surface completions consist of a 6-inch-square protective steel casing; 5-feet long with a hinged, lockable lid set a minimum of 2 feet into a 4-foot-square by 6-inch-thick concrete pad. Concrete-filled steel bollards were installed just outside the corners of the concrete pad.

The monitoring wells and surface completions were installed in general accordance with USACE and State of Texas requirements by a drilling subcontractor licensed in the State of Texas. Following the completion of the field work for monitoring well installation, a State of Texas Well Report was submitted to the Texas Department of Licensing and Regulations for construction of each well. Drilling logs for the monitoring wells installed during this sample event are included in **Attachment 1**. Geologic cross sections showing the stratigraphy underlying LHAAP-17 are shown on **Figures B-2** through **B-4**.

2.1 Well Development

The newly installed monitoring wells were developed to remove drilling fines and enhance hydraulic communication between the well and the groundwater zone. The wells were developed no sooner than 48 hours and no later than 7 days after installation. Well development was performed by pumping and gentle surging of the screened interval using a rubber-lined surge block. A minimum of three well borehole volumes of water (including the diameter of the well borehole and assumed 30-percent filter pack porosity) was pumped from each well. The volume of groundwater removed from each well was calculated based on the static water level as measured from the top-of-casing. An electronic interface probe was used to measure the water levels. General water quality parameters (temperature, pH, conductivity, and turbidity) were measured using field instruments and recorded in the field logbook. Development was performed until the water quality parameters were stabilized to within 10 percent and the water was visually clear. Well development procedures were performed in accordance with the guidance provided in Appendix D, Attachment 3, of the *Final Installation-Wide Work Plan* (Shaw, 2006). Development records for the newly installed monitoring wells are included in **Attachment 2**.

A Shaw hydrogeologist supervised well development and documented the development process and measurements in a Well Development Record specific to each well. Downhole development equipment was decontaminated prior to and following use at each well location by cleaning in a detergent/water solution and double rinsing with tap water in clean buckets. The development and decontamination wastewater was placed in 55-gallon drums and handled in accordance with Appendix D of the *Final Installation-Wide Work Plan* (Shaw, 2006).

2.2 Survey of Monitoring Well Locations

A State of Texas-licensed professional land surveyor surveyed the locations and elevations of the newly installed monitoring wells. The horizontal coordinates (northings and eastings) of the wells were surveyed to the nearest foot based on the North American Datum of 1983. The vertical elevations of the top of the wells (top-of-casing) were surveyed to nearest 0.01 feet. The ground surface elevation at each well location was surveyed to the nearest 0.1 feet.

3.0 Groundwater Sampling and Analysis

This section describes the sampling and analysis procedures applicable to groundwater samples collected at LHAAP-17. Samples were collected and handled in accordance with the Chemical Data Acquisition Plan, Appendix C of the *Final Installation-Wide Work Plan* (Shaw, 2006). Health and safety procedures, including screening methods, are presented in the Health and Safety Plan, Appendix A of the *Final Installation-Wide Work Plan* (Shaw, 2006).

Groundwater samples were collected from the monitoring well locations identified on **Figure B-1**. Groundwater samples were collected using the low-flow sampling methodology in accordance with Appendix C of the *Final Installation-Wide Work Plan* (Shaw, 2006). General water quality parameters (temperature, pH, conductivity, and turbidity) were measured throughout the sampling process at each well location using field instruments. This information was recorded in the field logbook. Each sample bottle was labeled as described in Section 4.6.3 of Appendix C of the *Final Installation-Wide Work Plan* (Shaw, 2006), enclosed in a sealable plastic bag, and placed in a cooler containing ice to preserve the samples at 4 degrees Celsius or less. Following collection of the samples, the location and field measurements were recorded on groundwater sampling forms (**Attachment 3**) and a chain-of-custody documentation was completed.

4.0 Results

This section discusses the results of the groundwater samples collected as part of the additional investigation sampling events. The associated laboratory data reports are included as **Attachment 4** of this document.

In the February 2007 sampling event, eight shallow groundwater monitoring wells were sampled. Four of the wells had detections of volatile organic compounds above the Safe Drinking Water Act Maximum Contaminant Level (MCL) as established by the EPA. Well 17WW01 had detection of 1,1-dichloroethene at 32.6 µg/L, above the MCL of 7 µg/L. 1,2-dichloroethane (DCA) was detected above the MCL of 5 µg/L in wells 17WW01 at 44.9 µg/L and 17WW02 at 40.7 µg/L. Four of the wells, 130, 17WW01, 17WW02, and 17WW06, had detections of trichloroethene (TCE) at 25.1 µg/L, 5,790 µg/L, 479 µg/L, and 205 µg/L, respectively, which are greater than the MCL of 5 µg/L. All other VOCs detected were either below their respective MCLs or were below detection limits. The February 2007 results are presented in **Table B-1**.

In the December 2007 sampling event, two shallow groundwater monitoring wells, 130 and 17WW06, had detections of TCE concentrations at 23.6 and 168 µg/L, respectively, greater than the cleanup goal of 5 µg/L. DCA was also detected in well 17WW06 at a concentration of 5.4 µg/L slightly above its MCL of 5 µg/L. All other VOCs were either below their respective MCLs or were below detection limits.

During the February and March 2008 groundwater sampling events, one intermediate well, 17WW17, was sampled. During both events, TCE and methylene chloride were detected at concentrations exceeding their respective MCLs of 5 µg/L. In February 2008, TCE was detected at a concentration of 56.6 µg/L. During the March 2008 sampling event, TCE was detected at approximately twice the February concentration (112 µg/L). Methylene chloride on the other hand was detected in February 2008 at a concentration of 1,040 µg/L but decreased significantly to 30.2 µg/L during the subsequent event in March 2008.

In October 2008, one groundwater sample collected from the newly installed intermediate monitoring well 17WW18, and all VOCs were below detection limits. The December 2007 through October 2008 results are presented in **Table B-2**.

Ten wells (17WW05, 28WW07, 17WW08, 17WW09, 17WW10, 17WW11, 17WW12, 17WW14, 17WW15, and 17WW16) were sampled in February 2009 for VOCs, metals, and perchlorate. Well 17WW11 had an elevated reading of perchlorate at 290 µg/L, which is above the TCEQ GW-Ind of 72 µg/L. All other constituents detected were below their respective MCLs or were below detection limits.

In March 2009, eleven wells (130, 17WW01, 17WW02, 17WW03, 17WW04, 17WW06, 17WW11, 17WW13, 17WW17, 17WW18, and MW18) were sampled for VOCs, natural attenuation parameters, metals, and anions (including perchlorate). Perchlorate was detected in 130 at 170 µg/L, 17WW01 at 56,000 µg/L, 17WW02 at 160,000 µg/L and 17WW06 at 74,000 g/L. Well 17WW06 had chromium detection at 0.129 µg/L, slightly above the MCL of 0.1 g/L. Wells 17WW01, 17WW02, 17WW06 and 17WW17 had detections of 1,1-dichloroethene. Of the four, only 17WW01 (with a detection of 70 µg/L) exceeded the MCL of 7 µg/L. 17WW06 had detection equal to the MCL. Wells 17WW02 and 17WW06 had a detection of DCA at 34.5 µg/L and 5.68 µg/L respectively, above the MCL of 5 µg/L. Cis-1,2-dichloroethene which was detected in 17WW01 at 107 µg/L above its MCL of 70 µg/L. TCE was detected in 130, 17WW01, 17WW02, 17WW03, 17WW06, and 17WW17 at 31.1 µg/L, 6,090 µg/L, 867 µg/L, 12.8 µg/L, 176 µg/L, and 10.8 µg/L respectively, above the MCL of 5 µg/L. All other constituents detected were below their respective MCLs or were below detection limits.

5.0 References

ASTM International, 2003, ASTM D2488-00, *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).*

Shaw, 2006, *Installation-Wide Work Plan, Longhorn Army Ammunition Plant, Karnack, Texas*, Final, Houston, Texas, January.

Tables

Table B-1

Groundwater Analytical Results, February 2007

Table B-1
Groundwater Analytical Results
February 2007

			LOCATION_CODE	130				17WW04				17WW05				17WW06				17WW10				17WW17				17WW17				17WW18			
			SAMPLE_NO	MW130-120407				17WW04-120507				17WW05-120407				17WW06-120507				17WW10-120507				17WW17-021908				17WW17-031408				17WW18-100808			
			SAMPLE_DATE	4-Dec-07				5-Dec-07				4-Dec-07				4-Dec-07				5-Dec-07				19-Feb-08				14-Mar-08				10/8/2008			
			SAMPLE_PURPOSE	REG				REG				REG				REG				REG				REG				REG				REG			
Test Group	Parameter	Units		Result	Qual	VQ	RC	Result	Qual	VQ	RC	Result	Qual	VQ	RC	Result	Qual	VQ	RC	Result	Qual	VQ	RC	Result	Qual	VQ	RC	Result	Qual	VQ	RC	Result	Qual	VQ	RC
FIELD TESTS	Dissolved Oxygen	ug/L		8700				600				730				2310				310				NA				NA				NA			
FIELD TESTS	Ferrous iron	ug/L																						NA				NA				NA			
FIELD TESTS	Oxygen Reduction Potential	mV		173.4				10.8				-127.3				58.7				3				NA				NA				NA			
FIELD TESTS	pH	STD UNIT		6.82				6.12				8.35				6.89				6.29				NA				NA				NA			
FIELD TESTS	Salinity	ug/L																						NA				NA				NA			
FIELD TESTS	Specific Conductivity	uS/cm		4746				921				1293				4081				3787				NA				NA				NA			
FIELD TESTS	Temperature	Deg C		17.1				15.86				18.65				19				18.91				NA				NA				NA			
FIELD TESTS	Turbidity	NTU		0				7.6								0				0.07				NA				NA				NA			
GEN CHEMISTRY	Perchlorate	ug/L		19400				0.5	U	U		4.71				77800				2	U	U		NA				NA				NA			
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		
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		2.77				2.95				0.25	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		
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		
VOLATILES	1,1-Dichloroethane	ug/L		0.125	U	U		0.125	U	U		0.125	U	U		1.07				0.125	U	U		1.09				4.96				0.125	U		
VOLATILES	1,1-Dichloroethene	ug/L		0.5	U	U		0.763	J	J	15	0.5	U	U		4.8				0.5	U	U		2.68				5.87				0.5	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		
VOLATILES	1,2,3-Trichlorobenzene	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		0.15	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		
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		
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		2.85				3.61				0.25	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		
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		
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		
VOLATILES	1,2-Dichloroethane	ug/L		4.17				0.25	U	U		0.25	U	U		5.4				0.25	U	U		1.87				2.52				0.25	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		
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		0.8	J	J	15	1.19				NA			
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		0.799	J	J	15	1.05				0.25	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		
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		
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		
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		
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		
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		
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		
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		
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		
VOLATILES	Acetone	ug/L		3.8	J	J	15	2.5	U	U		9.03	J	J	15	2.5	U	U		2.5	U	U		48.9				2.5	U	U		2.5	U		
VOLATILES	Benzene	ug/L		0.125	U	U		0.125	U	U		0.125	U	U		0.165	J	J	15	0.125	U	U		0.125	U	U		0.125	U	U		0.125	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		
VOLATILES	Bromochloromethane	ug/L		0.2	U	U		0.2	U	U		0.2	U	U		0.2	U	U		0.2	U	U		0.724	J	J	15	0.2	U	U		0.2	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		
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		
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		
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		3.27				2.52				1.14	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		
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		
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		

Table B-1
Groundwater Analytical Results
February 2007

		LOCATION_CODE	130				17WW04				17WW05				17WW06				17WW10				17WW17				17WW17				17WW18			
		SAMPLE_NO	MW130-120407				17WW04-120507				17WW05-120407				17WW06-120507				17WW10-120507				17WW17-021908				17WW17-031408				17WW18-100808			
		SAMPLE_DATE	4-Dec-07				5-Dec-07				4-Dec-07				4-Dec-07				5-Dec-07				19-Feb-08				14-Mar-08				10/8/2008			
		SAMPLE_PURPOSE	REG				REG				REG				REG				REG				REG				REG				REG			
Test Group	Parameter	Units	Result	Qual	VQ	RC	Result	Qual	VQ	RC	Result	Qual	VQ	RC	Result	Qual	VQ	RC	Result	Qual	VQ	RC	Result	Qual	VQ	RC	Result	Qual	VQ	RC	Result	Qual	VQ	RC
VOLATILES	Chloroform	ug/L	0.125	U	U		0.125	U	U		0.125	U	U		0.125	U	U		0.125	U	U		0.603	J	J	15	0.125	U	U		0.125	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		1.33	B	B,J	
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.737	J	J	15	0.25	U	U		0.25	U	U		7.52				0.25	U	U		6.62				26.4				0.25	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		
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		NA			
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		
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		
VOLATILES	Ethylbenzene	ug/L	0.25	U	U		0.25	U	U		0.25	U	U		0.25	U	U		0.25	U	U		0.379	J	J	15	0.409	J	J	15	0.25	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		NA			
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		
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		1.71				2				NA			
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		NA			
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		1040				30.2				0.25	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		0.445	J	J	15	0.2	U	U		0.2	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		0.287	J	J	15	0.25	U	U		0.25	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		0.362	J	J	15	0.383	J	J	15	0.125	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		
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		
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		
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		
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		
VOLATILES	Toluene	ug/L	0.25	U	U		0.25	U	U		0.298	J	J	15	0.25	U	U		0.25	U	U		0.296	J	J	15	0.489	J	J	15	0.25	U		
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U		0.25	U	U		0.25	U	U		1.8				0.25	U	U		0.328	J	J	15	0.698	J	J	15	0.25	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		
VOLATILES	Trichloroethene	ug/L	23.6				1.57				0.25	U	U		168				0.25	U	U		56.6				112				0.25	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		
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		
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		

Notes and Abbreviations:

15 - quantitation

µg/L - micrograms per Liter

B - The concentration reported was detected in the associated method blank, trip blank, or equiment 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.

mV - millivolts

NA - no analysis

NTU - nephelometric turbidity unit

RC - reason code

Reg - regular sample

U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.

that the "non-detect" may be inaccurate or imprecise. The non-detect result should be estimated.

uS/cm - microsiemens per centimeter

VQ - validation qualifier

Table B-2

Groundwater Analytical Results, December 2007 through October 2008

Table B-2
Groundwater Analytical Results
December 2007 through October 2008

		LOCATION_CODE	130							17WW04							17WW05							17WW06							17WW10						
		SAMPLE_NO	MW130-120407							17WW04-120507							17WW05-120407							17WW06-120507							17WW10-120507						
		SAMPLE_DATE	4-Dec-07							5-Dec-07							4-Dec-07							4-Dec-07							5-Dec-07						
		PURPOSE	REG							REG							REG							REG							REG						
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL
FIELD TESTS	Dissolved Oxygen	ug/L	8700				1	0.3		600				1	0.3		730				1	0.3		2310				1	0.3		310				1	0.3	
FIELD TESTS	Oxygen Reduction Potential	mV	173.4				1	0.02		10.8				1	0.02		-127.3				1	0.02		58.7				1	0.02		3				1	0.02	
FIELD TESTS	pH	pH UNITS	6.82				1	0		6.12				1	0		8.35				1	0		6.89				1	0		6.29				1	0	
FIELD TESTS	Specific Conductivity	uS/cm	4.746				1	0		0.921				1	0		1.293				1	0		4.081				1	0		3.787				1	0	
FIELD TESTS	Temperature	Deg C	17.1				1	0		15.86				1	0		18.65				1	0		19				1	0		18.91				1	0	
FIELD TESTS	Turbidity	NTU	0				1	10		7.6				1	10									0				1	10		0.07				1	10	
GEN CHEMISTRY	Chloride	mg/L																																			
GEN CHEMISTRY	Perchlorate	ug/L	19400				500	500	250	0.5	U	U		1	1	0.5	4.71				2	2	1	77800				1000	1000	500	2	U	U		4	4	2
GEN CHEMISTRY	Sulfate	mg/L																																			
METALS	Aluminum	mg/L																																			
METALS	Arsenic	mg/L																																			
METALS	Barium	mg/L																																			
METALS	Cadmium	mg/L																																			
METALS	Chromium	mg/L																																			
METALS	Cobalt	mg/L																																			
METALS	Iron	mg/L																																			
METALS	Lead	mg/L																																			
METALS	Manganese	mg/L																																			
METALS	Nickel	mg/L																																			
METALS	Selenium	mg/L																																			
METALS	Silver	mg/L																																			
METALS	Vanadium	mg/L																																			
METALS	Zinc	mg/L																																			
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1,1-Trichloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1-Dichloroethane	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	1.07				1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,1-Dichloroethene	ug/L	0.5	U	U		1	1	0.5	0.763	J	J	15	1	1	0.5	0.5	U	U		1	1	0.5	4.8				1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	1,1-Dichloropropene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2,3-Trichlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,2,3-Trichloropropane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,2,4-Trimethylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,2-Dichloroethane	ug/L	4.17				1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	5.4				1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3,5-Trimethylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3-Dichloropropane	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	2,2-Dichloropropane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	2-Butanone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	2-Chloroethyl vinyl ether	ug/L	2	U	U		1	10	2	2	U	U		1	10	2	2	U	U		1	10	2	2	U	U		1	10	2	2	U	U		1	10	2
VOLATILES	2-Chlorotoluene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	2-Hexanone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	4-Chlorotoluene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Acetone	ug/L	3.8	J	J	15	1	10	2.5	2.5	U	U		1	10	2.5	9.03	J	J	15	1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Benzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.165	J	J	15	1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Bromobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Bromochloromethane	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2

Table B-2
Groundwater Analytical Results
December 2007 through October 2008

		LOCATION_CODE	130							17WW04							17WW05							17WW06							17WW10						
		SAMPLE_NO	MW130-120407							17WW04-120507							17WW05-120407							17WW06-120507							17WW10-120507						
		SAMPLE_DATE	4-Dec-07							5-Dec-07							4-Dec-07							4-Dec-07							5-Dec-07						
		PURPOSE	REG							REG							REG							REG							REG						
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Bromoform	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Bromomethane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Carbon disulfide	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Chlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Chloroethane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Chloroform	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Chloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.737	J	J	15	1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	7.52				1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Cyclohexane	ug/L																																			
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dibromomethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dichlorodifluoromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Ethylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Freon 113	ug/L																																			
VOLATILES	Hexachlorobutadiene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	m,p-Xylenes	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Methyl Acetate	ug/L																																			
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Methyl tert-butyl ether	ug/L																																			
VOLATILES	Methylcyclohexane	ug/L																																			
VOLATILES	Methylene chloride	ug/L	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25
VOLATILES	Naphthalene	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	n-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	n-PROPYLBENZENE	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	sec-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Styrene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	tert-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Tetrachloroethene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Toluene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.298	J	J	15	1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	1.8				1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Trichloroethene	ug/L	23.6				1	1	0.25	1.57				1	1	0.25	0.25	U	U		1	1	0.25	168				1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Vinyl acetate	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Vinyl chloride	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Xylenes, Total	ug/L																																			

Table B-2
Groundwater Analytical Results
December 2007 through October 2008

	LOCATION_CODE	17WW17							17WW17							17WW18							MW-19						
	SAMPLE_NO	17WW17-021908							17WW17-031408							17WW18-100808							MW19-041608						
	SAMPLE_DATE	19-Feb-08							14-Mar-08							8-Oct-08							16-Apr-08						
	PURPOSE	REG							REG							REG							REG						
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL
FIELD TESTS	Dissolved Oxygen	ug/L																												
FIELD TESTS	Oxygen Reduction Potential	mV																												
FIELD TESTS	pH	pH UNITS																												
FIELD TESTS	Specific Conductivity	uS/cm																												
FIELD TESTS	Temperature	Deg C																												
FIELD TESTS	Turbidity	NTU																												
GEN CHEMISTRY	Chloride	mg/L																												
GEN CHEMISTRY	Perchlorate	ug/L																						5	U			10	10	5
GEN CHEMISTRY	Sulfate	mg/L																												
METALS	Aluminum	mg/L																												
METALS	Arsenic	mg/L																												
METALS	Barium	mg/L																												
METALS	Cadmium	mg/L																												
METALS	Chromium	mg/L																												
METALS	Cobalt	mg/L																												
METALS	Iron	mg/L																												
METALS	Lead	mg/L																												
METALS	Manganese	mg/L																												
METALS	Nickel	mg/L																												
METALS	Selenium	mg/L																												
METALS	Silver	mg/L																												
METALS	Vanadium	mg/L																												
METALS	Zinc	mg/L																												
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25							
VOLATILES	1,1,1-Trichloroethane	ug/L	2.77				1	1	0.25	2.95				1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.308	J	J	15	1	1	0.125
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1-Dichloroethane	ug/L	1.09				1	1	0.125	4.96				1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,1-Dichloroethene	ug/L	2.68				1	1	0.5	5.87				1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	1,1-Dichloropropene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25							
VOLATILES	1,2,3-Trichlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.15	U	U		1	1	0.15							
VOLATILES	1,2,3-Trichloropropane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5							
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,2,4-Trimethylbenzene	ug/L	2.85				1	1	0.25	3.61				1	1	0.25	0.25	U	U		1	1	0.25							
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,2-Dichloroethane	ug/L	1.87				1	1	0.25	2.52				1	1	0.25	0.25	U	U		1	1	0.25	0.512	J	J	15	1	1	0.25
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	0.8	J	J	15	1	1	0.25	1.19				1	1	0.25	0.25	U	U		1	1	0.25							
VOLATILES	1,3,5-Trimethylbenzene	ug/L	0.799	J	J	15	1	1	0.25	1.05				1	1	0.25	0.25	U	U		1	1	0.25							
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3-Dichloropropane	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2							
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	2,2-Dichloropropane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25							
VOLATILES	2-Butanone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	2-Chloroethyl vinyl ether	ug/L	2	U	U		1	10	2	2	U	U		1	10	2	2	U	U		1	10	2							
VOLATILES	2-Chlorotoluene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125							
VOLATILES	2-Hexanone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	4-Chlorotoluene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25							
VOLATILES	Acetone	ug/L	48.9				1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Benzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Bromobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125							
VOLATILES	Bromochloromethane	ug/L	0.724	J	J	15	1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2							
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25

Table B-2
Groundwater Analytical Results
December 2007 through October 2008

		LOCATION_CODE	17WW17							17WW17							17WW18							MW-19						
		SAMPLE_NO	17WW17-021908							17WW17-031408							17WW18-100808							MW19-041608						
		SAMPLE_DATE	19-Feb-08							14-Mar-08							8-Oct-08							16-Apr-08						
		PURPOSE	REG							REG							REG							REG						
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL
VOLATILES	Bromoform	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Bromomethane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Carbon disulfide	ug/L	3.27				1	1	0.5	2.52				1	1	0.5	1.14				1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Chlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Chloroethane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Chloroform	ug/L	0.603	J	J	15	1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Chloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	1.33	B	J,B	06A,06D,11B	1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	cis-1,2-Dichloroethene	ug/L	6.62				1	1	0.25	26.4				1	1	0.25	0.25	U	U		1	1	0.25	0.27	J	J	15	1	1	0.25
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Cyclohexane	ug/L																						0.25	U	U		1	5	0.25
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dibromomethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25							
VOLATILES	Dichlorodifluoromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Ethylbenzene	ug/L	0.379	J	J	15	1	1	0.25	0.409	J	J	15	1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Freon 113	ug/L																						0.25	U	U		1	5	0.25
VOLATILES	Hexachlorobutadiene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25							
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	m,p-Xylenes	ug/L	1.71				1	1	0.5	2				1	1	0.5	0.5	U	U		1	1	0.5							
VOLATILES	Methyl Acetate	ug/L																						0.25	U	U		1	10	0.25
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Methyl tert-butyl ether	ug/L																						0.5	U	U		1	5	0.5
VOLATILES	Methylcyclohexane	ug/L																						0.25	U	U		1	10	0.25
VOLATILES	Methylene chloride	ug/L	1040				10	50	2.5	30.2				1	5	0.25	0.25	U	U		1	5	0.25	0.25	U	U		1	2	0.25
VOLATILES	Naphthalene	ug/L	0.445	J	J	15	1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2							
VOLATILES	n-BUTYLBENZENE	ug/L	0.287	J	J	15	1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25							
VOLATILES	n-PROPYLBENZENE	ug/L	0.362	J	J	15	1	1	0.125	0.383	J	J	15	1	1	0.125	0.125	U	U		1	1	0.125							
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25							
VOLATILES	sec-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25							
VOLATILES	Styrene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	tert-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25							
VOLATILES	Tetrachloroethene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Toluene	ug/L	0.296	J	J	15	1	1	0.25	0.489	J	J	15	1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.328	J	J	15	1	1	0.25	0.698	J	J	15	1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Trichloroethene	ug/L	56.6				1	1	0.25	112				1	1	0.25	0.25	U	U		1	1	0.25	3.83				1	1	0.25
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Vinyl acetate	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5							
VOLATILES	Vinyl chloride	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Xylenes, Total	ug/L																						0.5	U	U		1	1	0.5

Notes and Abbreviations:

06A - method or preparation blank
06D - Trip blank
11B - % RPD (if run in duplicate)
15 - quantitation
B - The concentration reported was detected in the associated method blank, trip blank, or equipment blank within 5x/10x the blank concentration.
DF - dilution factor
DL - detection limit
J - The analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.
MDL - method detection limit
mg/L - milligrms per liter
mV - millivolts
NTU - nephelometric trubidity unit
Qual - qualifier
RC - reason code
Reg - regular sample
U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.
uS/cm - microsiemens per centimeters
ug/L - microgams per liter
ValQual - validation qualifier

Table B-3

Groundwater Analytical Results, February/March 2009

Table B-3
Groundwater Analytical Results
February/March 2009

		LOCATION_CODE	130							17WW01							17WW02							17WW03						
		SAMPLE_NO	MW-130-030409							17WW01-030409							17WW02-030509							17WW03-030509						
		SAMPLE_DATE	4-Mar-09							4-Mar-09							5-Mar-09							5-Mar-09						
		PURPOSE	REG							REG							REG							REG						
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL
DHE	Dehalococcoides	cells/ml	6600				1	10	10	10	U			1.81	18	10	10	U			1	10	10	9800	D			1.47	15	10
GASES	Ethane	ug/L	1	U	U		1	5	1	1	U	U		1	5	1	1	U			1	5	1	1	U	U		1	5	1
GASES	Ethylene	ug/L	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1
GASES	Methane	ug/L	5.15				1	5	1	66.7				1	5	1	5.1				1	5	1	19				1	5	1
GEN CHEMISTRY	Chloride	mg/L															817				25	5	2.5	794				25	5	2.5
GEN CHEMISTRY	Nitrate	mg/L	1.86	J	J	15	5	3	0.5	1	U	U		10	6	1	0.5	U	U		5	3	0.5	0.5	U	U		5	3	0.5
GEN CHEMISTRY	Nitrite	mg/L	0.5	U	U		5	2	0.5	1	U	U		10	4	1	0.5	U	U		5	2	0.5	0.5	U	U		5	2	0.5
GEN CHEMISTRY	ORTHOPHOSPHATE	mg/L	0.0341	J	J	15	1	0.05	0.025	0.025	U	U		1	0.05	0.025	0.025	U	U		1	0.05	0.025	0.025	U	U		1	0.05	0.025
GEN CHEMISTRY	Perchlorate	ug/L	1700				25	25	2.8	56000				1000	1000	110	160000				2500	2500	280	0.44	U	U		4	4	0.44
GEN CHEMISTRY	Sulfate	mg/L	170				5	5	2.5	90				10	10	5	124				5	5	2.5	44.8				5	5	2.5
GEN CHEMISTRY	Sulfide	mg/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
GEN CHEMISTRY	Total Alkalinity	mg/L	608				5	50	25	184				1	10	5	256				1	10	5	132				1	10	5
GEN CHEMISTRY	Total Organic Carbon	mg/L	9.37				1	1	0.5	6.6				1	1	0.5	5.67				3	3	1.5	4.17				2	2	1
METALS	Antimony	mg/L															0.00125	U	U		5	0.005	0.00125							
METALS	Arsenic	mg/L	0.00427				1	0.001	0.00025																					
METALS	Chromium	mg/L															0.0198				5	0.01	0.0025							
METALS	Nickel	mg/L																												
METALS	Thallium	mg/L								0.00005	U	U		1	0.0002	0.00005	0.00025	U	U		5	0.001	0.00025	0.00025	U	U		5	0.001	0.00025
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	1,1,1-Trichloroethane	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U		1	1	0.125	6.25	U	U		50	50	6.25	0.625	U	U		5	5	0.625	0.125	U	U		1	1	0.125
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	1,1-Dichloroethane	ug/L	0.125	U	U		1	1	0.125	29.6	J	J	15	50	50	6.25	0.625	U	U		5	5	0.625	0.125	U	U		1	1	0.125
VOLATILES	1,1-Dichloroethene	ug/L	0.5	U	U		1	1	0.5	70				50	50	25	6.22				5	5	2.5	0.5	U	U		1	1	0.5
VOLATILES	1,1-Dichloropropene	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	1,2,3-Trichlorobenzene	ug/L	0.15	U	U		1	1	0.15	7.5	U	U		50	50	7.5	0.75	U	U		5	5	0.75	0.15	U	U		1	1	0.15
VOLATILES	1,2,3-Trichloropropane	ug/L	0.5	U	U		1	1	0.5	25	U	U		50	50	25	2.5	U	U		5	5	2.5	0.5	U	U		1	1	0.5
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U		1	1	0.2	10	U	U		50	50	10	1	U	U		5	5	1	0.2	U	U		1	1	0.2
VOLATILES	1,2,4-Trimethylbenzene	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U		1	5	1	50	U	U		50	250	50	5	U	U		5	25	5	1	U	U		1	5	1
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U		1	1	0.125	6.25	U	U		50	50	6.25	0.625	U	U		5	5	0.625	0.125	U	U		1	1	0.125
VOLATILES	1,2-Dichloroethane	ug/L	4.29				1	1	0.25	35.8	J	J	15	50	50	12.5	34.5				5	5	1.25	0.26	J	J	15	1	1	0.25
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U		1	1	0.2	10	U	U		50	50	10	1	U	U		5	5	1	0.2	U	U		1	1	0.2
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	1,3,5-Trimethylbenzene	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	1,3-Dichloropropane	ug/L	0.2	U	U		1	1	0.2	10	U	U		50	50	10	1	U	U		5	5	1	0.2	U	U		1	1	0.2
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U		1	1	0.125	6.25	U	U		50	50	6.25	0.625	U	U		5	5	0.625	0.125	U	U		1	1	0.125
VOLATILES	2,2-Dichloropropane	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	2-Butanone	ug/L	2.5	U	U		1	10	2.5	125	U	U		50	500	125	12.5	U	U		5	50	12.5	2.5	U	U		1	10	2.5
VOLATILES	2-Chloroethyl vinyl ether	ug/L	2	U	U		1	10	2	100	U	U		50	500	100	10	U	U		5	50	10	2	U	U		1	10	2
VOLATILES	2-Chlorotoluene	ug/L	0.125	U	U		1	1	0.125	6.25	U	U		50	50	6.25	0.625	U	U		5	5	0.625	0.125	U	U		1	1	0.125
VOLATILES	2-Hexanone	ug/L	2.5	U	U		1	10	2.5	125	U	U		50	500	125	12.5	U	U		5	50	12.5	2.5	U	U		1	10	2.5
VOLATILES	4-Chlorotoluene	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	Acetone	ug/L	2.5	U	U		1	10	2.5	125	U	U		50	500	125	12.5	U	U		5	50	12.5	2.5	U	U		1	10	2.5
VOLATILES	Benzene	ug/L	0.125	U	U		1	1	0.125	6.25	U	U		50	50	6.25	0.625	U	U		5	5	0.625	0.125	U	U		1	1	0.125
VOLATILES	Bromobenzene	ug/L	0.125	U	U		1	1	0.125	6.25	U	U		50	50	6.25	0.625	U	U		5	5	0.625	0.125	U	U		1	1	0.125
VOLATILES	Bromochloromethane	ug/L	0.2	U	U		1	1	0.2	10	U	U		50	50	10	1	U	U		5	5	1	0.2	U	U		1	1	0.2
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	Bromoform	ug/L	0.5	U	U		1	1	0.5	25	U	U		50	50	25	2.5	U	U		5	5	2.5	0.5	U	U		1	1	0.5
VOLATILES	Bromomethane	ug/L	0.5	U	U		1	1	0.5	25	U	U		50	50	25	2.5	U	U		5	5	2.5	0.5	U	U		1	1	0.5
VOLATILES	Carbon disulfide	ug/L	0.5	U	U		1	1	0.5	25	U	U		50	50	25	2.5	U	U		5	5	2.5	0.5	U	U		1	1	0.5
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25

Table B-3
Groundwater Analytical Results
February/March 2009

		LOCATION_CODE	130							17WW01							17WW02							17WW03						
		SAMPLE_NO	MW-130-030409							17WW01-030409							17WW02-030509							17WW03-030509						
		SAMPLE_DATE	4-Mar-09							4-Mar-09							5-Mar-09							5-Mar-09						
		PURPOSE	REG							REG							REG							REG						
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL
VOLATILES	Chlorobenzene	ug/L	0.125	U	U		1	1	0.125	6.25	U	U		50	50	6.25	0.625	U	U		5	5	0.625	0.125	U	U		1	1	0.125
VOLATILES	Chloroethane	ug/L	0.5	U	U		1	1	0.5	25	U	U		50	50	25	2.5	U	U		5	5	2.5	0.5	U	U		1	1	0.5
VOLATILES	Chloroform	ug/L	0.125	U	U		1	1	0.125	6.25	U	U		50	50	6.25	0.625	U	U		5	5	0.625	0.125	U	U		1	1	0.125
VOLATILES	Chloromethane	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.606	J	J	15	1	1	0.25	107				50	50	12.5	8.11				5	5	1.25	1.58				1	1	0.25
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	Dibromomethane	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	Dichlorodifluoromethane	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	Ethylbenzene	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	Hexachlorobutadiene	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	m,p-Xylenes	ug/L	0.5	U	U		1	1	0.5	25	U	U		50	50	25	2.5	U	U		5	5	2.5	0.5	U	U		1	1	0.5
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U		1	10	2.5	125	U	U		50	500	125	12.5	U	U		5	50	12.5	2.5	U	U		1	10	2.5
VOLATILES	Methylene chloride	ug/L	0.25	U	U		1	5	0.25	12.5	U	U		50	250	12.5	1.25	U	U		5	25	1.25	0.25	U	U		1	5	0.25
VOLATILES	Naphthalene	ug/L	0.2	U	U		1	1	0.2	10	U	U		50	50	10	1	U	U		5	5	1	0.2	U	U		1	1	0.2
VOLATILES	n-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	n-PROPYLBENZENE	ug/L	0.125	U	U		1	1	0.125	6.25	U	U		50	50	6.25	0.625	U	U		5	5	0.625	0.125	U	U		1	1	0.125
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	sec-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	Styrene	ug/L	0.125	U	U		1	1	0.125	6.25	U	U		50	50	6.25	0.625	U	U		5	5	0.625	0.125	U	U		1	1	0.125
VOLATILES	tert-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	Tetrachloroethene	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	Toluene	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U		1	1	0.25	20.1	J	J	15	50	50	12.5	1.54	J	J	15	5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U		1	1	0.5	25	U	U		50	50	25	2.5	U	U		5	5	2.5	0.5	U	U		1	1	0.5
VOLATILES	Trichloroethene	ug/L	31.1				1	1	0.25	6090				50	50	12.5	867				5	5	1.25	12.8				1	1	0.25
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25
VOLATILES	Vinyl acetate	ug/L	2.5	U	U		1	10	2.5	125	U	U		50	500	125	12.5	U	U		5	50	12.5	2.5	U	U		1	10	2.5
VOLATILES	Vinyl chloride	ug/L	0.25	U	U		1	1	0.25	12.5	U	U		50	50	12.5	1.25	U	U		5	5	1.25	0.25	U	U		1	1	0.25

Table B-3
Groundwater Analytical Results
February/March 2009

		LOCATION_CODE	17WW04							17WW05							17WW06							17WW07						
		SAMPLE_NO	17WW04-030209							17WW05-022509							17WW06-030509							17WW07-022509						
		SAMPLE_DATE	2-Mar-09							25-Feb-09							5-Mar-09							25-Feb-09						
		PURPOSE	REG							REG							REG							REG						
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL
DHE	Dehalococcoides	cells/ml															730				1	10	10							
GASES	Ethane	ug/L															1	U	U		1	5	1							
GASES	Ethylene	ug/L															1	U	U		1	5	1							
GASES	Methane	ug/L															9.16				1	5	1							
GEN CHEMISTRY	Chloride	mg/L															1040				50	10	5							
GEN CHEMISTRY	Nitrate	mg/L															1	U	U		10	6	1							
GEN CHEMISTRY	Nitrite	mg/L															1	U	U		10	4	1							
GEN CHEMISTRY	ORTHOPHOSPHATE	mg/L															0.025	U	U		1	0.05	0.025							
GEN CHEMISTRY	Perchlorate	ug/L	0.22	U	U		2	2	0.22	0.55	U	U		5	5	0.55	74000				1000	1000	110	0.22	U	U		2	2	0.22
GEN CHEMISTRY	Sulfate	mg/L															111				10	10	5							
GEN CHEMISTRY	Sulfide	mg/L															0.5	U	U		1	1	0.5							
GEN CHEMISTRY	Total Alkalinity	mg/L															274				1	10	5							
GEN CHEMISTRY	Total Organic Carbon	mg/L															5.02				3	3	1.5							
METALS	Antimony	mg/L	0.00025	U	U		1	0.001	0.00025																					
METALS	Arsenic	mg/L																												
METALS	Chromium	mg/L															0.129				5	0.01	0.0025							
METALS	Nickel	mg/L																												
METALS	Thallium	mg/L	0.00005	U	U		1	0.0002	0.00005	0.00005	U	U		1	0.0002	0.00005	0.00025	U	U		5	0.001	0.00025	0.00005	U	U		1	0.0002	0.00005
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1,1-Trichloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1-Dichloroethane	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	1.28				1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,1-Dichloroethene	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	7				1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	1,1-Dichloropropene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2,3-Trichlorobenzene	ug/L	0.15	U	U		1	1	0.15	0.15	U	U		1	1	0.15	0.15	U	U		1	1	0.15	0.15	U	U		1	1	0.15
VOLATILES	1,2,3-Trichloropropane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,2,4-Trimethylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,2-Dichloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	5.68				1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3,5-Trimethylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3-Dichloropropane	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	2,2-Dichloropropane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	2-Butanone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	2-Chloroethyl vinyl ether	ug/L	2	U	U		1	10	2	2	U	U		1	10	2	2	U	U		1	10	2	2	U	U		1	10	2
VOLATILES	2-Chlorotoluene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	2-Hexanone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	4-Chlorotoluene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Acetone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Benzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.177	J	J		15	1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Bromobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Bromochloromethane	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Bromoform	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Bromomethane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Carbon disulfide	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25

Table B-3
Groundwater Analytical Results
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		LOCATION_CODE	17WW04							17WW05							17WW06							17WW07						
		SAMPLE_NO	17WW04-030209							17WW05-022509							17WW06-030509							17WW07-022509						
		SAMPLE_DATE	2-Mar-09							25-Feb-09							5-Mar-09							25-Feb-09						
		PURPOSE	REG							REG							REG							REG						
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL
VOLATILES	Chlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Chloroethane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Chloroform	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Chloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	13				1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dibromomethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dichlorodifluoromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Ethylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Hexachlorobutadiene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	m,p-Xylenes	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Methylene chloride	ug/L	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25
VOLATILES	Naphthalene	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	n-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	n-PROPYLBENZENE	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	sec-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Styrene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	tert-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Tetrachloroethene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Toluene	ug/L	0.25	U	U		1	1	0.25	0.451	J	J		15	1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	2.38				1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Trichloroethene	ug/L	0.914	J	J		15	1	1	0.25	0.25	U	U		1	1	0.25	176				2	2	0.5	0.25	U	U		1	1	0.25
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Vinyl acetate	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Vinyl chloride	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25

Table B-3
Groundwater Analytical Results
February/March 2009

	LOCATION_CODE	17WW08							17WW09							17WW10							17WW10							17WW11						
	SAMPLE_NO	17WW08-022509							17WW09-022609							17WW10-022609							17WW10-022609-FD							17WW11-022609						
	SAMPLE_DATE	25-Feb-09							26-Feb-09							26-Feb-09							26-Feb-09							26-Feb-09						
	PURPOSE	REG							REG							REG							FD							REG						
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL
DHE	Dehalococcoides	cells/ml																																			
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	ORTHOPHOSPHATE	mg/L																																			
GEN CHEMISTRY	Perchlorate	ug/L	0.22	U	U		2	2	0.22	0.11	U	U		1	1	0.11	0.55	U	U		5	5	0.55	0.55	U	U		5	5	0.55	290				10	10	1.1
GEN CHEMISTRY	Sulfate	mg/L																																			
GEN CHEMISTRY	Sulfide	mg/L																																			
GEN CHEMISTRY	Total Alkalinity	mg/L																																			
GEN CHEMISTRY	Total Organic Carbon	mg/L																																			
METALS	Antimony	mg/L								0.00025	U	U		1	0.001	0.00025																						
METALS	Arsenic	mg/L																																			
METALS	Chromium	mg/L																																			
METALS	Nickel	mg/L																													2.84				50	0.2	0.05
METALS	Thallium	mg/L								0.00005	U	U		1	0.0002	0.00005																						
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1,1-Trichloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1-Dichloroethane	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,1-Dichloroethene	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	1,1-Dichloropropene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2,3-Trichlorobenzene	ug/L	0.15	U	U		1	1	0.15	0.15	U	U		1	1	0.15	0.15	U	U		1	1	0.15	0.15	U	U		1	1	0.15	0.15	U	U		1	1	0.15
VOLATILES	1,2,3-Trichloropropane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,2,4-Trimethylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,2-Dichloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3,5-Trimethylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3-Dichloropropane	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	2,2-Dichloropropane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	2-Butanone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	2-Chloroethyl vinyl ether	ug/L	2	U	U		1	10	2	2	U	U		1	10	2	2	U	U		1	10	2	2	U	U		1	10	2	2	U	U		1	10	2
VOLATILES	2-Chlorotoluene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	2-Hexanone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	4-Chlorotoluene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Acetone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Benzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Bromobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Bromochloromethane	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Bromoform	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Bromomethane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Carbon disulfide	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25

Table B-3
Groundwater Analytical Results
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		LOCATION_CODE	17WW08							17WW09							17WW10							17WW10							17WW11						
		SAMPLE_NO	17WW08-022509							17WW09-022609							17WW10-022609							17WW10-022609-FD							17WW11-022609						
		SAMPLE_DATE	25-Feb-09							26-Feb-09							26-Feb-09							26-Feb-09							26-Feb-09						
		PURPOSE	REG							REG							REG							FD							REG						
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL
VOLATILES	Chlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Chloroethane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Chloroform	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.711	J	J		15	1	1	0.125
VOLATILES	Chloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dibromomethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dichlorodifluoromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Ethylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Hexachlorobutadiene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	m,p-Xylenes	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Methylene chloride	ug/L	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25
VOLATILES	Naphthalene	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	n-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	n-PROPYLBENZENE	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	sec-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Styrene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	tert-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Tetrachloroethene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Toluene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Trichloroethene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Vinyl acetate	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Vinyl chloride	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25

Table B-3
Groundwater Analytical Results
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		LOCATION_CODE	17WW11							17WW12							17WW13							17WW14						
		SAMPLE_NO	17WW11-033009							17WW12-022609							17WW13-030309							17WW14-022509						
		SAMPLE_DATE	30-Mar-09							26-Feb-09							3-Mar-09							25-Feb-09						
		PURPOSE	REG							REG							REG							REG						
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL
DHE	Dehalococcoides	cells/ml																												
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	ORTHOPHOSPHATE	mg/L																												
GEN CHEMISTRY	Perchlorate	ug/L	990				10	10	1.1	0.22	U	U		2	2	0.22	0.55	U	U		5	5	0.55	0.55	U	U		5	5	0.55
GEN CHEMISTRY	Sulfate	mg/L																												
GEN CHEMISTRY	Sulfide	mg/L																												
GEN CHEMISTRY	Total Alkalinity	mg/L																												
GEN CHEMISTRY	Total Organic Carbon	mg/L																												
METALS	Antimony	mg/L															0.00025	U	U		1	0.001	0.00025							
METALS	Arsenic	mg/L																												
METALS	Chromium	mg/L																												
METALS	Nickel	mg/L																												
METALS	Thallium	mg/L								0.00005	U	U		1	0.0002	0.00005	0.00005	U	U		1	0.0002	0.00005	0.00005	U	U		1	0.0002	0.00005
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1,1-Trichloroethane	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L								0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,1,2-Trichloroethane	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1-Dichloroethane	ug/L								0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,1-Dichloroethene	ug/L								0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	1,1-Dichloropropene	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2,3-Trichlorobenzene	ug/L								0.15	U	U		1	1	0.15	0.15	U	U		1	1	0.15	0.15	U	U		1	1	0.15
VOLATILES	1,2,3-Trichloropropane	ug/L								0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	1,2,4-Trichlorobenzene	ug/L								0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,2,4-Trimethylbenzene	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L								1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1
VOLATILES	1,2-Dibromoethane	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dichlorobenzene	ug/L								0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,2-Dichloroethane	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dichloropropane	ug/L								0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3,5-Trimethylbenzene	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3-Dichlorobenzene	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3-Dichloropropane	ug/L								0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,4-Dichlorobenzene	ug/L								0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	2,2-Dichloropropane	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	2-Butanone	ug/L								2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	2-Chloroethyl vinyl ether	ug/L								2	U	U		1	10	2	2	U	U		1	10	2	2	U	U		1	10	2
VOLATILES	2-Chlorotoluene	ug/L								0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	2-Hexanone	ug/L								2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	4-Chlorotoluene	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Acetone	ug/L								2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Benzene	ug/L								0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Bromobenzene	ug/L								0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Bromochloromethane	ug/L								0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	Bromodichloromethane	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Bromoform	ug/L								0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Bromomethane	ug/L								0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Carbon disulfide	ug/L								0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Carbon tetrachloride	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25

Table B-3
Groundwater Analytical Results
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		LOCATION_CODE	17WW11							17WW12							17WW13							17WW14						
		SAMPLE_NO	17WW11-033009							17WW12-022609							17WW13-030309							17WW14-022509						
		SAMPLE_DATE	30-Mar-09							26-Feb-09							3-Mar-09							25-Feb-09						
		PURPOSE	REG							REG							REG							REG						
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL
VOLATILES	Chlorobenzene	ug/L								0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Chloroethane	ug/L								0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Chloroform	ug/L								0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Chloromethane	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	cis-1,2-Dichloroethene	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	cis-1,3-Dichloropropene	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dibromochloromethane	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dibromomethane	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dichlorodifluoromethane	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Ethylbenzene	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Hexachlorobutadiene	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Isopropylbenzene	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	m,p-Xylenes	ug/L								0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Methyl isobutyl ketone	ug/L								2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Methylene chloride	ug/L								0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25
VOLATILES	Naphthalene	ug/L								0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	n-BUTYLBENZENE	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	n-PROPYLBENZENE	ug/L								0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	p-ISOPROPYLTOLUENE	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	sec-BUTYLBENZENE	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Styrene	ug/L								0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	tert-BUTYLBENZENE	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Tetrachloroethene	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Toluene	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	trans-1,2-Dichloroethene	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	trans-1,3-Dichloropropene	ug/L								0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Trichloroethene	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Trichlorofluoromethane	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Vinyl acetate	ug/L								2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Vinyl chloride	ug/L								0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25

Table B-3
Groundwater Analytical Results
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	LOCATION_CODE	17WW15							17WW16							17WW17							17WW18							MW-18						
	SAMPLE_NO	17WW15-022609							17WW16-022609							17WW17-030409							17WW18-030309							MW-18-030309						
	SAMPLE_DATE	26-Feb-09							26-Feb-09							4-Mar-09							3-Mar-09							3-Mar-09						
	PURPOSE	REG							REG							REG							REG							REG						
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL
DHE	Dehalococcoides	cells/ml															10	U			1	10	10														
GASES	Ethane	ug/L															1	U	U		1	5	1														
GASES	Ethylene	ug/L															3.27	J	J	15	1	5	1														
GASES	Methane	ug/L															201				1	5	1														
GEN CHEMISTRY	Chloride	mg/L																																			
GEN CHEMISTRY	Nitrate	mg/L															0.2	U	U		2	1.2	0.2														
GEN CHEMISTRY	Nitrite	mg/L															0.2	U	U		2	0.8	0.2														
GEN CHEMISTRY	ORTHOPHOSPHATE	mg/L															0.025	U	U		1	0.05	0.025														
GEN CHEMISTRY	Perchlorate	ug/L	0.11	U	U		1	1	0.11	0.44	U	U		4	4	0.44	0.22	U	U		2	2	0.22	0.44	U	U		4	4	0.44	0.11	U	U		1	1	0.11
GEN CHEMISTRY	Sulfate	mg/L															3.5				2	2	1														
GEN CHEMISTRY	Sulfide	mg/L															0.5	U	U		1	1	0.5														
GEN CHEMISTRY	Total Alkalinity	mg/L															12.8				1	10	5														
GEN CHEMISTRY	Total Organic Carbon	mg/L															1.81				1	1	0.5														
METALS	Antimony	mg/L																																			
METALS	Arsenic	mg/L																																			
METALS	Chromium	mg/L																																			
METALS	Nickel	mg/L																																			
METALS	Thallium	mg/L																													0.00005	U	U		1	0.0002	0.00005
VOLATILES	1,1,1,2-Tetrachloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1,1-Trichloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1,2,2-Tetrachloroethane	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,1,2-Trichloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,1-Dichloroethane	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	1.94				1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,1-Dichloroethene	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	1.92				1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	1,1-Dichloropropene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2,3-Trichlorobenzene	ug/L	0.15	U	U		1	1	0.15	0.15	U	U		1	1	0.15	0.15	U	U		1	1	0.15	0.15	U	U		1	1	0.15	0.15	U	U		1	1	0.15
VOLATILES	1,2,3-Trichloropropane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	1,2,4-Trichlorobenzene	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,2,4-Trimethylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	1.44				1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dibromo-3-chloropropane	ug/L	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1	1	U	U		1	5	1
VOLATILES	1,2-Dibromoethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dichlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	1,2-Dichloroethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.274	J	J	15	1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,2-Dichloropropane	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,2-Dimethylbenzene (o-Xylene)	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3,5-Trimethylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.455	J	J	15	1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3-Dichlorobenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	1,3-Dichloropropane	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	1,4-Dichlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	2,2-Dichloropropane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	2-Butanone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	2-Chloroethyl vinyl ether	ug/L	2	U	U		1	10	2	2	U	U		1	10	2	2	U	U		1	10	2	2	U	U		1	10	2	2	U	U		1	10	2
VOLATILES	2-Chlorotoluene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	2-Hexanone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	4-Chlorotoluene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Acetone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Benzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Bromobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Bromochloromethane	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	Bromodichloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Bromoform	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Bromomethane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Carbon disulfide	ug/L	0.5	U	U		1	1	0.5	4.3				1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Carbon tetrachloride	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Chlorobenzene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125

Table B-3
Groundwater Analytical Results
February/March 2009

		LOCATION_CODE	17WW15							17WW16							17WW17							17WW18							MW-18						
		SAMPLE_NO	17WW15-022609							17WW16-022609							17WW17-030409							17WW18-030309							MW-18-030309						
		SAMPLE_DATE	26-Feb-09							26-Feb-09							4-Mar-09							3-Mar-09							3-Mar-09						
		PURPOSE	REG							REG							REG							REG							REG						
Test Group	Parameter	Units	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL	Result	Qual	ValQual	RC	DF	DL	MDL
VOLATILES	Chloroethane	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Chloroform	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	Chloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	cis-1,2-Dichloroethene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	46				1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	cis-1,3-Dichloropropene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dibromochloromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dibromomethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Dichlorodifluoromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Ethylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Hexachlorobutadiene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Isopropylbenzene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	m,p-Xylenes	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Methyl isobutyl ketone	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Methylene chloride	ug/L	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25	0.25	U	U		1	5	0.25
VOLATILES	Naphthalene	ug/L	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2	0.252	J	J	15	1	1	0.2	0.2	U	U		1	1	0.2	0.2	U	U		1	1	0.2
VOLATILES	n-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	n-PROPYLBENZENE	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.171	J	J	15	1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	p-ISOPROPYLTOLUENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	sec-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Styrene	ug/L	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125	0.125	U	U		1	1	0.125
VOLATILES	tert-BUTYLBENZENE	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Tetrachloroethene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Toluene	ug/L	0.424	J	J	15	1	1	0.25	0.823	J	J	15	1	1	0.25	0.346	J	J	15	1	1	0.25	0.373	J	J	15	1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	trans-1,2-Dichloroethene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.497	J	J	15	1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	trans-1,3-Dichloropropene	ug/L	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5	0.5	U	U		1	1	0.5
VOLATILES	Trichloroethene	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	10.8				1	1	0.25	0.25	U	U		1	1	0.25	0.677	J	J	15	1	1	0.25
VOLATILES	Trichlorofluoromethane	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25
VOLATILES	Vinyl acetate	ug/L	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5	2.5	U	U		1	10	2.5
VOLATILES	Vinyl chloride	ug/L	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25	0.25	U	U		1	1	0.25

Notes and Abbreviations:

15 - quantitation

DF - dilution factor

DL - detection limit

J - The analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.

MDL - method detection limit

mg/L - milligrams per liter

ug/L - microgams per liter

Qual - qualifier

RC - reason code

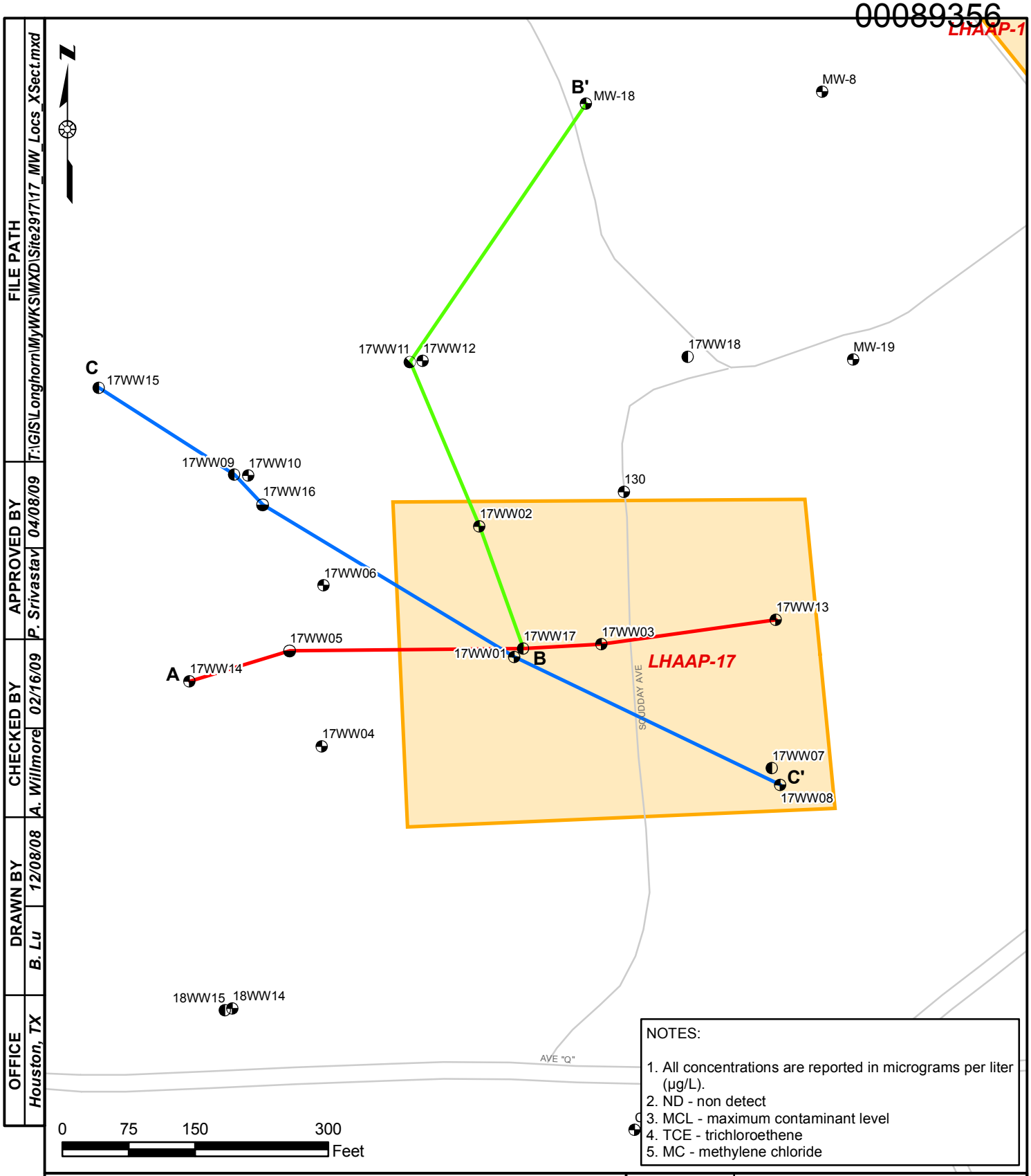
Reg - regular sample

U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.

ValQual - validation qualifier

Figures

00089356



NOTES:

1. All concentrations are reported in micrograms per liter (µg/L).
2. ND - non detect
3. MCL - maximum contaminant level
4. TCE - trichloroethene
5. MC - methylene chloride

LEGEND

- Shallow Monitoring Well
- Shallow/Intermediate Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- Stream
- Road
- Site

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE B-1

MONITORING WELL LOCATIONS
LHAAP-17 FEASIBILITY STUDY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

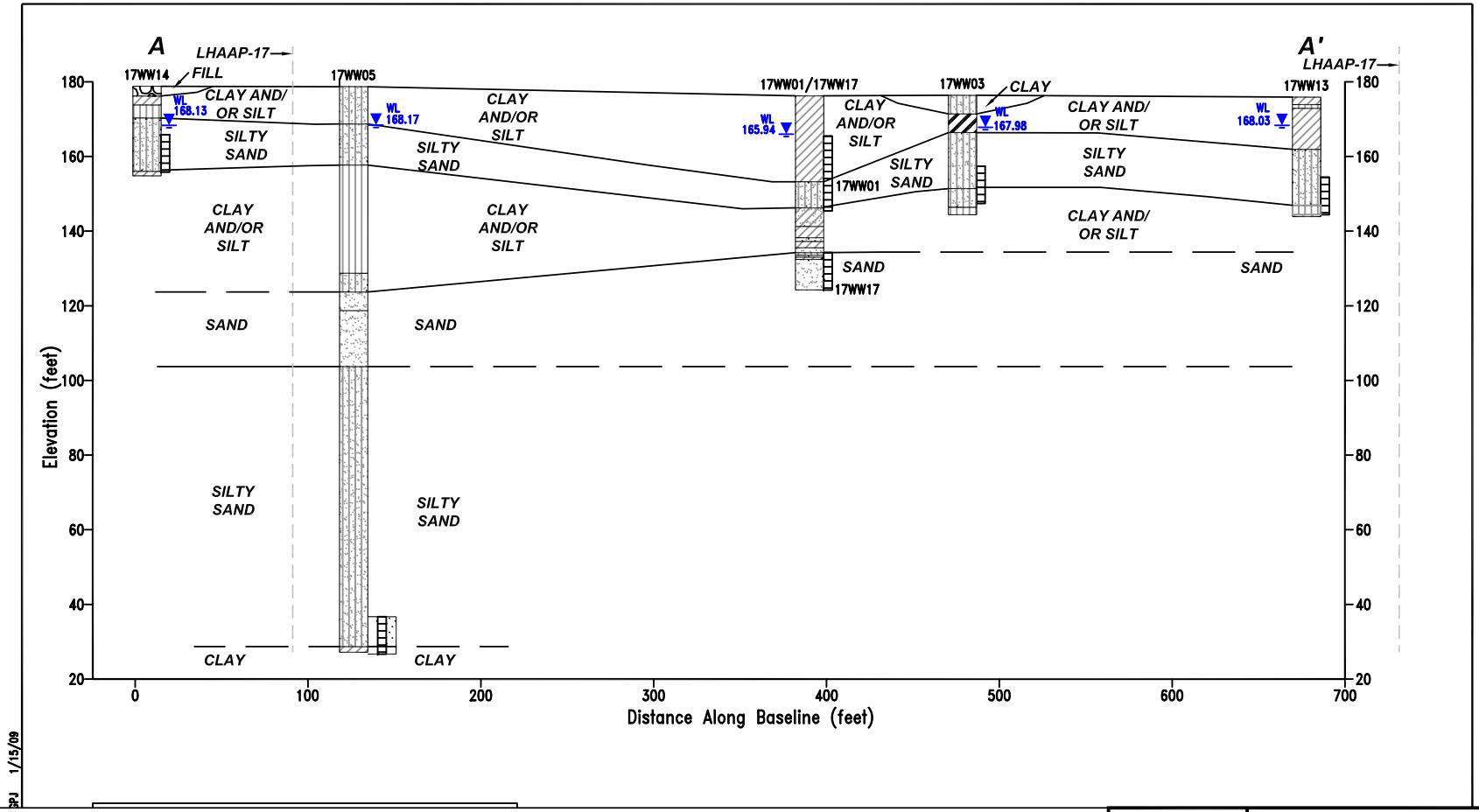
OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		FILE PATH
Houston, TX	B. Lu	12/08/08	A. Willmore	02/16/09	P. Srivastav	04/08/09	T:\GIS\Longhorn\MyWKS\MXD\Site2917\17_MW_Locs_XSect.mxd

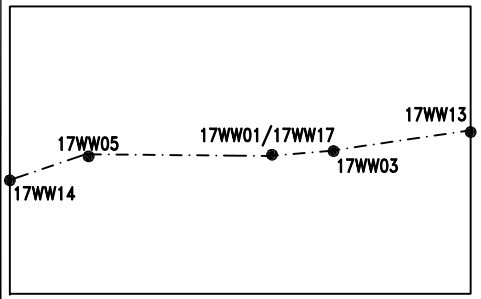
Plot Date: 02/09

00089357

PLOT DATE: 12/19/08
FORMAT REVISION

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	---	HOUSTON, TX	L. JONES	01/13/09	A. WILLMORE	01/13/09	P. SRIVASTAV	04/08/09	117591-A53





LEGEND:

- CLAY
- SAND
- SILT
- SANDY SILT
- WL (WATER LEVEL)
- SCREEN

NOTES:

1.) SYMBOLS ARE DERIVED FROM THE UNITED SOIL CLASSIFICATION SYSTEM.

2.) NO WATER LEVEL DATA FOR 17WW17.

3.) WATER ELEVATION DATA IS FROM NOVEMBER 2007.

Shaw

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE B-2

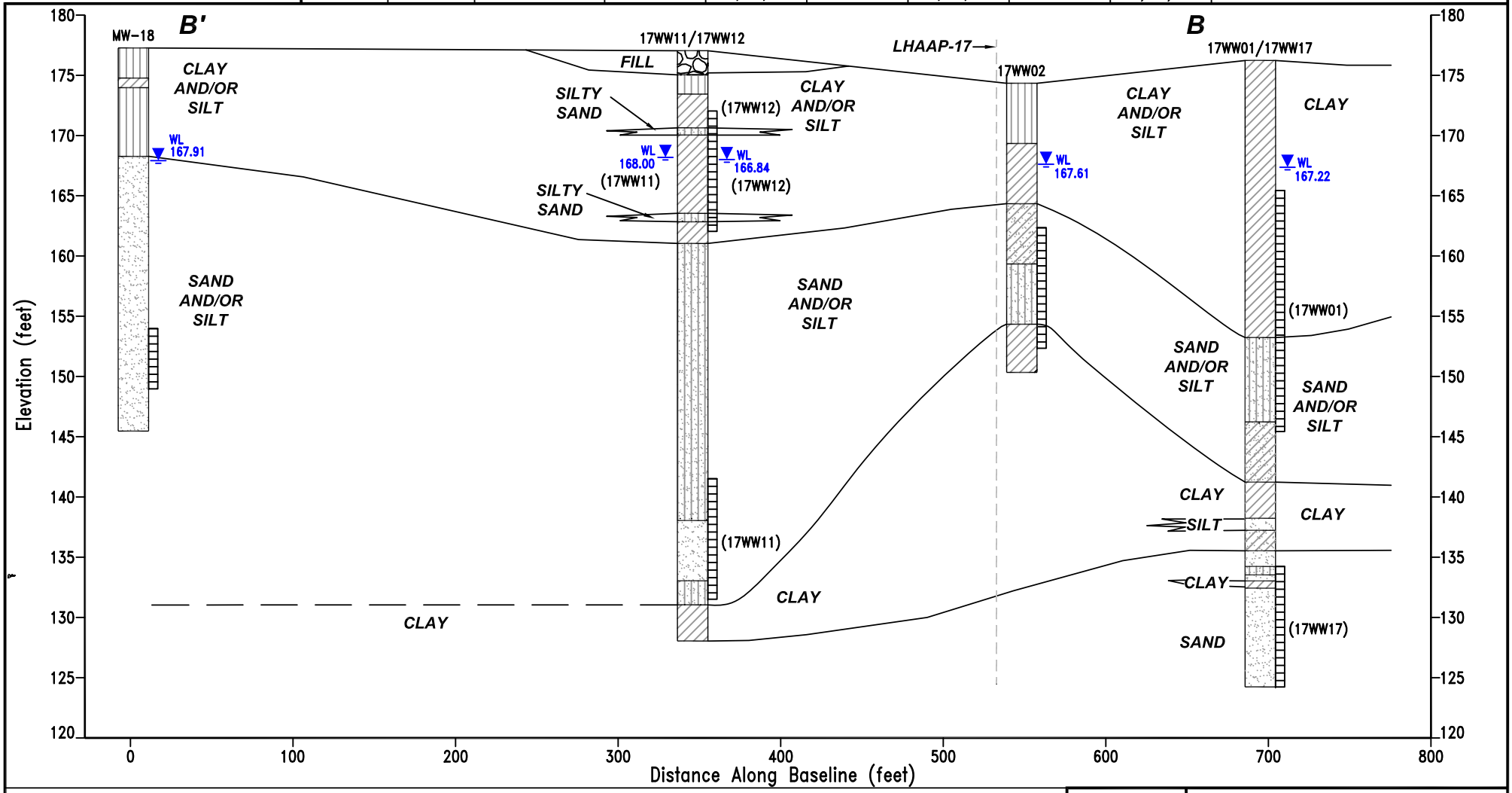
CROSS SECTION A-A'
LHAAP-17

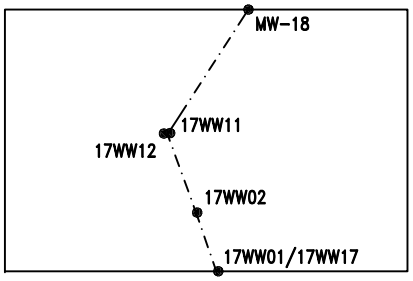
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00089358

PLOT DATE: 12/19/08
FORMAT REVISION

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	---	HOUSTON, TX	L. JONES	01/13/09	A. WILLMORE	01/13/09	P. SRIVASTAV	04/08/09	117591-A53





LEGEND:

- CLAY
- SAND
- SILT
- SANDY SILT
- WL (WATER LEVEL)
- SCREEN

NOTES:

1.) SYMBOLS ARE DERIVED FROM THE UNITED SOIL CLASSIFICATION SYSTEM.

2.) NO WATER LEVEL DATA FOR 17WW17.

3.) WATER ELEVATION DATA IS FROM NOVEMBER 2007.

Shaw

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE B-3

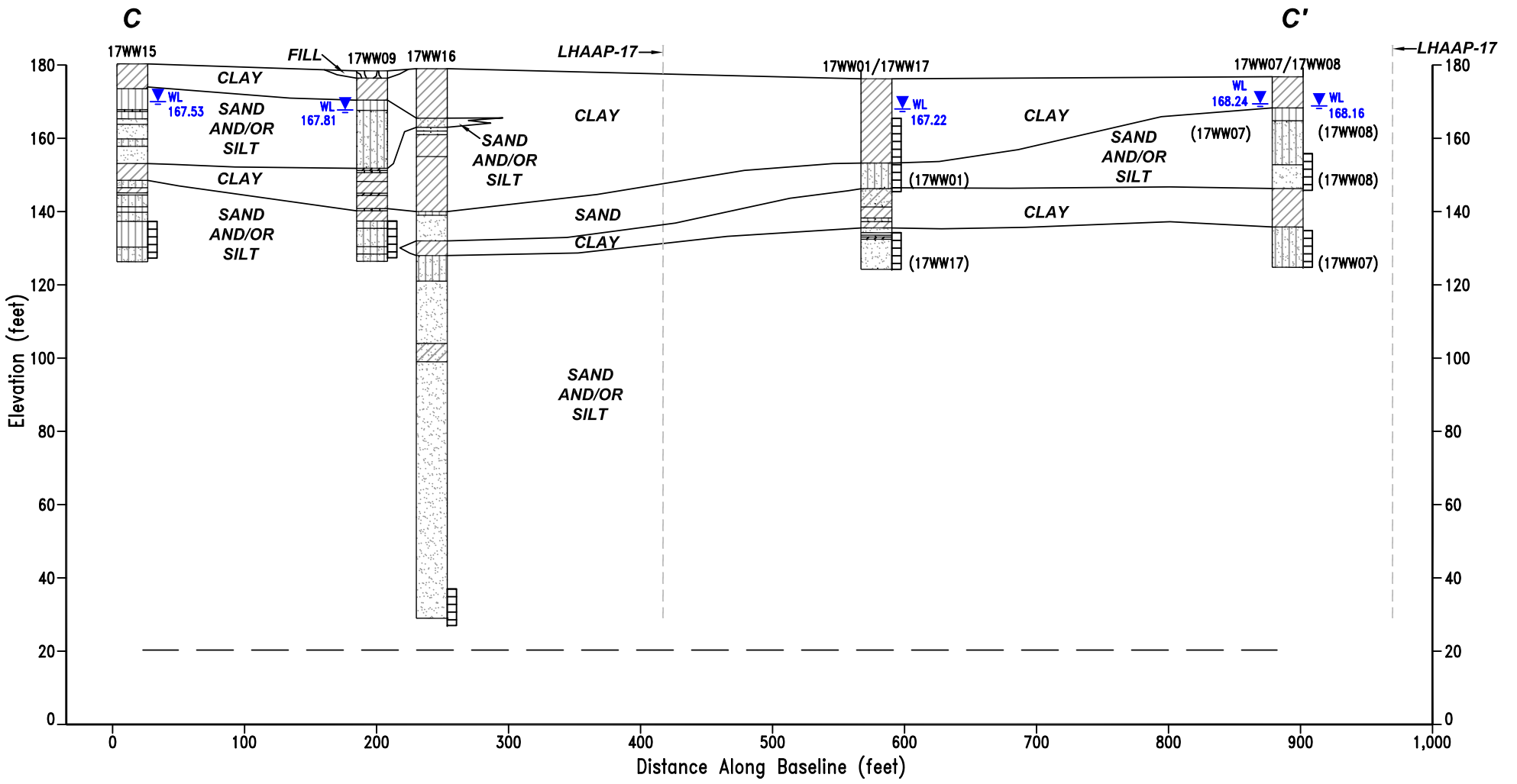
CROSS SECTION B-B'
LHAAP-17

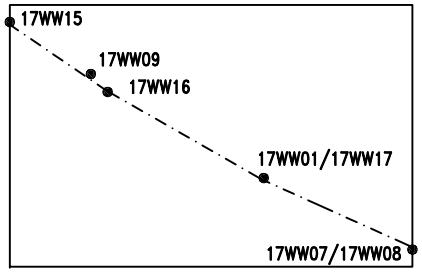
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00089359

PLOT DATE: 12/19/08
FORMAT REVISION

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	---	HOUSTON, TX	L. JONES	01/13/09	A. WILLMORE	01/13/09	P. SRIVASTAV	04/08/09	117591-A53





LEGEND:

- CLAY
- SAND
- SILT
- SANDY SILT
- WL (WATER LEVEL)
- SCREEN

NOTE:

1.) SYMBOLS ARE DERIVED FROM THE UNITED SOIL CLASSIFICATION SYSTEM.

2.) NO WATER LEVEL DATA FOR 17WW16, 17WW17 AND 17WW18.

3.) WATER LEVEL DATA IS FROM NOVEMBER 2007.

Shaw

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE B-4

CROSS SECTION C-C'
LHAAP-17

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Attachment 1

Monitoring Well Drilling Logs

00089361

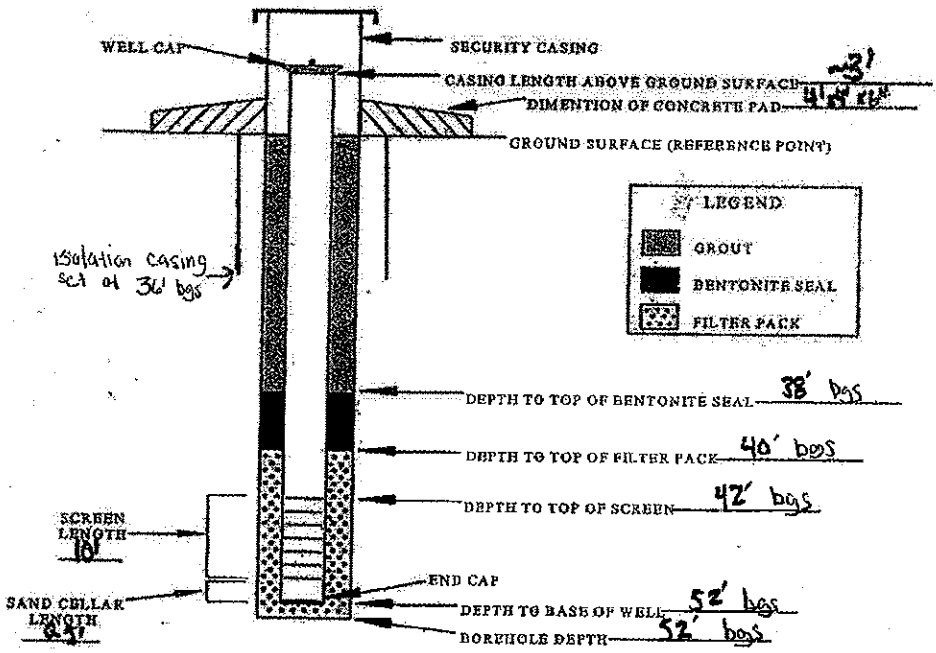
17WW17

WELL COMPLETION FORM (Stickup or Above Grade Completion Well)

FIELD REPRESENTATIVE: Allen Willmore
DRILLING CONTRACTOR: JEDI
DRILLING TECHNIQUE: Hollow Stem
AUGER SIZE AND TYPE:
BOREHOLE IDENTIFICATION: 17WW17
BOREHOLE DIAMETER: 8"
WELL IDENTIFICATION: 17WW17
WELL CONSTRUCTION START DATE: 2/15/08
WELL CONSTRUCTION COMPLETE DATE: 2/15/08
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: SILICA SAND
GRADIATION: #20/40
AMOUNT OF FILTER PACK USED: ~1 - 50 lb bags
TYPE OF BENTONITE: Bentonite chips
AMOUNT BENTONITE USED: ~1/2 50 lb bucket
TYPE OF CEMENT: Portland - Cement
AMOUNT CEMENT USED: 8 - 94 lb bags
GROUT MATERIALS USED: bentonite slurry
DIMENSIONS OF SECURITY CASING: 8" x 8"
TYPE OF WELL CAP: locking cap
TYPE OF END CAP: PVC to cap
COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: OSCAR GARCIA (JEDI) INSTALLATION OBSERVED BY: ALLEN WILLMORE (CSHAB)

DISCREPANCIES: Isolation casing set at 36' bgs; Isolation casing I.D. = 12", Isolation casing is PVC

00089362

HOLE NO. 17WW17

DRILLING LOG

DIVISION: FEDERAL

INSTALLATION: LHAAP

SHEET 1 OF 2 SHEETS

1. PROJECT: Longhorn Army Ammunition Plant
2. LOCATION (Coordinates or Station): Karnack, Texas
3. DRILLING AGENCY: JEDI
4. HOLE NO. (As shown on drawing title and file number): 17WW17
5. NAME OF DRILLER: Oscar Garcia
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED 0° DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: NA
8. DEPTH DRILLED INTO ROCK: NA
9. TOTAL DEPTH OF HOLE: 36'
10. SIZE AND TYPE OF BIT: 8"
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME-75
13. OVERBURDEN SAMPLES: DISTURBED ☐ UNDISTURBED ☒
14. TOTAL NUMBER CORE BOXES: NR
15. ELEVATION GROUND WATER: NR
16. DATE HOLE: STARTED 8/5/08 COMPLETED 8/14/08
17. ELEVATION TOP OF HOLE: NR
18. TOTAL CORE RECOVERY FOR BORING: 95 %

INSPECTOR: Allen Willmore

ELEVATION (FT) 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
0.0			Same lithology as 17WW01 to 30' bgs			Casing set @ 36' bgs
0.0						
21						
	30					
3.2			Sand, clayey, dense, well-sorted, dense, gray, wet			
		SC	- becomes moist			
1.6						
	35					
0.0		CL	CLAY, SANDY, No PLASTICITY, STIFF, No ODOR GRAY, SLIGHTLY MOIST TO DRY			
			Same as above			- SET CASING @ 36' BGS 8" PVC casing

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE: NR

Hole No. MWW17

PROJECT: LHAAP

INSTALLATION: LHAAP

SHEET 2 OF SHEETS

ELEVATION PID	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
0.0		SP	SAND, SILTY, LOOSE, WELL-SORTED, SATURATED, GRAY, NO ODOR			
	40	CL	CLAY, SILTY, STIFF, LOW PLASTICITY, GRAY, MOIST, NO ODOR			
0.0		SP	SAND, SILTY, MEDIUM DENSE, WELL-SORTED, MOIST, NO ODOR, GRAY			
		SM	SILT, clayey, LOW PLAST., DENSE, MOIST, GRAY			
0.0		SP	SAND, SILTY, MEDIUM DENSE, WELL-SORTED, WET, GRAY			
		CL	CLAY, SANDY, LOW PLAST, WET, GRAY			
			SAND, SILTY, MEDIUM DENSE, WELL-SORTED, WET, NO ODOR			
0.0	45					
		SP				
0.0						
0.0						
	50		-BECOMES MORE DENSE			
0.0						
			END OF BORING @ 52' bgs			

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MAR 71

PROJECT LHAAP HOLE NO. MWW17

00089364

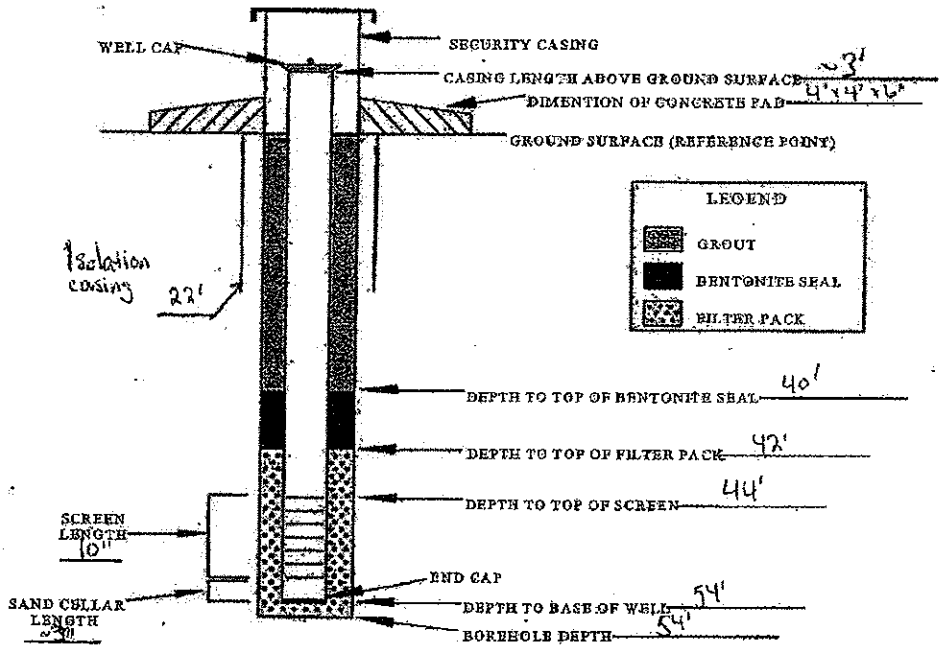
17WW18

WELL COMPLETION FORM (Stickup or Above Grade Completion Well)

FIELD REPRESENTATIVE: Allen Willmon
DRILLING CONTRACTOR: ETL
DRILLING TECHNIQUE: HSA
AUGER SIZE AND TYPE: 6"
BOREHOLE IDENTIFICATION: 17WW18
BOREHOLE DIAMETER: 10"
WELL IDENTIFICATION: 17WW18
WELL CONSTRUCTION START DATE: 9/25/08
WELL CONSTRUCTION COMPLETE DATE: 9/26/08
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 silica sand
GRADIATION: 20/40
AMOUNT OF FILTER PACK USED: 9 bags
TYPE OF BENTONITE: bentonite pellets
AMOUNT BENTONITE USED: 1-5gal bucket
TYPE OF CEMENT: Portland cement
AMOUNT CEMENT USED: ~5-6 94 lb bags
GROUT MATERIALS USED: Grout
DIMENSIONS OF SECURITY CASING: 6"x6"
TYPE OF WELL CAP: plugging cap
TYPE OF END CAP: PVC
COMMENTS:

SPECIAL CONDITIONS
(describe and draw)



NOT TO SCALE

INSTALLED BY: Tommy Cook
INSTALLATION OBSERVED BY: Allen Willmon
DISCREPANCIES: None

00089365

HOLE NO. 17WW18

BORING LOG	DIVISION: Federal	INSTALLATION: LHAAP	SHEET 1 OF 4 SHEETS
1. PROJECT: LHAAP		9. DATUM FOR ELEVATION SHOWN (TBM or MSL):	
2. LOCATION: Karnack, Tx		10. MANUFACTURER'S DESIGNATION OF DRILL: Foremost 5500/Mayhew 500	
3. DRILLING AGENCY: ETTL		11. OVERBURDEN SAMPLES: DISTURBED: -	UNDISTURBED: -
4. HOLE NO. (As shown on drawing title and file number): 17WW18		12. TOTAL NUMBER CORE BOXES: NA	
5. NAME OF DRILLER: Doug Hinds / Tommy Cook		13. ELEVATION GROUND WATER: NA	
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED 5° DEG. FROM VERT.		14. DATE HOLE: STARTED 9/25/08	COMPLETED 9/30/08
7. TOTAL DEPTH OF HOLE: 54'		15. ELEVATION TOP OF HOLE: ~~TOC~~ = 178.68 ft	
8. SIZE AND TYPE OF BIT: 10" tri-cone roller bit/ 10" H.S.A.		16. TOTAL CORE RECOVERY FOR BORING: 100 %	
		17. LOGGED BY: A. Willmore	QC: RE

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
0.0	0		CLAY, Sandy, low to no plasticity, mottling, soft, dry no odor			11:20- Began drilling 9/25/08 17WW18
				50%		Casing to be set @ 23' bgs.
0.0						Well set @ ~54' bgs
	5	CL				
1.7				100%		
0.0						
0.0	10			100%		
			-Becomes more sandy			
3.2			Sand, clayey, dense, well-sorted, wet	~~100%~~ TOR		

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE TOC = 178.68 | Hole No. 17WW18

PROJECT: LHAAP - 46 | INSTALLATION: LHAAP | SHEET 2 OF 4 SHEETS

ELEVATION MSL (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)
4.6						
	15		- Becomes less clayey, loose			
8.7			- mottling	100%		
9.3						
	20					
7.1				100%		
			- Becomes more dense			
14.1			CLAY, SANDY			
				100%		
	25		SILT, clayey, DENSE, GRAY, POORLY-SORTED, MOIST, MILD ODOR			
28.2				95%		
7.1			- Becomes silty, WET, LOOSE	75%		

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PROJECT: LHAAP-17 | HOLE NO. AWW 18

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE Toc = 178.68 | Hole No. 17WW18

PROJECT LHAAP-317 | INSTALLATION LHAAP | SHEET 3 OF 4 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)
14.6	30		Same As Above	95%		
7.3				95%		
14.1				95%		
	35					
17.1				100%		
				60%		
4.2						
	40			70%		
3.1						
4.2				80%		
16.2				80%		
	45					

ENG FORM 1836—APREVIOUS EDITIONS ARE OBSOLETE. MAR 71

PROJECT LHAAP | HOLE NO. 17WW18

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE TOC = 178.68 | Hole No. 17 WW18

PROJECT LHAAP-17 | INSTALLATION LHAAP | SHEET 4 OF 4 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)
3.0			Same as above	75%		
7.1				75%		
14.3	50			80%		
16.7				100%		
21.1		MLS	SILT, SANDY, DARK GRAY, MOIST, DENSE, POORLY-SORTED, ORGANICS, NO ODOR	100%		
			END OF BORING			
	55					

ENG FORM 1836—APREVIOUS EDITIONS ARE OBSOLETE. MAR 71

PROJECT LHAAP | HOLE NO. AWW18

Attachment 2

Monitoring Well Development Records

00089370

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID 17MW17
SHEET 1 of 1

PROJECT NAME: Longhorn PROJECT NO.: 119591 DATE: 9/18/08

LOCATION: Karnack, TX DATE INSTALLED: 8/15/08

TOTAL DEPTH (FTOC) ~53.85' CASING DIAMETER 4"

METHODS OF DEVELOPMENT:

☐ Swabbing ☐ Bailing ☑ Pumping ☐ Describe Air lift w/ air compressor and 1" PVC

Equipment decontaminated prior to development ☐ Yes ☐ NO

Describe

EQUIPMENT NUMBERS:

pH Meter YSI (36919) Conductivity Meter YSI (36919) Turbidity Meter YSI (36919) Thermometer YSI (36919)

650 MDS 650 MDS 650 MDS

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: (used for calc.)

Measured Well Depth (B) 52' 53.55' ft. (actual)

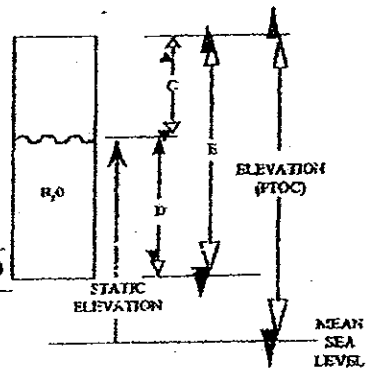
Measured Water Level Depth (C) 27 ft.

Length of Static Water Column (D) 52 (B) - 27 (C) = 25 ft.

Casing Water Volume (E) = 0.65 (A) x 25 (D) = 16.25 gal

5 x 16.25 = 81.25

Total Purge Volume = 110 (gal)



Date	Time	Water Level (FTOC)	Volume Removed (gal)	pH	EC	Temperature F or C	Turbidity/ Sand (ppm)	Comments
9/16/08	12:15	NR	8.48	6.69	1.553	18.52	87.1	Grayish
9/17/08	12:30	NR	65	6.75	1.525	18.81	18.1	clear
9/17/08	12:40	NR	80	6.61	1.548	18.83	12.7	clear
9/17/08	13:50	NR	81.2	6.63	1.538	18.82	8.1	clear

FIGURE 5

00089371

WELL DEVELOPMENT RECORD

WELL/PIEZOMETER ID MW018
SHEET 1 OF 1

PROJECT NAME: Longhorn PROJECT NO.: 119591 DATE: 10/3/08

LOCATION: Kennedy, TX DATE INSTALLED: ~~D.~~ 9/30/08

TOTAL DEPTH (FTOC) ~57 CASING DIAMETER 4"

METHODS OF DEVELOPMENT

☐ Swabbing ☑ Bailing ☑ Pumping ☐ Describe

Equipment decontaminated prior to development ☐ Yes ☐ No

Describe Developed using disposable bailer

EQUIPMENT NUMBERS

pH Meter YSI EC Meter YSI Turbidity Meter YSI Thermometer YSI

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

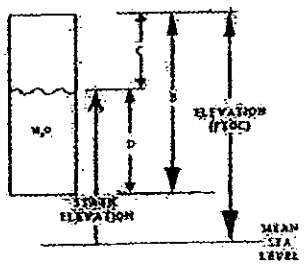
Measured Well Depth B 57 ft.

Measured Water Level Depth (C) 11.4 ft.

Length of Static Water Column (D) 57 (B) − 11.4 (C) = 45.6 ft.

Casing Water Volume (E) 0.65 (A) × 45.6 (D) = 29.6 gal

Total Purge Volume = 150 gal



Date	Time	Water Level (FTOC)	Volume Removed (gal)	pH	EC	Temperature F or C	Turbidity/ Sand (ppm)	Comments
9/3/08	10:05	ND	30	5.77	2.001	19.14	NA	Murky
10/3/08	10:15	↓	60	6.31	2.031	19.16	400.3	cloudy
10/3/08	10:25		90	6.76	2.342	19.24	106.2	clear
10/3/08	10:39		120	6.74	2.346	19.84	74.1	clear
10/3/08	10:46		150	6.81	2.306	19.27	43.1	clear

Attachment 3

Groundwater Sampling Forms

FEBRUARY 2007

00089374

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP-17
Project Name/#: 117591
Weather: Rain

Sampling location ID: 17WW01
Sample ID: 17WW01-Feb 2007
Collection Time/Date: 2/20/07

Pump Installation

Pump installation crew: DLW / WMW
PID/FID reading (well head/background): 20.1
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 9.48 33.63
Initial (pre-installation) DTW/time: 9.48
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: 2/20/07 12:45
Installation date/completion time: 2/20/07 13:05
Screen Interval (ft. BTOC): 23.63 to 33.63
Pump intake depth (ft BTOC): 28.63
Post-installation DTW/time: 9.37 15:05
Max. sustainable pump rate (mL/min): 200
Appearance of product: Cloudy
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 = 20 psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20								
Refill Setting	10								
Discharge Setting	5								
Flow rate (mL/min)	200								

Purging

Purging/sampling crew: DLW / WMW
Purge date/beginning time: 2/20/07
Initial (pre-purging) DTW (ft. BTOC): 9.48 9.68
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 20.1
Purge date/completion time: 2/20/07
Final (post-purging) DTW (ft. BTOC):
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:

Initial air pressure = H (ft.) X 0.43 = 20 psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	20								
Refill Setting	10								
Discharge Setting	5								
Flow rate (mL/min)	200								

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (mL)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
	9.68								
13:15	9.48	200	200	18.31	3.906	5.91	50.0	.99	249
13:20	9.69	200	1200	18.3	3.936	5.87	50.1	.46	231.1
13:25	9.69	200	2200	18.35	3.95	5.84	50.3	.35	190.0
13:30	9.69	200	3200	18.34	3.958	5.85	50.4	.29	166.1
13:35	9.84								
13:35	9.72	200	4200	18.38	3.963	5.85	51.0	.26	142.8
13:40	9.73	200	5200	18.36	3.985	5.84	51.2	.24	115.9
13:45	9.73	200	6200	18.33	3.985	5.84	51.3	.25	113.6

00089375

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW01

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%
13:50	9.72	200	7200	18.36	3.998	5.85	57.5	.23	111.00
13:55	9.73	200	8200	18.40	4.001	5.85	50.0	.22	106.1
14:00	9.73	200	9200	18.44	4.017	5.5	48.3	.21	96.1
14:05	9.73	200	10200	18.46	4.026	5.85	47.9	.19	90.4
14:10	9.73	200	11200	18.58	4.084	5.92	57.5	2.81	87.4
14:15	9.73	200	12200	18.56	4.107	5.89	57.2	1.15	87.5
14:20	9.73	200	13200	18.57	4.119	5.87	56.2	.59	91.2
14:25	9.73	200	14200	18.59	4.142	5.87	55.0	.34	70.7
14:30	9.73	200	15200	18.64	4.153	5.87	54.3	.28	68.9
14:35	9.73	200	16200	18.52	4.165	5.87	53.2	.23	73.0
14:40	9.73	200	17200	18.59	4.172	5.87	52.0	.26	69.3
14:45	9.73	200	18200	18.68	4.189	5.87	50.9	.21	62.8
14:50	9.73	200	19200	18.73	4.207	5.88	50.3	.21	55.7
14:55	9.73	200	20200	18.63	4.223	4.92 5.88	49.6	.20	58.5

Sampling

Sampling beginning time: 15:10

Sampling completion time: 16:00

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)
14:55	9.73	200	20200	18.63	4.223	5.88	49.6	.20	58.5

Sample Information

Sample ID: 17WW01-Feb2007

Sample collection date/time: 2/20/07

Duplicate sample collected (Y/N): Y

Duplicate sample ID: 17WW01-Feb2007-FD

Split sample collected (Y/N): N

Split sample ID: NA

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC	8260	3-40ml VOA	Sulfides	376.2	1-500mL
Perchlorate	~~EPA~~ 314.1	1-500ml	Gases	RSK	3-40ml
Explosives	8330	1-1L Amber	Denitrococcoidles		2-1L Amber
TOC	415.1	3-40ml VOA	Alkalinity	310.1	1-1000 ml
NO_3,NO_2,Cl,~~Sulfate~~ SO_4	300	1-500ml			

Comments: 5, PO4

Due to the regulator freezing up after over an hour of pumping took sample but did not reach target level for turbidity (10/20)

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089376

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP-17
Project Name/#: LHAAP-MNA
Weather: Clear, 75-80°

Sampling location ID: 17WW02
Sample ID: 17WW02-FEB2007
Collection Time/Date:

Pump Installation

Pump installation crew: Olla / Winzer
PID/FID reading (well head/background): 5.8
Casing diameter (inches): 4" / Stainless Steel
Total well Depth (ft. BTOC): 24.98
Initial (pre-installation) DTW/time: 7.85
Final (after pump priming) DTW/time: 8.15
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.):

Installation date/beginning time: 2/22/07 13:50
Installation date/completion time: 2/22/07 13:54
Screen Interval (ft. BTOC): 19.98 to 24.98
Pump intake depth (ft BTOC): 19.98
Post-installation DTW/time: 7.65
Max. sustainable pump rate (mL/min):
Appearance of product: Clear to light silt
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					CW				
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Olla / Winzer
Purge date/beginning time: 2/22/07 13:55
Initial (pre-purging) DTW (ft. BTOC): 7.85
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 5.8
Purge date/completion time: 2/22/07
Final (post-purging) DTW (ft. BTOC): 8.15
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)	15	15							
Refill Setting	10	11							
Discharge Setting	5	4							
Flow rate (mL/min)	270	220							

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged gal	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
13:53	8.07	270	2000	17.75	3.983	6.76	16.4	2.06	37.1
13:58	8.15	220	3100	17.49	3.979	6.65	126.2	1.55	29.1
14:03	8.16	220	4200	17.43	3.980	6.62	131.6	1.37	20.9
14:08	8.15	220	5300	17.24	3.980	6.61	134.2	1.22	15.2
14:13	8.15	220	5400	17.26	3.991	6.60	130.4	1.14	12.0
14:18	8.15	220	5500	17.23	3.993	6.59	126.4	1.14	11.0
~~14:23~~									

00089377

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW02

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

CW

Sampling

Sampling beginning time: 14:18 Sampling completion time: 15:30

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (mL)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
14:18	8.15	220	5500	17.23	3.993	6.59	126.4	1.14	11.0

Sample Information

Sample ID: 17WW02-FEB 2007 Sample collection date/time: 2/22/07 14:18

Duplicate sample collected (Y/N): Y Duplicate sample ID: 17WW02-FEB 2007-FD

Split sample collected (Y/N): N Split sample ID:

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC	8260B	3-40mL VOA	Anions	300	1-L
Perchlorate	314.0	1-500mL	Alkalinity	310.1	1-1L
Gases	RSK	3-40mL VOA	Sulfide	326.2	1-500mL
TOC	415.1	3-40mL VOA	Dehalococcoides		2-1L Amber
Explosives	8330	2-1L Amber			

Comments: Sal. – 2.53, Fer. – 0.03

Took FD – 17WW02-FEB 2007-FD

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089378

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: LHAAP
Weather: Partly Cloudy 70-75°

Sampling location ID: 17WW05
Sample ID: 17WW05-FEB2007
Collection Time/Date: 2/23/07

Pump Installation

Pump installation crew: AW / CW
PID/FID reading (well head/background): 0.0
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 151
Initial (pre-installation) DTW/time: 12.88 / 14:05
Final (after pump priming) DTW/time: —
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): —
Discharge tube length (ft.): NA

Installation date/beginning time: 2/23/07 11:05
Installation date/completion time: 2/23/07 14:30
Screen Interval (ft. BTOC): 141 to 151
Pump intake depth (ft BTOC): 146
Post-installation DTW/time: 11.99 / 14:10
Max. sustainable pump rate (mL/min): —
Appearance of product: Slightly cloudy
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)									
Refill Setting				CW					
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: AW / CW
Purge date/beginning time: 2/23/07
Initial (pre-purging) DTW (ft. BTOC): 11.99
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 0.0
Purge date/completion time: 2/23/07
Final (post-purging) DTW (ft. BTOC): NA
No. of tubing + pump volumes purged: —

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	76								76
Refill Setting	20								20
Discharge Setting	10								10
Flow rate (mL/min)	100								100

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (mL)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
14:37	12.39	100	1500	20.97	1.271	8.11	187.9	3.98	37.6
14:42	12.51	100	2000	20.16	1.273	8.24	146.8	1.87	73.9
14:47	12.63	100	2500	20.14	1.291	8.25	127.1	1.21	77.9
14:52	12.89	100	3000	20.13	1.291	8.28	126.8	1.18	76.8
14:57	12.93	100	3500	19.90	1.297	8.28	120.3	0.95	73.9
15:02	13.15	100	4000	19.86	1.298	8.27	117.3	0.87	75.6
15:07	Cleared								
15:12									

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GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW05

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (mL)	Temp. (degree C) ± 10%	±3% Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10% (10 to 20)
15:17	13.69	100	5500	19.45	1.295	8.23	133.9	0.89	50.5
15:22	13.70	100	6000	19.29	1.297	8.24	109.3	0.56	30.8
15:27	13.72	100	6500	19.30	1.297	8.24	106.7	0.54	30.4
15:32	13.73	100	7000	19.31	1.297	8.24	106.1	0.53	30.1

Sampling

Sampling beginning time: 15:28 15:33

Sampling completion time: 16:30

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (mL)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
15:33	13.73	100	7000	19.31	1.297	8.24	106.1	0.53	30.1

Sample Information

Sample ID: 17 WW05-FEB 2007

Duplicate sample collected (Y/N): N

Split sample collected (Y/N): N

COC No(s):

Sample collection date/time: 2/23/07

Duplicate sample ID: NA

Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC	8260	3 - 40mL VOA	TOC	415	3 - 40mL VOA
Anions	300	1 - 500mL	DHC	Shaw	2 - 1L Amber
Perchlorate	314	1 - 500mL	Sulfides		1 - 1000mL
Gases	RSK	3 - 40mL VOA	Explosives		2 - 1L Amber
Alkalinity		1 - 1000mL			

Comments: Sul. - 0.65

Fer - 0.07

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

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GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: Longhorn MP
Weather: Hot Cloudy Low 80's

Sampling location ID: 17MW06
Sample ID: 17MW06-FEB2007
Collection Time/Date:

Pump Installation

Pump installation crew: A. Wilmore / C. Winzer
PID/FID reading (well head/background): 0.3
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 22.88
Initial (pre-installation) DTW/time: 10.40
Final (after pump priming) DTW/time: NA
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): 21.88

Installation date/beginning time: 2/23/07 1428
Installation date/completion time: 2/23/07 1430
Screen Interval (ft. BTOC): 12.88 to 22.88
Pump intake depth (ft BTOC): 17.88
Post-installation DTW/time: 10.33
Max. sustainable pump rate (mL/min): 120
Appearance of product: None
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)									

2/23/07

Purging

Purging/sampling crew: Allen Wilmore
Purge date/beginning time: 2/23/07
Initial (pre-purging) DTW (ft. BTOC): 10.88
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 0.0
Purge date/completion time: 2/23/07
Final (post-purging) DTW (ft. BTOC): 10.41
No. of tubing + pump volumes purged: NR

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	9								9
Refill Setting	10								10
Discharge Setting	5								5.5
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)
1605	10.41	120	600	17.55	4.320	6.88	20.7	6.66	11.1
1610	10.41	120	1200	17.55	4.322	6.88	21.1	0.64	10.7
1615	10.41	120	1800	17.36	4.295	6.74	18.9	0.48	9.9
1620	10.41	120	2400	17.29	4.299	6.76	17.1	0.41	9.6

2/23/07

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GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW06

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

2/23/07

Sampling

Sampling beginning time: 16:30

Sampling completion time: AW 16:50

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (mL)	Temp. (degree C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
1655	10.41	420	~10	17.16	4.272	6.62	76.8	0.31	5.2

Sample Information

Sample ID: 17ww06

Sample collection date/time: 2/23/07

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	8260	3-40 mL Voa Vials	Dehalococcoides	Shaw	2-1L Amber
D-Gases	RSK	3-40 mL Voa Vials	Explosives		2-1L Ambers
TOC	415	3-40 mL Voa Vials	Alkalinity		1-1L HDPE
Anions		1-1L HDPE	Perchlorate	314.0	1-1L HDPE
Sulfides		1-500 mL HDPE			

Comments: Ferrous Iron: 0.13

Salinity: 2.48

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

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GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: HLHAAP-17 | Sampling location ID: 17WW10
Project Name/#: LHAAP-MNA | Sample ID: 17WW10-Feb2007
Weather: Clear, warm | Collection Time/Date: 2/21/07

Pump Installation

Pump installation crew: Allen/Wininger | Installation date/beginning time: 13:30 2/21/07
PID/FID reading (well head/background): 0.6 | Installation date/completion time: 2/21/07
Casing diameter (inches): 4" / Stainless Steel | Screen Interval (ft. BTOC): 23.5' to 33.5'
Total well Depth (ft. BTOC): 33.5' | Pump intake depth (ft BTOC): 28.5'
Initial (pre-installation) DTW/time: 12.61 / 13:35 | Post-installation DTW/time: 12.51 / 13:37
Final (after pump priming) DTW/time: 12.82 / 16:15 | Max. sustainable pump rate (mL/min): 120
Free product (circle): LNAPL / DNAPL | Appearance of product: Silty
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): NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = 33 psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: Allen/Wininger | PID/FID reading (well head/background): 0.6
Purge date/beginning time: 2/21/07 15:41 | Purge date/completion time: 2/21/07 /
Initial (pre-purging) DTW (ft. BTOC): 12.61 | Final (post-purging) DTW (ft. BTOC): 12.82
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	18	18						
Refill Setting	10	11.5	~~12.0~~ 11.0						
Discharge Setting	5	3.5	4.0						
Flow rate (mL/min)	220	110	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)
13:45	12.94	220	0.880	19.22	3.652	6.11	57.4	0.69	525.8
13:50	12.92	110	1.430	19.30	3.651	6.12	59.4	0.37	286.5
13:55	12.88	120	2.030	19.51	3.659	6.13	59.5	0.32	142.3
14:00	12.86	120	2.630	19.69	3.665	6.13	60.1	0.29	134.5
14:05	12.84	120	3.230	19.91	3.677	6.14	61.1	0.28	123.2
14:10	12.84	120	3.830	19.91	3.686	6.14	61.8	0.26	141.7
14:15	12.84	120	4.430	19.95	3.687	6.14	62.1	0.24	117.4
14:20	12.84	120	5.030	19.96	3.685	6.14	62.1	0.24	75.8

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GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW10

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
14:25	12.86	120	5.630	20.11	3.692	6.14	62.3	0.23	104.1
14:30	12.86	120	6.830	20.10	3.695	6.15	63.2	.22	49.6
14:35	12.86	120	7.430	20.01	3.698	6.15	62.3	.22	58.1
14:40	12.86	120	8.030	19.78	3.695	6.15	63.0	.18	31.7
14:45	12.86	120	8.630	19.77	3.695	6.15	62.9	.18	52.0
14:50	12.86	120	9.230	19.99	3.691	6.16	63.8	.17	75.3
14:55	12.86	120	9.830	20.06	3.692	6.16	64.2	.16	76.0
15:00	12.86	120	9.990	19.98	3.700	6.15	64.8	.17	72.6

Sampling

Sampling beginning time: 14:58 Sampling completion time: 16:15

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)
14:58	12.82	120	≈10	19.98	3.700	6.15	64.8	.17	72.0

Sample Information

Sample ID: 17WW10 - Feb 2007 Sample collection date/time: 2/21/07

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOC	8260	3 - 40ml VOA	Anions	300.0	1 - 1000ml
Perchlorate	314.0	1 - 500 ml	Alkalinity	310.1	1 - 1000ml
Gases	RSK	3 - 40 ml	Sulfides	376.2	1 - 500 ml
TOC	415.1	3 - 40 ml	Dehalococcoidies		2 - 1 L AMBER
Explosives	8330	2 - 1 L Amber			

Comments: 1.96 Sol, 1.91 Fe orange tint to water

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

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GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP - 17
Project Name/#: LHAAP MNA
Weather: Clear, warm

Sampling location ID: 17WW12
Sample ID: 17WW12 - Feb 2007
Collection Time/Date: 2/21/07 9:30

Pump Installation

Pump installation crew: Allen / Wingo
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 48.85
Initial (pre-installation) DTW/time: 10.31 2/21/07
Final (after pump priming) DTW/time: 10.31
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): NA

Installation date/beginning time: 2/21/07 9:00
Installation date/completion time: 2/21/07 9:25
Screen Interval (ft. BTOC): 38.85 to 48.85
Pump intake depth (ft BTOC): 43.85
Post-installation DTW/time: 10.29
Max. sustainable pump rate (mL/min): 2130
Appearance of product: Cloudy
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)	25	25							
Refill Setting	10	11.5							
Discharge Setting	~~200~~ 5	3.5							
Flow rate (mL/min)	200	130							

Purging

Purging/sampling crew: Allen / Wingo
Purge date/beginning time: 2/21/07 9:25
Initial (pre-purging) DTW (ft. BTOC): ~~10.51~~ 10.54
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 0.0
Purge date/completion time: 2/21/07
Final (post-purging) DTW (ft. BTOC):
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:

Initial air pressure = ~~H~~ 46.33 (ft.) X 0.43 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

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)
								.87	
9:35	10.31	200	2.00	17.86	1.258	5.99	-13.9	~~-15.6~~	174.9
9:40	10.54	130	2 6.50	17.93	1.277	5.99	-21.6	.67	170.0
9:45	10.51	130	3.3	17.94	1.278	6.00	-23.6	0.44	112.3
9:50	10.50	130	3.95	18.02	1.285	6.00	-25.3	0.40	125.6
9:55	10.50	130	4.4	18.06	1.290	6.00	-25.8	.39	116.9
10:00	10.50	130	6.5	18.29	1.289	6.00	-25.5	.37	84.0
10:05	10.50	139	6.9	18.41	1.293	6.00	-25.4	.35	124.0
10:10	10.50	130	6.55	18.54	1.295	6.00	-25.5	.37	84.3

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GROUNDWATER SAMPLING FORM

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17WW12

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%	(ES) Peak 10 Cum. Vol.
10:20	10.50	130	~~3385~~	18.62	1.294	6.00	-24.9	.35	90.4	7.205
10:25	10.50	130	~~3640~~	18.72	1.294	6.00	-23.8	.34	110.8	7.860
10:30	10.50	130	~~4295~~	18.76	1.295	6.00	-22.2	.33	105.7	8.515
10:35	10.50	130	~~4550~~	18.88	1.296	6.00	-21.7	.33	100.9	9.17
10:40	10.50	130	~~5850~~	18.70	1.302	6.00	-21.0	.32	65.9	9.825
10:45	10.50	130	6660	18.62	1.313	6.00	-21.3	.30	121.5	10.480
10:50	10.50	130	~~6115~~	18.68	1.321	6.00	-22.0	.28	125.8	11.135
10:55	10.50	130	~~6540~~	18.68	1.323	6.00	-22.0	0.28	118.3	11.790
11:00	10.50	130	~~7025~~	18.59	1.326	6.00	-21.8	0.28	120.9	12.445

Sampling

Sampling beginning time: 11:05 Sampling completion time: 12:10

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)
12:00	10.61	130	13.100	18.60	1.326	6.00	-21.8	.28	120.8

Sample Information

Sample ID: ~~17WW0~~ 2/07 17WW12-Feb2007 Sample collection date/time: 2/21/07

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s): 10933, 10942

Requested Analysis	Method	Containers
VOC	SW8260	3 - 40ml VOA
Perchlorate	314.0	1 - 500ml
Gases	RSK	3 - 40ml VOA
TOC	415.1	3 - 40ml VOA
Dehalococcoidies		2 - 1L Amber

Requested Analysis	Method	Containers
Explosives	8330	2 - 1L Amber
Alkalinity	310.1	1 - 1000 ml
Anions	300	1 - 1000 ml
Sulfides	376.2	1 - 250 ml

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

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GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP-17
Project Name/#: LHAAP-MNA
Weather: Clear skies

Sampling location ID: 17MW16
Sample ID: 17MW16-FEB2007
Collection Time/Date: 10:30 2/22/07

Pump Installation

Pump installation crew: Olla / Winzer
PID/FID reading (well head/background): 0.7
Casing diameter (inches): 4" / Stainless Steel
Total well Depth (ft. BTOC): 154
Initial (pre-installation) DTW/time: 12.19 / 8:40
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: 2/22/07 8:38
Installation date/completion time: 2/22/07
Screen Interval (ft. BTOC): 144 to 154
Pump intake depth (ft BTOC): 149
Post-installation DTW/time: 11.20 / 8:48
Max. sustainable pump rate (mL/min):
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 = 66.22 psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	120	120	120						
Refill Setting	16.0	16.0	16.0						
Discharge Setting	7.0	12.0	12.0						
Flow rate (mL/min)									

Purging

Purging/sampling crew: Olla / Winzer
Purge date/beginning time: 2/22/07 8:49
Initial (pre-purging) DTW (ft. BTOC): 12.19
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

PID/FID reading (well head/background): 0.7
Purge date/completion time: 2/22/07 / 11:54
Final (post-purging) DTW (ft. BTOC): 15.25
No. of tubing + pump volumes purged:

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	120	120	120	120	120				
Refill Setting	16.0	16.0	16.0	16.0	16.0				
Discharge Setting	7.0	11.0	12	11.0	12.0				
Flow rate (mL/min)	75	110	100	110	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)
9:34	12.05	75	900	16.02	1.364	11.35	-209.9	2.65	9.0
9:39	12.07	100	1400	16.51	1.918	11.36	-212.0	2.04	7.9
9:44	12.02	100	1900	16.81	1.920	11.34	-211.5	1.68	9.4
9:49	12.29	100	2400	17.25	1.948	11.34	-224.5	1.23	10.6
9:54	12.40	110	2900	17.48	1.951	11.33	-230.0	0.95	10.0
9:59	12.51	110	3400	17.62	1.957	11.33	-241.4	0.67	9.7
10:04	12.68	100	3900	17.61	1.959	11.32	-246.6	0.59	9.4
10:09	12.81	100	4400	17.62	1.960	11.33	-250.6	0.53	9.1

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GROUNDWATER SAMPLING FORM

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17WW16

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%
10:14	13.11	100	4900	17.65	1.960	11.32	-256.4	0.51	9.5
10:19	13.22	100	5400	17.70	1.959	11.32	-256.9	0.42	9.1
10:24	13.31	100	5900	17.74	1.960	11.31	-262.2	0.40	9.0
10:29	13.53	100	6400	17.78	1.961	11.31	-262.3	0.39	9.1

10
20

Sampling

Sampling beginning time: 10:30

Sampling completion time: 12:00

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)
10:30	12.53	100	6400	17.78	1.961	11.31	-262.3	0.39	9.1

Sample Information

Sample ID: 17WW16-FEB2007

Sample collection date/time: 2/22/07 10:30

Duplicate sample collected (Y/N): N

Duplicate sample ID: NA

Split sample collected (Y/N): N

Split sample ID: NA

COC No(s):

Requested Analysis	Method	Containers
VOC	8260	3-40mL VOA
Perchlorate	314.0	1-500mL
Gases	RSK	3-40mL VOA
TOC	415.1	3-40mL VOA
Explosives	8330	2-1L Amber

Requested Analysis	Method	Containers
Anion	300	1-1L
Alkalinity	310.1	1-1L
Sulfide	376.2	1-500mL
Dehalococcoides		2-1L Amber

Comments: Used pneumatic compressor to sample well. At such a deep depth, Refill setting had to be turned to 16 sec. to allow compressor to recharge air pressure. Discharge setting had to be turned up to 12 sec to allow pressure to build above the needed 60 psi.

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

Sal. - 1.00

Fer. - 0.03

00089388

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: LHAAP
Weather: Partly Cloudy 65-70°

Sampling location ID: 17 MW 130
Sample ID: 17 MW 130 - FEB 2007
Collection Time/Date: 2/23/07

Pump Installation

Pump installation crew: AW / CW
PID/FID reading (well head/background): 0.0
Casing diameter (inches): 2" / PVC
Total well Depth (ft. BTOC): 25.52
Initial (pre-installation) DTW/time: 7.19
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: 2/23/07 9:49
Installation date/completion time: 2/23/07
Screen Interval (ft. BTOC): 15.52 to 25.52
Pump intake depth (ft BTOC): 20
Post-installation DTW/time: 6.61 9:55
Max. sustainable pump rate (mL/min): 130
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 = _____ psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)					CW				
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: AW / CW
Purge date/beginning time: 2/23/07
Initial (pre-purging) DTW (ft. BTOC): 6.61
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 0.0
Purge date/completion time: 2/23/07
Final (post-purging) DTW (ft. BTOC): 9.30
No. of tubing + pump volumes purged: —

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						
Refill Setting	10	11.5	12.5						
Discharge Setting	5	3.5	2.5						
Flow rate (mL/min)	200	175	130						

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (mL)	Temp. (degree C)	Electrical Conductivity (mmhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)	Cum. Volume Purged
10:11	8.23	270	2000	16.99	4.730	7.01	281.9	5.22	28.6	2675
10:16	8.62	175	2650	17.00	4.718	7.01	283.7	5.09	29.9	3750
10:21	9.18	175	3300	17.18	4.695	6.99	286.7	4.82	29.8	4400
10:26	9.14	130	3820	17.35	4.689	6.97	289.5	4.54	28.2	5050
10:31	9.12	130	4340	17.45	4.700	6.94	292.8	4.15	27.0	6700
10:36	9.08	130	4860	17.61	4.672	6.91	297.1	3.79	26.3	6350
10:41	9.04	130	5380	17.51	4.644	6.90	299.6	3.48	23.6	7000
10:46	9.02	130	5900	17.58	4.631	6.87	301.5	3.27	25.6	7650

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GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW130

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%

CW

10
20

Sampling

Sampling beginning time: 10:47

Sampling completion time: 11:52

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)
11:54	9.30	130	9.750	19.04	4.634	6.78	307.7	2.91	23.6

Sample Information

Sample ID: 17WW130-FEB2007

Sample collection date/time: 2/13/07 10:47

Duplicate sample collected (Y/N): N

Duplicate sample ID:

Split sample collected (Y/N): N

Split sample ID:

COC No(s):

Requested Analysis	Method	Containers
VOC	8260	3-40mL VOA
Anions	300	1-500mL
Perchlorate	314	1-500mL
Gases	RSK	3-40mL VOA
Alkalinity		1-1000mL

Requested Analysis	Method	Containers
TOC	415	3-40mL VOA
Sulfide		1 x 1000mL
Explosives		2 x 1L Amber
Dehalococcoides	Shaw	2 x 1L Amber

Comments: Sal. 2.53-2.48
Cor. 0.06

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

DECEMBER 2007

AND

OCTOBER 2008

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GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: LHAAP
Weather: clear, 40s

Sampling location ID: MW13-120407
Sample ID: MW130-120407
Collection Time/Date: 11:00 12-04-07

Pump Installation

Pump installation crew: A. Willmore / D. Haynes
PID/FID reading (well head/background): 0.0
Casing diameter (inches): 2"
Total well Depth (ft. BTOC): 25.27
Initial (pre-installation) DTW/time: 9.10
Final (after pump priming) DTW/time: NA
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): 23
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

Installation date/beginning time: 12-04-07 09:45
Installation date/completion time: 12-04-07 09:47
Screen interval (ft. BTOC): 15 to 25
Pump intake depth (ft BTOC): ~20
Post-installation DTW/time: 9.10
Max. sustainable pump rate (mL/min): 100
Appearance of product: N.A.
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)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Willmore / D. Haynes
Purge date/beginning time: 12-04-07 10:01
Initial (pre-purging) DTW (ft. BTOC): 9.10
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

PID/FID reading (well head/background): 0.0
Purge date/completion time: 12-04-07 11:15
Final (post-purging) DTW (ft. BTOC): 9.81
No. of tubing + pump volumes purged: NA

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting	NA								
Discharge Setting									NA
Flow rate (mL/min)									

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (µMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
10:06	9.81	100	0.5	16.93	4.736	6.85	202.8	5.40	0.0
10:11	9.81	100	1.0	17.03	4.738	6.85	201.2	5.61	0.0
10:16	9.81	100	1.5	17.03	4.749	6.84	199.6	5.99	0.0
10:21	9.81	100	2.0	16.95	4.794	6.82	199.5	6.14	0.0
10:26	9.81	100	2.5	16.92	4.752	6.89	188.1	6.22	0.0
10:31	9.81	100	3.0	17.02	4.741	6.82	187.1	8.78	0.0
10:36	9.81	100	3.5	17.01	4.739	6.82	182.1	8.74	0.0
10:41	9.81	100	4.0	17.05	4.739	6.82	181.4	8.75	0.0

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

MW 130

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%
10:46		100	4.5	17.00	4,738	6.82	180.9	8.72	0.8

10-20

12/04/07

Sampling

Sampling beginning time: ~~1650~~ 11:00

Sampling completion time: ~~1655~~ 11:16

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)
~~1650~~ 11:15	9.81	100	7.5	17.10	4.746	6.82	173.4	8.70	0.0

Sample Information

Sample ID: ~~MW113~~ BGR-100407

Sample collection date/time: 12-04-07

Duplicate sample collected (Y/N): N

Duplicate sample ID: NA

Split sample collected (Y/N): N

Split sample ID: NA

COC No(s): NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOCs		3-Voa vial (40 mL)			
Perchlorate		1-500 mL plastic			

Comments: Sampled w/ peristaltic pump

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

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GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP-17
Project Name/#: LHAAP-[illegible]
Weather: Clear 80s

Sampling location ID: MW006
Sample ID: MW006-120407
Collection Time/Date: 13:10 12-04-07

Pump Installation

Pump installation crew: A.Williams / D. Haynes
PID/FID reading (well head/background): 0.0
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): ~~150~~ 152
Initial (pre-installation) DTW/time: 13.96
Final (after pump priming) DTW/time: NA
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): 150
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NR psi

Installation date/beginning time: 12-04-07 12:01
Installation date/completion time: 12-04-07 12:03
Screen Interval (ft. BTOC): 142 to 152
Pump intake depth (ft BTOC): 147
Post-installation DTW/time: ~~13.98~~ 13.98
Max. sustainable pump rate (mL/min): 120
Appearance of product: None
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)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

12/04/07

Purging

Purging/sampling crew: A.Williams / D. Haynes
Purge date/beginning time: 12:14 12-04-07
Initial (pre-purging) DTW (ft. BTOC): 13.98
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

PID/FID reading (well head/background): 0.0
Purge date/completion time: 12-04-07 13:11
Final (post-purging) DTW (ft. BTOC): 16.01
No. of tubing + pump volumes purged: NA

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	100								60
Refill Setting	10								10
Discharge Setting	5								5
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)
12:19	16.01	120	0.6	18.81	1.296	8.36	-116.6	1.17	6.0
12:24	16.01	120	1.2	19.13	1.289	8.33	-141.8	0.44	0.0
12:27	16.01	120	1.8	19.13	1.289	8.33	-142.5	0.48	0.0
12:29	16.01	120	2.4	19.14	1.287	8.33	-142.5	0.45	0.0
12:32	16.01	120	3.0	19.15	1.288	8.33	-142.7	0.41	0.0
12:34	16.01	120	3.6	18.71	1.296	8.36	-142.2	0.46	0.0

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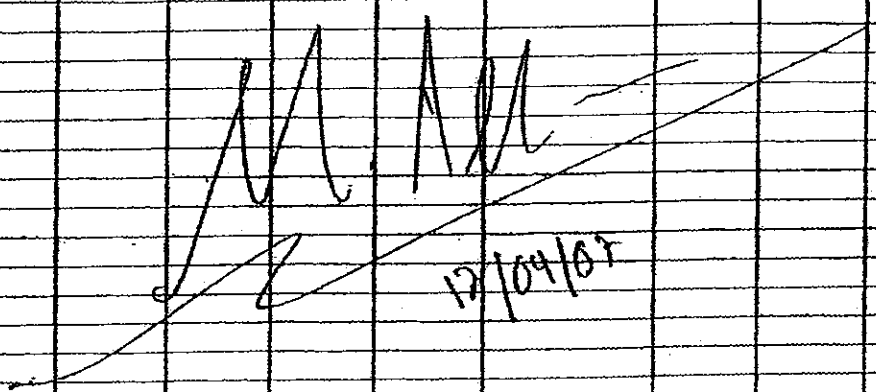
GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17 WW05

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%



Sampling

Sampling beginning time: 13:10 Sampling completion time: 13:15

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)
13:14	4.01	120	~8	18.65	1.293	8.35	-127.3	0.73	

Sample Information

Sample ID: MW05-120407 Sample collection date/time: 13:16

Duplicate sample collected (Y/N): Y Duplicate sample ID: DUP-MW05-120407-QMM

Split sample collected (Y/N): Y Split sample ID: MK

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOCs		3-40mL Vials			
perchlorate		1-500mL Plastic			

Comments: Bladder Pump

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

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GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP-13 | Sampling location ID: FTWyl01
Project Name/#: LHAAP | Sample ID: FTWyl01-120507
Weather: Clear, 40's | Collection Time/Date: 0850 12/5/07

Pump Installation

Pump installation crew: A. Willmore / D. Hayes | Installation date/beginning time: 12-05-07 08:09
PID/FID reading (well head/background): 3.8 | Installation date/completion time: 12-05-07 08:13
Casing diameter (inches): 4" | Screen interval (ft. BTOC): 29 to 39
Total well Depth (ft. BTOC): ~39 | Pump intake depth (ft BTOC): 35'
Initial (pre-installation) DTW/time: 10.28 | Post-installation DTW/time: 10.28
Final (after pump priming) DTW/time: ~0 NA | Max. sustainable pump rate (mL/min): 150
Free product (circle): LNAPL / DNAPL | Appearance of product: None
Volume of water removed during priming (mL): NA | Discharge tube diameter (3/8" or 1/4"): 1/4"
Discharge tube length (ft.): 36' | 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)									
Refill Setting									
Discharge Setting						12/05/07			
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Willmore D. Hayes | PID/FID reading (well head/background): 3.8
Purge date/beginning time: 12/5/07 08:17 | Purge date/completion time: 12/05/07
Initial (pre-purging) DTW (ft. BTOC): 10.28 | Final (post-purging) DTW (ft. BTOC): 12.50
Calculated tubing + pump volume: NA | No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NR psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (millisps/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
08:28	12.50	150	0.75	15.16	0.908	6.14	15.0	0.84	43.8
08:27	12.50	150	1.50	15.32	0.913	6.13	13.6	0.73	16.4
08:32	12.50	150	2.25	15.30	0.915	6.13	12.6	0.70	9.3
08:37	12.06	150	3.00	15.64	0.916	6.12	11.7	0.66	8.1
08:42	12.50	150	3.75	15.63	0.919	6.13	10.4	0.64	8.2

12/05/07

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GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW04

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degrees C) ±10%	Electrical Conductivity (uMhos/cm) ±3%	pH ±0.1	Eh (mv) ±10	DO (mg/L) ±10%	Turbidity (NTU) ±10%

10 - < 20

N/A 12/05/07

Sampling

Sampling beginning time: 08:50 Sampling completion time: 09:00

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degrees C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
08:55	12.56	150		16.86	0.931	6.12	10.8	0.60	7.6

Sample Information

Sample ID: 17WW04 - 120507 Sample collection date/time: 08:50 12-05-07

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOCs		3-40mL vom vials			
Perchlorate		1-50mL plastic			

Comments: purged & sampled w/ Peristaltic Pump

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

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GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP
Project Name/#: LHAAP
Weather: clear; 40s

Sampling location ID: MW06
Sample ID: MW06 - 120407
Collection Time/Date: 15:30 12/04/07

Pump Installation

Pump installation crew: A. Williams
PID/FID reading (well head/background): 0.0
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 28.65
Initial (pre-installation) DTW/time: 11.54
Final (after pump priming) DTW/time: NA
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NR
Discharge tube length (ft): 96'
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

Installation date/beginning time: 12/04/07 14:48
Installation date/completion time: 12/04/07 14:51
Screen Interval (ft. BTOC): 13 to 23
Pump intake depth (ft BTOC): 18
Post-installation DTW/time: 11.54
Max. sustainable pump rate (mL/min): 106
Appearance of product: None
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)									
Refill Setting									
Discharge Setting						12/4/07			
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Williams / D. Hayes
Purge date/beginning time: 14:55
Initial (pre-purging) DTW (ft. BTOC): 11.54
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

PID/FID reading (well head/background): 0.0
Purge date/completion time: 12/04/07 15:50
Final (post-purging) DTW (ft. BTOC): 11.68
No. of tubing + pump volumes purged: NA

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									NA
Refill Setting	NA								
Discharge Setting									
Flow rate (mL/min)									

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)
15:00	11.60	106	0.5	14.13	4.208	6.99	54.1	3.01	0.0
15:05	11.60	100	1.0	19.86	4.193	6.91	53.9	2.99	0.0
15:10	11.60	100	1.5	19.31	4.113	6.93	53.7	2.93	0.0
15:15	11.60	100	2.0	19.39	4.106	6.91	53.3	2.68	0.0
15:20	11.60	100	2.5	19.33	4.104	6.89	53.2	2.65	0.0
15:25	11.60	100	3.0	19.81	4.099	6.88	50.1	2.59	0.0

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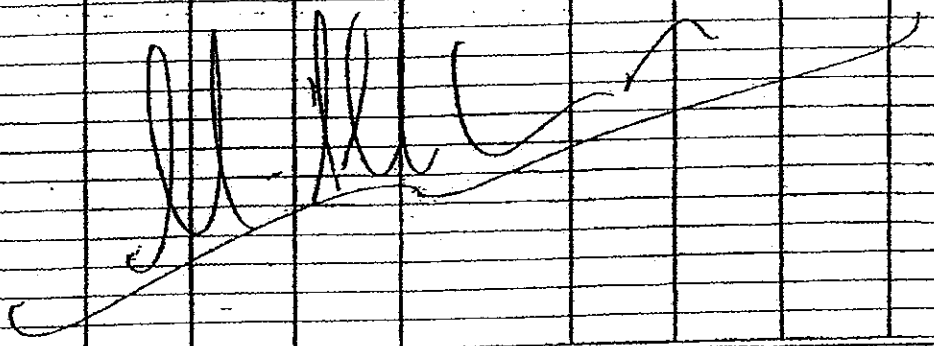
GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW06

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degrees C) ±10%	Electrical Conductivity (uMhos/cm) ±3%	pH ±0.1	Eh (mv) ±10	DO (mg/L) ±10%	Turbidity (NTU) ±10%



Sampling

Sampling beginning time: 15:30

Sampling completion time: 15:40

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degrees C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
15:45	11.60	100	5	19.	4.081	6.89	58.7	2.51	0.0

Sample Information

Sample ID: MW06-120107

Sample collection date/time: 12/01/07

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
VOCs		VOCs 3-40 mL vials			
perchlorate		1-500 mL			

Comments: Peristaltic Pump

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089399

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP-17
Project Name/#: LHAAP
Weather: clear, 60s

Sampling location ID: 17MW10
Sample ID: 17MW10 - 120507
Collection Time/Date:

Pump Installation

Pump installation crew: A. Willmore / D. Haynes
PID/FID reading (well head/background): 0.0
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 33.5
Initial (pre-installation) DTW/time: 13.63
Final (after pump priming) DTW/time: 13.63
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): 88'
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

Installation date/beginning time: 12-05-07 09:09
Installation date/completion time: 12-05-07 09:13
Screen interval (ft. BTOC): 23.5 to 33.5
Pump intake depth (ft BTOC): 25'
Post-installation DTW/time: 13.63
Max. sustainable pump rate (mL/min): 200
Appearance of product: None
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)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Willmore / D. Haynes
Purge date/beginning time: 12/05/07 09:15
Initial (pre-purging) DTW (ft. BTOC): 13.63
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

PID/FID reading (well head/background): 0.0
Purge date/completion time:
Final (post-purging) DTW (ft. BTOC): 13.94
No. of tubing + pump volumes purged: NA

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)									

NA

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)
09:20	13.94	200	1	17.77	3.700	6.97	13.3	0.79	4.7
09:25	13.94	200	2	17.94	3.694	6.87	13.0	0.36	5.2
09:30	13.94	200	3	18.22	3.740	6.34	10.9	[illegible]	4.0
09:35	13.94	200	4	18.62	3.760	6.32	9.5	[illegible]	2.6
09:40	13.94	200	5	18.82	3.772	6.32	5.7	[illegible]	2.2

00089400

GROUNDWATER SAMPLING FORM

Sheet 2 of 3

17WW10

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%

10-5
20

Sampling

Sampling beginning time: 09:45 Sampling completion time: 09:56

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)
09:55	13.99	200	8	18.91	3.787	6.29	3.0 ~~0.31~~	0.31	0.7

Sample Information

Sample ID: 17WW10-120507 Sample collection date/time: 12.05.07

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Perchlorate		1 - 500 mL HDPE			
VOCs		3 - 40 mL Voa vials			

Comments: Peristaltic pump used to purge & Sample

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; ft - head above pump intake; mL - milliliter; L - Liter

17ww17

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: 17
Project Name/#: Longhorn
Weather: Partly cloudy

Sampling location ID: 17ww17
Sample ID: 17ww17-080908
Collection Time/Date: 13:10 2-A-08

Pump Installation

Pump installation crew: A. Williams
PID/FID reading (well head/background): 0.0
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 53.55
Initial (pre-installation) DTW/time: 10.26
Final (after pump priming) DTW/time: NA
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): 51

Installation date/beginning time: 2/17/08 10:35
Installation date/completion time: 2/17/08 12:45
Screen interval (ft. BTOC): 44 to 54
Pump intake depth (ft BTOC): 49
Post-installation DTW/time: 10:33
Max. sustainable pump rate (mL/min): 300
Appearance of product: None
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)									
Refill Setting									
Discharge Setting									
Flow rate (mL/min)					2/17/08				

Purging

Purging/sampling crew: A. Williams
Purge date/beginning time: 8-9-08
Initial (pre-purging) DTW (ft. BTOC): 10.33
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

PID/FID reading (well head/background): 0.0
Purge date/completion time: 8-9-08
Final (post-purging) DTW (ft. BTOC): 10.30
No. of tubing + pump volumes purged: NA

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	33								33
Refill Setting	10								10
Discharge Setting	6								5
Flow rate (mL/min)	300								300

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp. (degree C)	Electrical Conductivity (µMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
12:50	10.30	1	400	18.79	1.579	6.31	-25.6	2.29	6.1
12:55	10.30	2	200	18.79	1.578	6.31	-25.1	2.29	5.2
13:00	10.30	3	300	18.78	1.572	6.30	-25.0	2.28	4.9
13:05	10.31	4	200	18.77	1.574	6.30	-24.8	2.25	4.7
					2/17/08				

00089402

FWW17

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%

2/19/09

Sampling

Sampling beginning time: 13:10 Sampling completion time: 18:15

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)
13:30	10.30	200	7	8.75	1576	6.30	-24.8	3.22	4.4

Sample Information

Sample ID: 17WW17-021909 Sample collection date/time: 2-19-09 13:10

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s): NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOCs	8260	3 - 40mL Vog vials			

Comments: Purged and sampled with stainless steel-cased bladder pump.

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089403

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LLAAP
Project Name/#: 117591.0009.B810
Weather: Sunny 62°F

Sampling location ID: Site 17
Sample ID: 17WW17-031408
Collection Time/Date: 3:10 3/14/08

Pump Installation

Pump installation crew: Beesley
PID/FID reading (well head/background):
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 53.55
Initial (pre-installation) DTW/time: 10.00
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: 3/14/08 2:00
Installation date/completion time: 3/14/08 2:15
Screen Interval (ft BTOC): 43.55 to 53.55
Pump intake depth (ft BTOC): 48.5
Post-installation DTW/time: 9.40
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: Beesley
Purge date/beginning time: 3/14/08 2:15
Initial (pre-purging) DTW (ft. BTOC): 9.40
Calculated tubing + pump volume: NA

PID/FID reading (well head/background):
Purge date/completion time: 3/14/08 3:10
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)	35								
Refill Setting	31								
Discharge Setting	35								
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)
2:20	9.45	125	.625	24.23	1.549	6.27	-43.5	1.07	1.4
2:25	9.50	125	1.250	24.58	1.541	6.21	-51.5	0.68	2.3
2:30	9.53	125	1.875	24.25	1.545	6.21	-54.0	0.38	2.0
2:35	9.55	125	2.500	24.06	1.540	6.21	-56.0	0.43	2.1
2:40	9.57	125	3.125	23.67	1.539	6.21	-56.2	0.33	4.0
2:45	9.59	125	3750	23.54	1.536	6.20	-56.7	0.34	4.9
2:50	9.60	125	4375	24.16	1.538	6.21	-58.9	0.41	4.8
2:55	9.61	125	5.000	23.80	1.538	6.21	-60.6	0.40	5.1

00089404

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 ±3% Conductivity (uMhos/cm)	pH ±0.1	Eh (mv) ±10	DO (mg/L) ±10%	Turbidity (NTU) ±10%
3:00	9.62	125	5.625	23.76	1,538	6.21	-60.4	0.40	6.0
3:05	9.62	125	6.250	23.80	1,539	6.21	-61.5	0.45	3.8
3:10	9.62	125	6.875	23.83	1,539	6.21	-62.2	0.43	3.2

10 – 20

Sampling

Sampling beginning time: 3:10 Sampling completion time: 3:12

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)
3:12	9.62	125	7.25	23.84	1,539	6.21	-62.7	0.42	4.0

Sample Information

Sample ID: 17WW17-031408 Sample collection date/time: 3/14/08 3:10

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		2-40 ml glass			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089405

GROUNDWATER SAMPLING FORM

Sheet 1 of 3

Operable Unit/Site ID: LHAAP-07
Project Name/#: Longhorn AAP 143591
Weather: sunny cloudy 100s

Sampling location ID: MW48
Sample ID: MW48-100808
Collection Time/Date: 14:20 10.08.08

Pump Installation

Pump installation crew: A. Williams
PID/FID reading (well head/background): 0.8
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): ~57
Initial (pre-installation) DTW/time: NR
Final (after pump priming) DTW/time: NA
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): 60'

Installation date/beginning time: 10/8/08 12:38
Installation date/completion time: 10/8/08 13:40
Screen Interval (ft. BTOC): 47 to 57
Pump intake depth (ft BTOC): 52'
Post-installation DTW/time: NA
Max. sustainable pump rate (mL/min): 200
Appearance of product: None
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 = NR psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting				NA					
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Williams
Purge date/beginning time: 10/8/08 13:45
Initial (pre-purging) DTW (ft. BTOC): 13.59
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NR psi

PID/FID reading (well head/background): 0.0
Purge date/completion time: 10.8.08 14:35
Final (post-purging) DTW (ft. BTOC): 13.96
No. of tubing + pump volumes purged: NA

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	34								34
Refill Setting	10								10
Discharge Setting	5								5
Flow rate (mL/min)	200								200

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)
13:53	13.74	200	1	18.81	2.876	5.82	100.1	0.21	200.1
13:58	13.46	200	2	18.83	2.904	5.97	-23.2	0.39	76.7
14:03	13.46	200	3	18.82	2.930	5.97	-49.1	0.41	12.4
14:08	13.96	200	4	18.34	2.931	5.99	-49.3	0.43	9.3
14:13	13.41	200	5	18.86	2.931	5.99	-49.4	0.44	4.6

00089406

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW18

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

10/8/08

Sampling

Sampling beginning time: 14:20 Sampling completion time: 14:25

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)
14:30	13.46	200	8	12.84	2.934	6.01	-52.1	0.48	4.3

Sample Information

Sample ID: 17WW18-100808 Sample collection date/time: 10.08.08 14:20

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
VOCs	8260	3x 40mL VOA vials			

Comments: Purged & Sample w/ bladder pump.

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/#: 11759.0005B002
Weather: Cloudy 75°F
Sampling location ID: Site 18/24
Sample ID: MW19-090408
Collection Time/Date: 9:15 9/4/08

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 33.45
Initial (pre-installation) DTW/time: 9.91
Final (after pump priming) DTW/time: 9.91
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 3
Discharge tube length (ft.): NA
Installation date/beginning time: 9/4/08 8:20
Installation date/completion time: 9/4/08 8:35
Screen Interval (ft. BTOC): 23.45 to 33.45
Pump intake depth (ft BTOC): 28.50
Post-installation DTW/time: 9.71
Max. sustainable pump rate (mL/min): 150
Appearance of product: little cloudy
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	20	20	20	20	20	20	20
Refill Setting	18	18	18	18	18	18	18	18	18
Discharge Setting	20	20	20	20	20	20	20	20	20
Flow rate (mL/min)	150	150	150	150	150	150	150	150	150

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/4/08 8:35
Initial (pre-purging) DTW (ft. BTOC): 9.81
Calculated tubing + pump volume: NA
PID/FID reading (well head/background): NA
Purge date/completion time: 9/4/08 9:15
Final (post-purging) DTW (ft. BTOC): 10.05
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	18	18	18	18	18	18	18	18	18
Discharge Setting	20	20	20	20	20	20	20	20	20
Flow rate (mL/min)	150	150	150	150	150	150	150	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)
8:40	10.00	150	.75	20.35	4.093	6.32	-25.5	4.18	6.0
8:45	10.03	150	1.5	19.72	7.820	6.09	-20.5	1.12	-5.6
8:50	10.05	150	2.25	19.59	7.815	6.08	-23.5	0.78	-5.5
8:55	10.05	150	3.0	19.52	7.814	6.08	-25.0	0.68	-4.5
9:00	10.05	150	3.75	19.51	7.815	6.08	-25.5	0.63	-4.6
9:05	10.05	150	4.50	19.46	7.817	6.08	-26.4	0.58	-5.5
9:10	10.05	150	5.25	19.46	7.817	6.09	-27.2	0.53	-5.5
9:15	10.05	150	6.0	19.45	7.817	6.09	-27.8	0.54	-5.7

00089408

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: 9:20

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)
9:18	10.05	150	6.45	19.45	7.817	6.09	-27.9	.54	-5.5

Sample Information

Sample ID: MW19-090408

Duplicate sample collected (Y/N): N

Split sample collected (Y/N): N

COC No(s): 10449

Sample collection date/time: 9/4/08 9:15

Duplicate sample ID: NA

Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Perchlorate		1-250ml plastic			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089409

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: [illegible]-17 | Sampling location ID: MW-17
Project Name/#: Longhorn / 117691 | Sample ID: MW-17 - 030309
Weather: Partly cloudy, 60s | Collection Time/Date: 15:50 3-03-09

Pump Installation

Pump installation crew: A. Williams / M. Martinez
PID/FID reading (well head/background): 0.2
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 33.59
Initial (pre-installation) DTW/time: 9.57
Final (after pump priming) DTW/time: NA
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): 36
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

Installation date/beginning time: 3/02/09 14:50
Installation date/completion time: 3/03/09 14:57
Screen Interval (ft. BTOC): 23.5 to 33.5
Pump intake depth (ft BTOC): 32
Post-installation DTW/time: 9.55
Max. sustainable pump rate (mL/min): 100
Appearance of product: None
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)									
Refill Setting									
Discharge Setting				NA					
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Williams / M. Martinez
Purge date/beginning time: 3/3/09 15:03
Initial (pre-purging) DTW (ft. BTOC): 9.55
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NA psi

PID/FID reading (well head/background): 0.6
Purge date/completion time: 3/3/09
Final (post-purging) DTW (ft. BTOC):
No. of tubing + pump volumes purged: NA

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting				NA					55
Flow rate (mL/min)									

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)
15:08	9.63	100	0.5	17.46	0.582	5.51	117.4	1.17	135.3
15:13	9.65	100	1.0	17.47	0.547	5.47	128.7	0.70	129.1
15:18	9.65	100	1.5	17.25	0.535	5.44	177.3	0.63	100.9
15:23	9.65	100	2.0	17.24	0.521	5.43	184.1	0.58	91.1
15:28	9.65	100	2.5	17.23	0.518	5.43	192.7	0.52	82.2
15:33	9.65	100	3.0	17.22	0.517	5.44	198.1	0.48	73.6
15:38	9.65	100	3.5	17.20	0.515	5.46	200.3	0.45	71.4
15:43	9.65	100	4.0	17.20	0.515	5.46	201.1	0.46	68.6

00089410

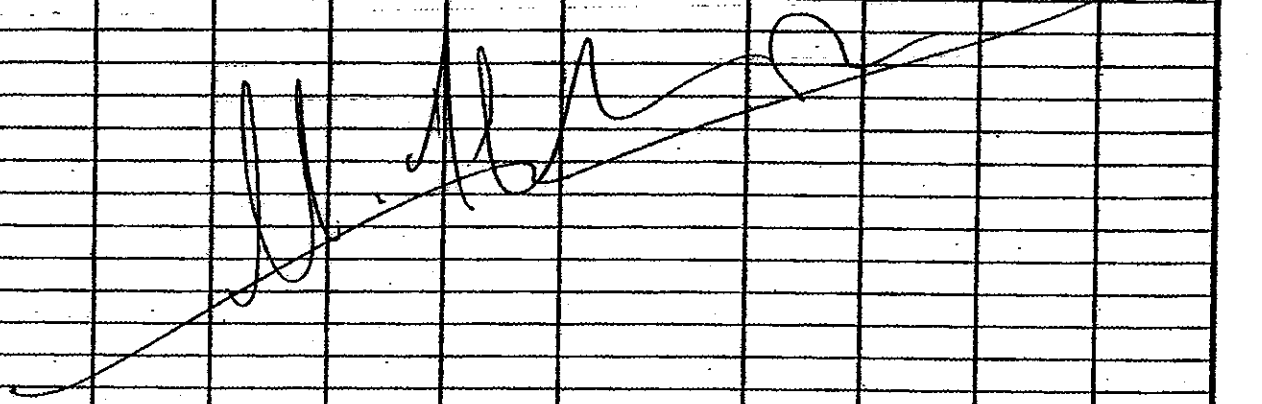
GROUNDWATER SAMPLING FORM

Sheet 2 of 2

MW-18

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% 10/30



Sampling

Sampling beginning time: 15:50 Sampling completion time: 15:55

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)
16:03	9.65	120	6.0	17.17	0.516	5.46	203.4	0.46	66.6

Sample Information

Sample ID: MW-18-030309 Sample collection date/time: 3/3/09

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):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Thallium	6020B	1- 250 mL HDPE			
VOCs	8260	3- 40 mL VOA vials			
Perchlorate	300	1- 250 mL HDPE			

Comments: Purged & Sampled w/ peristaltic pump

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089411

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Shaw®

Operable Unit/Site ID: LHAAP
Project Name/#: 117591.0005B002
Weather: Cloudy 88°F

Sampling location ID: Site 18/24
Sample ID: MW18-090408
Collection Time/Date: 10:50 9/4/08

Pump Installation

Pump installation crew: Beesinger
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 33.40
Initial (pre-installation) DTW/time: 10.00
Final (after pump priming) DTW/time: 9.85
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): 100
Discharge tube length (ft.): NA

Installation date/beginning time: 9/4/08 9:40
Installation date/completion time: 9/4/08 9:50
Screen Interval (ft. BTOC): 23.40 to 33.40
Pump intake depth (ft BTOC): 28.50
Post-installation DTW/time: 9.81
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)	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

Purging

Purging/sampling crew: Beesinger
Purge date/beginning time: 9/4/08 9:50
Initial (pre-purging) DTW (ft. BTOC): 9.85
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 9/4/08 10:50
Final (post-purging) DTW (ft. BTOC): 9.96
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)
10:00 Start									
~~10:00~~	9.88	100	1.0	20.49	0.750	5.92	22.4	1.44	6.1
10:05	9.90	100	1.5	20.48	0.715	5.87	21.4	0.97	15.2
10:10	9.92	100	2.0	20.47	0.682	5.86	21.4	0.83	14.8
10:15	9.95	100	2.5	20.47	0.665	5.84	21.6	0.72	15.1
10:20	9.95	100	3.0	20.47	0.651	5.83	21.2	0.67	15.0
10:25	9.96	100	3.5	20.45	0.637	5.83	21.1	0.65	7.0
10:30	9.96	100	4.0	20.43	0.620	5.82	21.0	0.60	0.2
10:35	9.96	100	4.5	20.44	0.604	5.82	21.8	0.56	-5.4

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)
10:40	9.96	100	5.0	20.43	0.596	5.82	22.1	0.54	-5.4
10:45	9.96	100	5.5	20.42	0595	5.82	22.2	0.53	-5.0
10:50	9.96	100	6.0	20.42	0.594	5.82	22.5	0.52	-5.1

Sampling

Sampling beginning time: 10:50 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)
10:53	9.96	100	6.3	20.42	0.593	5.82	22.1	0.52	-5.0

Sample Information

Sample ID: MW18-090408
Duplicate sample collected (Y/N): N
Split sample collected (Y/N): N
COC No(s): 10449

Sample collection date/time: 9/4/08 10:50
Duplicate sample ID: NA
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Perchlorate		1-250 ml plastic			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

FEBRUARY/MARCH 2009

00089414

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: Longhorn / LHMW-03
Project Name/#: Longhorn / 10134
Weather: Hot, dry

Sampling location ID: Duplicate
Sample ID: DUP01-030409
Collection Time/Date: 11:15 03/04/09

Pump Installation

Pump installation crew: A. Williams
PID/FID reading (well head/background): 7.9
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 33.68
Initial (pre-installation) DTW/time: 9.39
Final (after pump priming) DTW/time: NA
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): 37

Installation date/beginning time: 3/4/09 08:40
Installation date/completion time: 3/4/09 08:43
Screen Interval (ft. BTOC): 23.5 to 33.5
Pump intake depth (ft BTOC): 28
Post-installation DTW/time: 9.51
Max. sustainable pump rate (mL/min): 100
Appearance of product: None
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)									
Refill Setting				NA					
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Williams
Purge date/beginning time: 3/4/09 08:55
Initial (pre-purging) DTW (ft. BTOC):
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 7.4
Purge date/completion time: 3/4/09 13:25
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)	21								21
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)
09:00	9.81	100	0.5	17.87	5.009	5.92	-81.1	0.68	210.4
09:20	9.83	100	2.5	17.92	5.001	5.91	-63.1	0.61	209.4
09:25	9.87	100	3.0	18.41	4.913	5.85	-64.2	0.31	153.2
09:30	9.89	100	3.5	18.44	4.908	5.82	-61.0	0.34	146.1
09:35	9.89	100	4.0	18.43	4.908	5.82	-46.3	0.36	131.4
09:40	9.89	100	4.5	18.48	4.907	5.82	-47.3	0.38	129.1
10:00	9.89	100	6.5	18.12	4.907	5.82	-47.1	0.31	128.2
11:00	9.89	100	12.5	19.10	4.907	5.83	-46.9	0.29	129.0

00089415

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW01

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%
11:05	9.91	100	13.0	19.09	4.907	5.83	-45.3	0.23	127.1
11:10	9.87	100	13.5	19.09	4.907	5.83	-45.1	024	126.3

10 / 20

3/4/09

Sampling

Sampling beginning time: 11:15 Sampling completion time: 12:20

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)
12:25	9.89	100	21.0	19.09	4.907	5.83	-45.8	0.22	104.9

Sample Information

Sample ID: 17WW01-030409

Sample collection date/time: 03-04-09 11:15

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):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
TOC		1-250 mL HDPE w/ H2SO4	D-Gases		2-40 mL VOC
Perchlorate		1-250 mL	Sulfides		1-500 mL HDPE w/ NaOH + ZnAc
DHE		1-1L Amb	VOCs		2-40 mL VOAs HCl
Anions		1-500 mL HDPE			
Thallium		1-250 mL w/ HNO3			

Comments: Purged & Sampled w/ ~~peristaltic~~ bladder pump. 03/04/09

Ferrous Iron: ~~1.07~~ (AW) 2.80 mg/L

Filtered Metals sample

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089416

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: Site 17
Project Name/#: USACE - CHARP
Weather:
Sampling location ID: 17 MW02
Sample ID: 17 MW02 030509
Collection Time/Date:

Pump Installation

Pump installation crew: M. Martinez
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC):
Initial (pre-installation) DTW/time: 7.90 / 1107
Final (after pump priming) DTW/time: 7.90
Free product (circle): ~~LNAPL / DNAPL~~
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = _____ psi

Installation date/beginning time: 03-05-09 1108
Installation date/completion time: 03-05-09 1110
Screen Interval (ft. BTOC): _____ to _____
Pump intake depth (ft BTOC):
Post-installation DTW/time: 7.90' 1111
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

	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: 03-05-09 / 1115
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): NA
Purge date/completion time: 03-05-09
Final (post-purging) DTW (ft. BTOC):
No. of tubing + pump volumes purged: NA

	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)	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)
1127	8.21	120	0.6	18.09	3.369	6.36	285.7	0.92	22.6
1142	8.21	120	2.4	18.13	3.385	6.33	276.7	0.59	14.8
1147	8.21	120	3.0	18.05	3.400	6.32	400.1	0.57	12.6
1152	8.21	120	3.6	17.90	3.420	6.31	405.6	0.55	10.9
1157	8.21	120	4.2	17.84	3.424	6.31	412.6	0.56	16.2
1202	8.21	120	4.8	17.81	3.422	6.31	414.9	0.56	17.8
1207	8.21	120	5.4	17.81	3.423	6.31	412.8	0.55	18.1
1208	Sample								

00089417

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 do

Sampling

Sampling beginning time: 1208 Sampling completion time: 1252

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)
1238	8.21	200	9.0	17.75	3.423	6.31	415.6	0.57	16.3

Sample Information

Sample ID: MW-09 030509

Sample collection date/time: 03-05-09 / 1208

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 VOA	Perchlorate		1 x 250mL HDPE
MEE		3 x 40mL VOA	Hexavalent Chromium		1 x 500mL HDPE
Anions		1 x ~~500~~ 250mL HDPE	DHE		1 x 1L Amber
TOC		1 x 250mL HDPE			
Sulfide		1 x 500mL HDPE			

Comments:

Fe @ 032 mg/L — Hexavalent sample filtered in field

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089418

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP-17 | Sampling location ID: FTWW03
Project Name/#: Longhorn / 137591 | Sample ID: FTWW03 - 030509
Weather: Fthy cloudy 70s | Collection Time/Date: 09:35 03-05-09

Pump Installation

Pump installation crew: A. Willmore | Installation date/beginning time: 3.05.09 08:01
PID/FID reading (well head/background): 0.0 | Installation date/completion time: 3.05.09 08:03
Casing diameter (inches): 4" | Screen interval (ft. BTOC): 22 to 32
Total well Depth (ft. BTOC): 32.00 | Pump intake depth (ft BTOC): 27
Initial (pre-installation) DTW/time: 9.64 | Post-installation DTW/time: 9.62
Final (after pump priming) DTW/time: NA | Max. sustainable pump rate (mL/min): 100
Free product (circle): LNAPL / DNAPL | Appearance of product: None
Volume of water removed during priming (mL): NA | Discharge tube diameter (3/8" or 1/4"): 1/4"
Discharge tube length (ft.): 31 | 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)									
Refill Setting									
Discharge Setting				NA					
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Willmore | PID/FID reading (well head/background): 0.1
Purge date/beginning time: 03-05-09 08:26 | Purge date/completion time: 03.05.06 10:20
Initial (pre-purging) DTW (ft. BTOC): 9.62 | Final (post-purging) DTW (ft. BTOC): 9.79
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)									
Refill Setting									
Discharge Setting				NA					
Flow rate (mL/min)									

Water Quality Parameter Measurements

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L)	Temp, (degrees C)	Electrical Conductivity (uMhos/cm)	pH	Eh (mv)	DO (mg/L)	Turbidity (NTU)
09:11	9.64	100	0.5	19.00	3.141	5.91	-29.4	0.42	20.1
09:16	1.71	100	1.0	19.06	3.026	5.84	-23.6	0.39	9.4
09:21	9.79	100	1.5	19.08	3.027	5.84	-21.4	0.85	9.1
09:26	9.79	100	2.0	19.09	3.027	6.84	-20.4	0.81	4.3
09:31	9.79	100	2.5	19.11	3.029	5.84	-20.1	0.89	2.0

00089419

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

MWW03

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%
					3.15	09			

10
20

Sampling

Sampling beginning time: 09:35

Sampling completion time: 10:20

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)
10:20	9.79	100	9.5	19.12	3.023	5.83	-19.7	0.87 -19.4	0.5

Sample Information

Sample ID: MWW03-030509

Duplicate sample collected (Y/N): N

Split sample collected (Y/N): N

COC No(s): NR

Sample collection date/time: 03.05.09 09:35

Duplicate sample ID: NA

Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
TOC		1-250 mL NDPE Y H2SO4	D-Gases		3-40 mL vac vials
Perchlorate		1-250 mL	Sulfide		1-500 HDPE Y Acetate
DHE		2-1L amber	VOC		3-40mL vacs HCl
Amines		1-500 mL HDPE			
Thallium		1-250mL w/ HNO3			

Comments: Purged & Sampled w/ peristaltic pump. Ferrous Iron: 0.21 mL

Metals sampled NOT filtered!!

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089420

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: UHWMD-D
Project Name/#: Longhorn / 117591
Weather: clear, 40s

Sampling location ID: 17WW04
Sample ID: 17WW04-030209
Collection Time/Date: 14:15 03-02-09

Pump Installation

Pump installation crew: A. Willmore
PID/FID reading (well head/background): 0.0
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 37.75
Initial (pre-installation) DTW/time: 1139
Final (after pump priming) DTW/time: N/A
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): N/A
Discharge tube length (ft.): 35'

Installation date/beginning time: 3/2/09 12:25
Installation date/completion time: 3/2/09 12:27
Screen Interval (ft. BTOC): 27.5 to 37.5
Pump intake depth (ft BTOC): 32
Post-installation DTW/time: 11.37
Max. sustainable pump rate (mL/min): 100
Appearance of product: None
Discharge tube diameter (3/8" or 1/4"): 1/4"
Inlet reducer used (Y/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)									
Refill Setting				NA					
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Willmore
Purge date/beginning time: 3/2/09 12:36
Initial (pre-purging) DTW (ft. BTOC): 11.37
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 6.0
Purge date/completion time: 3/2/09
Final (post-purging) DTW (ft. BTOC): 11.52
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)									
Refill Setting				NA					
Discharge Setting									
Flow rate (mL/min)									

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)
12:41	11.42	100	0.5	18.21	0.791	6.97	156.1	2.01	294.1
12:51	11.47		1.5	18.16	6.792	5.93	62.3	1.41	152.3
13:01	11.52		2.5	18.14	0.784	5.92	141.1	1.32	94.1
13:11	↓		3.5	18.01	0.786	5.91	136.4	1.07	77.4
13:21			4.5	17.96	0.781	5.90	124.3	0.96	77.1
14:01			8.5	17.54	0.799	5.90	119.3	0.94	63.2
14:06		↓	9.0	17.41	0.794	5.90	118.4	0.78	60.1
14:11	↓		9.5	17.46	0.791	6.91	119.6	0.71	50.1

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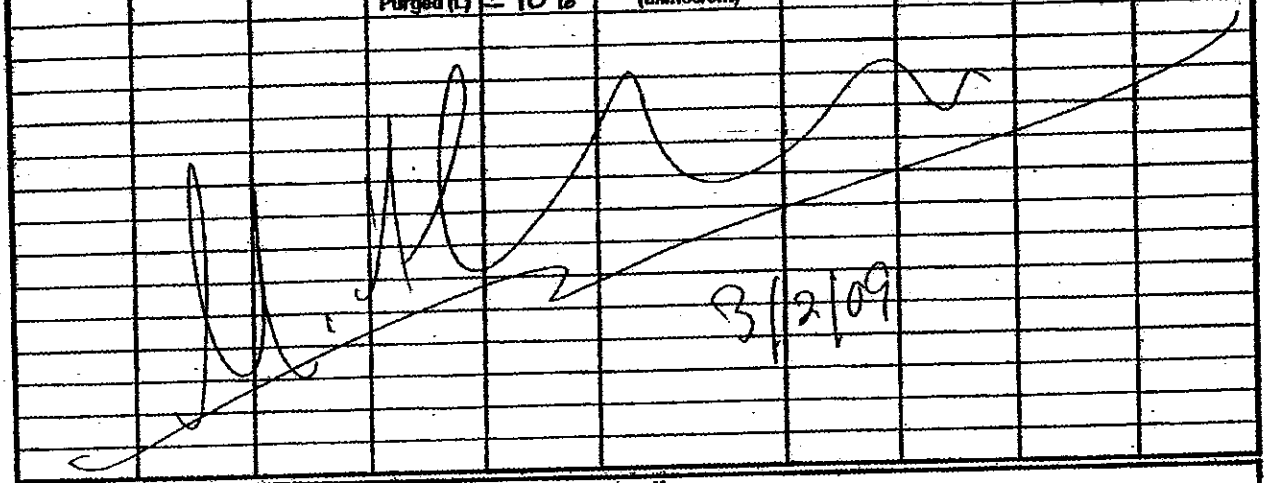
GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17wwp4

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



Sampling

Sampling beginning time: 14:15 Sampling completion time: 14:20

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)
14:25	11.52	100	10.9	17.43	0.790	5.91	117.9	0.70	55.5

Sample Information

Sample ID:
Duplicate sample collected (Y/N):
Split sample collected (Y/N):
COC No(s):

Sample collection date/time: 03-02-09 14:15
Duplicate sample ID:
Split sample ID:

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Antimony/Thallium	6020B	1-250 mL HDP			
VOCs	8260	3-40 mL VOA vials			
Perchlorate	300	1-250 mL HDPE			

Comments: Purged & Sampled w/ peristaltic pump
Filtered Antimony & Thallium

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: Site 17
Project Name/#: USACE - LHAAP
Weather:

Sampling location ID: LH 17GW05
Sample ID: LH 17GW05 022509
Collection Time/Date: 02-25-09 /

Pump Installation

Pump installation crew: M. Mantinor
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC):
Initial (pre-installation) DTW/time: 13.05'
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: 02-25-09 /
Installation date/completion time: 02-25-09 /
Screen Interval (ft. BTOC): ____ to ____
Pump intake depth (ft BTOC): ~~15'~~ 13.05'
Post-installation DTW/time: 13.05'
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. Mantinor
Purge date/beginning time: 02-25-09 / 1305
Initial (pre-purging) DTW (ft. BTOC): 13.05 /
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: 02-25-09
Final (post-purging) DTW (ft. BTOC):
No. of tubing + pump volumes purged: 1

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	90								90
Refill Setting	10								10
Discharge Setting	5								5
Flow rate (mL/min)	200								200

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)
1315	1305	200	2.0	19.20	1.237	8.31	158.4	1.82	73.4
1325	13.98	200	4.0	19.05	1.233	8.29	55.4	0.71	330
1330	14.72	200	5.0	19.00	1.233	8.29	51.1	0.70	35.0
1335	15.00	200	6.0	19.02	1.233	8.29	58.4	0.66	30.0
1340	15.15	200	7.0	19.15	1.233	8.28	53.0	0.69	26.0
1345	15.32	200	8.0	19.19	1.233	8.28	52.6	0.70	27.1
1350	15.50	200	9.0	19.23	1.232	8.28	51.7	0.66	26.2
1355	15.75	200	10.0	19.23	1.231	8.24	53.0	0.59	22.3

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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% for Electrical Conductivity (uMhos/cm)	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10%
1400	16.00	200	11.0	19.23	1.231	8.27	43.4	0.54	21.7
1405	16.25	200	12.0	19.36	1.231	8.26	45.9	0.54	18.9
1410	16.25	200	13.0	19.48	1.231	8.26	69.0	0.54	17.8
1415	16.35	200	14.0	20.00	1.232	8.25	80.5	0.58	17.6
1420	16.39	200	15.0	20.06	1.232	8.25	84.5	0.59	17.2
1425	16.50	200	16.5	20.36	1.234	8.25	82.1	0.60	17.4
1426	See pg 2								

10/20

Sampling

Sampling beginning time: 1426 Sampling completion time: 1434

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	16.02	200	17.0	20.36	1.235	8.25	88.3	0.57	17.9

Sample Information

Sample ID: LH17 WC 05 022509

Sample collection date/time: 02-25-09 / 1426

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
VOC		3 x 40mL VOA
Perchlorate		1 x 250mL HDPE
Thallium		1 x 250 mL HDPE

Requested Analysis	Method	Containers

Comments: Purged & Sampled w/ bladder pump

Filtered Thallium sample

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 7

Operable Unit/Site ID: LHAAP-17
Project Name/#: Longhorn
Weather: Pty cloudy; 70s

Sampling location ID: 17WW06
Sample ID: 17WW06-030509
Collection Time/Date: 11:00 03/05/09

Pump Installation

Pump installation crew: A. Willmore
PID/FID reading (well head/background): 0.3
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 2237
Initial (pre-installation) DTW/time: 10.85
Final (after pump priming) DTW/time: NA
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NR
Discharge tube length (ft.): 21
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NR psi

Installation date/beginning time: 3/5/09 10:12
Installation date/completion time: 3/5/09 10:16
Screen Interval (ft. BTOC): 12.5 to 22.5
Pump intake depth (ft BTOC): 17
Post-Installation DTW/time: 10.62
Max. sustainable pump rate (mL/min): 100
Appearance of product: None
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)									
Refill Setting									
Discharge Setting				NA					
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Willmore
Purge date/beginning time: 3/5/09 10:28
Initial (pre-purging) DTW (ft. BTOC): 10.82
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NR psi

PID/FID reading (well head/background): 0.3
Purge date/completion time: 3/5/09 11:28
Final (post-purging) DTW (ft. BTOC): 10.89
No. of tubing + pump volumes purged: NA

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting									
Discharge Setting				NA					
Flow rate (mL/min)									

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)
10:33	10.86	100	0.5	18.23	4.131	6.35	72.4	0.67	7.9
10:38	10.89	100	1.0	18.46	4.126	6.34	69.1	0.63	5.2
10:43	10.89	100	1.5	18.41	4.128	6.34	67.1	0.64	0.0
10:48	10.89	100	2.0	18.42	4.131	6.34	65.1	0.61	0.0
10:53	10.89	100	2.5	18.62	4.132	6.34	64.2	0.69	0.0

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GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WN06

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 / 30

3/5/09

Sampling

Sampling beginning time: 11:00 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)
11:20	10.89	100	6.0	19.94	4.134	6.34	62.6	0.71	0.0

Sample Information

Sample ID: MW06-030509
Duplicate sample collected (Y/N): N
Split sample collected (Y/N): N
COC No(s): NA

Sample collection date/time: 03/05/09 11:00
Duplicate sample ID: NA
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
TOC		1-250 mL HDPE w/ H_2SO_4	D-Gases		3-40 mL VOAs
Perchlorate		1-250 mL HDPE	Sulfides		1-500 mL HDPE w/ Acetate
DHC		1-1L Amber	VOC		2-40mL VOAs w/ HCl
Anions		1-500mL HDPE			
Cr/Th		1-500mL w/ HNO_3			

Comments: Purged & Sampled w/ peristaltic pump Ferrous Iron: 0.93

METALS NOT Filtered

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: Site 17
Project Name/#: USACE - LHAAP
Weather: Overcast 70°-75°F

Sampling location ID: 17GW07
Sample ID: 17GW07 022509
Collection Time/Date: 02-25-09 / 1044

Pump Installation

Pump installation crew: M. Mortimer
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 55.23'
Initial (pre-installation) DTW/time: 10.98'
Final (after pump priming) DTW/time: 10.25
Free product (circle): ~~LNAPL / DNAPL~~
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): NA

Installation date/beginning time: 02-25-09
Installation date/completion time: 02-25-09
Screen Interval (ft. BTOC): 45 to 55
Pump intake depth (ft BTOC): 50
Post-installation DTW/time: 10.25'
Max. sustainable pump rate (mL/min): ~ 4
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. Mortimer
Purge date/beginning time: 02-25-09 / 0945
Initial (pre-purging) DTW (ft. BTOC): 10.25'
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 02-25-09 / 1115
Final (post-purging) DTW (ft. BTOC): 10.66
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								30
Refill Setting	11								11
Discharge Setting	8								8
Flow rate (mL/min)	~~290~~ 200								200

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)
0953	10.55	~~290~~ 200	2.0	17.35	0.981	8.17	-161.3	1.05	47.5
1003	10.61	200	4.0	17.45	0.978	7.87	-209.1	0.32	100.1
1008	10.63	200	5.0	17.48	0.978	7.85	-207.1	0.29	90.6
1013	10.61	200	6.0	17.47	0.980	7.82	-215.3	0.24	30.4
1018	10.60	200	7.0	17.47	0.980	7.82	-219.1	0.21	31.2
1023	10.60	200	8.0	17.46	0.980	7.82	-221.8	0.22	29.2
1028	10.60	200	9.0	17.46	0.980	7.81	-230.1	0.20	21.6
1033	10.60	200	10.0	17.50	0.985	7.79	-220.9	0.17	19.1

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GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17MW07

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%
1038	10.60	200	11.0	17.55	0.988	7.77	-241.1	0.16	14.7
1043	10.60	200	13.0	17.61	0.990	7.75	-248.1	0.15	7.3
1644	Sample								

10
20

Sampling

Sampling beginning time: 1644

Sampling completion time: 1648

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)
1650	10.60	200	13.5	17.61	0.990	7.70	-238.7	0.15	8.9

Sample Information

Sample ID: 17MW07 022509

Sample collection date/time: 022509 / 1644

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 VOA			
Perchlorate		1 x 250 mL HDPE			
Thallium		1 x 250 mL HDPE			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

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GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHAAP-17 | Sampling location ID: MW003
Project Name/#: Longhorn / 117591 | Sample ID: MW003-022509
Weather: Cloudy | Collection Time/Date: 10:56 / 2-25-09

Pump Installation

Pump installation crew: A. Willmore / M. Mariner
Installation date/beginning time: 02/25/09 09:38
PID/FID reading (well head/background): 0.1
Installation date/completion time: 02/25/09 09:40
Casing diameter (inches): 4"
Screen Interval (ft. BTOC): 24 to 34
Total well Depth (ft. BTOC): 33.85
Pump intake depth (ft BTOC): 29
Initial (pre-installation) DTW/time: 10.31
Post-installation DTW/time: 10.31 09:42
Final (after pump priming) DTW/time: NA
Max. sustainable pump rate (mL/min): 100
Free product (circle): LNAPL / DNAPL
Appearance of product: None
Volume of water removed during priming (mL): NA
Discharge tube diameter (3/8" or 1/4"): 1/4"
Discharge tube length (ft.): 32
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)									
Refill Setting				NA					
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Willmore / M. Mariner
PID/FID reading (well head/background): 0.0
Purge date/beginning time: 2/25/09 09:51
Purge date/completion time:
Initial (pre-purging) DTW (ft. BTOC): 10.31
Final (post-purging) DTW (ft. BTOC):
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)									
Refill Setting				NA					
Discharge Setting									
Flow rate (mL/min)									

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)
09:56	10.43	100	0.5	17.50	1.596	7.44	103.0	1.16	166.2
10:01	16.46	100	1.0	17.34	1.512	7.80	126.9	0.98	44.5
10:06	10.47	100	1.5	17.32	1.468	7.79	129.4	0.92	39.5
10:11	10.48	100	2.0	17.30	1.492	7.76	138.1	0.89	37.7
1016	10.49	100	2.5	17.25	1.432	7.73	140.5	1.14	36.9
1021	10.52	100	3.0	17.30	1.429	7.68	131.3	1.08	30.3
1026	10.55	100	4.0	17.35	1.421	7.64	128.1	1.04	30.1
1031	10.58	100	4.5	17.41	1.421	7.57	144.1	1.98	23.1

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GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17MW08

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%
1036	10.59	100	5.0	17.42	1.418	7.56	144.1	1.32	23.4
1041	10.60	100	5.5	17.50	1.416	7.53	129.6	1.23	24.2
1046	10.60	100	6.0	17.52	1.467	7.50	128.1	1.21	25.1
					2/25/09				

10
20

Sampling

Sampling beginning time: 10:50

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)
10:55	10.60	100	6.8	17.52	1.403	7.51	127.9	1.23	20.1

Sample Information

Sample ID: 17MW08-022509

Sample collection date/time: 2-25-09 10:50

Duplicate sample collected (Y/N): N

Duplicate sample ID: NA

Split sample collected (Y/N): N

Split sample ID: NA

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Perchlorate	300.1	1 - 250 mL HDPE			
VOC	8260	3 - 40 mL VOCs			

Comments: Purged & Sampled w/ peristaltic pump

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

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GROUNDWATER SAMPLING FORM

Sheet 1 of 2

17MW09

Operable Unit/Site ID: LHAAP-17
Project Name/#: Longhorn / 117591
Weather: cloudy; 60s

Sampling location ID: 17MW09-
Sample ID: 17MW09-020609
Collection Time/Date: 14:20 02-2009

Pump Installation

Pump installation crew: A. Willmore
PID/FID reading (well head/background): 0.0
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 54.25
Initial (pre-installation) DTW/time: 12.35
Final (after pump priming) DTW/time: NR
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): 52

Installation date/beginning time: 02/24/09 13:10
Installation date/completion time: 02/26/09 15:12
Screen Interval (ft. BTOC): 44.5 to 54.5
Pump intake depth (ft BTOC): 47
Post-installation DTW/time: 12.91
Max. sustainable pump rate (mL/min): 100
Appearance of product: None
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 = NR psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	29								
Refill Setting	10								
Discharge Setting	5								
Flow rate (mL/min)	100								

Purging

Purging/sampling crew: A. Willmore
Purge date/beginning time: 2/26/09 17:24
Initial (pre-purging) DTW (ft. BTOC): 12.11
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 0.0
Purge date/completion time:
Final (post-purging) DTW (ft. BTOC): 12.94
No. of tubing + pump volumes purged: NA

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NR psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	29								29
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)
13:51	12.89	100	0.5	19.12	0.516	6.31	9.8	1.16	49.5
13:56	12.94	100	1.0	19.16	0.516	6.29	1.5	0.90	39.6
14:01	12.94	100	1.5	19.25	0.516	6.29	7.2	0.85	54.6
13:96	12.94	100	2.0	19.22	0.516	6.29	1.9	0.89	32.4
13:51	12.94	100	2.5	19.24	0.516	6.29	0.7	0.79	32.7
13:56	12.94	100	3.0	19.29	0.516	6.29	1.5	0.78	30.1
14:01	12.94	100	3.5	19.32	0.515	6.29	2.0	0.78	28.0
14:06	12.94	100	4.0	19.30	0.514	6.28	2.8	0.77	32.1

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GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW09

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%
14:11	12.94	100	4.5	19.53	0.513	6.28	-2.9	0.77	32.6
14:16	12.94	100	5.0	19.54	0.513	6.28	-1.6	0.77	32.7

10 20

Sampling

Sampling beginning time: 14:20 Sampling completion time: 14:30

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)
14:36	12.94	100	6.0	19.31	0.513	6.29	-1.9	0.78	30.1

Sample Information

Sample ID: 17WW09-022609
Duplicate sample collected (Y/N): N
Split sample collected (Y/N): N
COC No(s):

Sample collection date/time: 02-26-09 14:30
Duplicate sample ID: NA
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Antimony/Thallium	6020B	1-250 mL HD w/ HNO3			
Perchlorate	300.1	1-250 mL HDPE			
VOCs	8260	3-40mL VOA vials			

Comments: Purged & Sampled w/ bladder pump.

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

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GROUNDWATER SAMPLING FORM

Sheet 1 of 3

Operable Unit/Site ID: LHAAP-16 17
Project Name/#: Longhorn / 102591
Weather: cloudy; 60s

Sampling location ID: 17MW10-
Sample ID: 17MW10-022609
Collection Time/Date: 11:45 02.26.09

Pump Installation

Pump installation crew: A. Willmore
PID/FID reading (well head/background): 0.2
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 33.50
Initial (pre-installation) DTW/time: 12.91
Final (after pump priming) DTW/time: NA
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): ~~31~~ 31

Installation date/beginning time: 2/26/09 10:41
Installation date/completion time: 2/26/09 10:44
Screen Interval (ft. BTOC): 23.5 to 33.50
Pump intake depth (ft BTOC): 28
Post-installation DTW/time: 12.90
Max. sustainable pump rate (mL/min): 100
Appearance of product: None
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)									
Refill Setting									
Discharge Setting	C		NA		C				S
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Willmore
Purge date/beginning time: 2/26/09 10:56
Initial (pre-purging) DTW (ft. BTOC): 12.90
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 6.0
Purge date/completion time:
Final (post-purging) DTW (ft. BTOC):
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)									
Refill Setting									
Discharge Setting				NA					
Flow rate (mL/min)									

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)
11:01	13.01	100	0.5	18.79	3.364	6.55	65.7	2.16	191.2
11:11	13.02	100	1.5	18.62	3.426	6.07	64.0	0.75	125.7
11:16	13.04	100	2.0	18.62	3.429	6.04	61.5	0.69	126.6
11:21	13.04	100	2.5	18.57	3.437	6.02	58.2	6.64	98.2
11:26	13.04	100	3.0	18.51	3.431	6.02	56.7	0.66	78.7
11:31	13.04	100	3.5	18.61	3.438	6.02	53.5	0.55	82.7
11:36	13.04	100	4.0	18.66	3.435	6.01	50.7	0.56	66.9
11:41	13.04	100	4.5	18.64	3.439	6.01	50.1	0.51	71.9

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GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW10

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

Sampling

Sampling beginning time: 11:45

Sampling completion time: 11:55

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)
12:00	13.04	100	6.4	18.64	3.438	6.61	48.1	0.55	59.0

Sample Information

Sample ID: 17WW10-022609

Duplicate sample collected (Y/N): Y

Split sample collected (Y/N): N

COC No(s):

Sample collection date/time: 02.26.09 11:45

Duplicate sample ID: 17WW10-022609-FD, MS, MSD

Split sample ID: N/A

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Perchlorate	300.1	4x 250mL HDPE			
VOCs	8260	9- 40 mL Voa Vials			

Comments: Purged & Sampled w/ peristaltic pump No filter, Took Field Duplicate; Took MS/MSD Sampled per 8260 VOC

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089434

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: LHMP-17
Project Name/#: 117591 / LHMP
Weather: Cloudy; 60s

Sampling location ID: 17WW11
Sample ID: 17WW11-022609
Collection Time/Date:

Pump Installation

Pump installation crew: A. Willmon
PID/FID reading (well head/background): 0.0
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 17.96
Initial (pre-installation) DTW/time: 12.58
Final (after pump priming) DTW/time: NA
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): ~18'

Installation date/beginning time: 2/26/09 15:01
Installation date/completion time: 2/26/09 15:05
Screen Interval (ft. BTOC): ~~8 7.96~~ to ~~18.5~~ 18
Pump intake depth (ft BTOC): 15.5
Post-installation DTW/time: 12.14
Max. sustainable pump rate (mL/min): 100
Appearance of product: None
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)									
Refill Setting									
Discharge Setting				NA					
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Willmon
Purge date/beginning time: 2/26/09 15:15
Initial (pre-purging) DTW (ft. BTOC): 12.14
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 0.0
Purge date/completion time:
Final (post-purging) DTW (ft. BTOC): 13.26
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)									
Refill Setting									
Discharge Setting				NA					
Flow rate (mL/min)									

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)
15:20	13.03	100	0.5	19.96	3.132	5.94	112.0	2.74	499.7
15:25	13.26	100	1.0	18.99	3.160	5.91	152.6	2.12	146.7
15:30	13.26	100	1.5	18.71	3.165	5.94	187.4	2.40	54.9
15:35	13.26	100	2.0	18.59	3.168	5.95	200.2	2.40	52.1
15:40	13.26	100	2.5	18.65	3.170	5.95	217.0	2.52	45.5
1545	13.26	100	3.0	18.68	3.195	5.95	210.3	2.48	50.6
1550	13.26	100	3.5	18.70	3.207	5.96	203.1	2.46	58.3
1555	13.26	100	4.0	18.58	3.182	5.92	162.7	2.27	60.8

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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
1600	13.26	100	4.5	18.63	3.207	5.90	141.8	1.96	77.6
1605	13.26	100	5.0	18.69	3.205	5.89	145	1.94	73.8
1610	13.26	100	5.5	18.71	3.206	5.89	142.2	1.91	73.6
1611	Sampling Co								

8/26/09

Sampling

Sampling beginning time: 1611 Sampling completion time: 16:21

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)
16:21	13.26	100	7.9	18.71	3.206	5.89	142.1	1.90	72.4

Sample Information

Sample ID: MWW11-072609
Duplicate sample collected (Y/N): N
Split sample collected (Y/N): N
COC No(s):
Sample collection date/time:
Duplicate sample ID: NA
Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Nickel	6020B	1-500 mL HDPE			
VOCs	8260	3-40 mL VOAs			
Perchlorate	300.1	1-250 mL HDPE			

Comments: Purged & Sampled w/ Peristaltic pump.
Filtered Nickel Sample

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

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GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: Site 17
Project Name/#: USACE - LHAAP
Weather:

Sampling location ID: 17MW12
Sample ID: 17MW12 022609
Collection Time/Date: 02-26-09

Pump Installation

Pump installation crew: M. Martinez
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC):
Initial (pre-installation) DTW/time: 10.98
Final (after pump priming) DTW/time: 11.08
Free product (circle): LNAPL / ~~DNAPL~~
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): NA

Installation date/beginning time: 02-26-09/
Installation date/completion time: 02-26-09/
Screen Interval (ft. BTOC): 38.89 to 48.89
Pump intake depth (ft BTOC): ~~70~~ 43'
Post-installation DTW/time: 10.92
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: 02-26-09/ 1518
Initial (pre-purging) DTW (ft. BTOC): 11.08
Calculated tubing + pump volume: NA
Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NR psi

PID/FID reading (well head/background): NA
Purge date/completion time: 02-26-09
Final (post-purging) DTW (ft. BTOC):
No. of tubing + pump volumes purged: NA

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	30								
Refill Setting	10								
Discharge Setting	5								
Flow rate (mL/min)	210								

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)
1522	11.15	210	2.0	19.83	1.068	5.83	17.3	2.74	324.0
1532	11.25	210	4.1	19.09	1.117	5.73	-12.8	0.44	378.2
1537	11.26	210	5.04	19.11	1.120	5.73	-14.6	0.36	242.1
1542	11.26	210	6.11	19.13	1.123	5.73	-17.0	0.24	205.6
1547	11.24	210	7.16	18.98	1.124	5.73	-18.3	0.18	212.1
1552	11.26	210	8.21	18.80	1.127	5.73	-19.3	0.17	249.4
1557	11.24	210	9.26	18.81	1.124	5.73	-19.7	0.17	200.8
1558	Sample								

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GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW12

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

Sampling

Sampling beginning time: 1558

Sampling completion time: 1605

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)
1600	11.80	210		18.88	1.129	5.74	-20.9	0.15	210.6

Sample Information

Sample ID: 17WW12 032609

Sample collection date/time: 03-26-09

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 VOA			
Perchlorate		1 x 250mL HDPE			
Thallium		1 x 250mL HDPE			

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: 4HAA-17
Project Name/#:
Weather: cloudy, 30s

Sampling location ID: 17WW13
Sample ID: 17WW13-030309
Collection Time/Date: 10:25 3-03-09

Pump Installation

Pump installation crew: A. Willmer
PID/FID reading (well head/background): 0.0
Casing diameter (inches): 4
Total well Depth (ft. BTOC): 34.58
Initial (pre-installation) DTW/time: 9.68
Final (after pump priming) DTW/time: NR
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): 33

Installation date/beginning time: 3/3/09 0859
Installation date/completion time: 3/3/09 09:9
Screen Interval (ft. BTOC): 24.5 to 34.5
Pump intake depth (ft BTOC): 29.5
Post-installation DTW/time:
Max. sustainable pump rate (mL/min): 100
Appearance of product:
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)									
Refill Setting				NA					
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Willmer
Purge date/beginning time:
Initial (pre-purging) DTW (ft. BTOC):
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 0.0
Purge date/completion time:
Final (post-purging) DTW (ft. BTOC):
No. of tubing + pump volumes purged: N/A

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					NA				
Discharge Setting									
Flow rate (mL/min)									

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	9.87	100	0.5	17.42	2.823	6.29	91.1	2.05	201.7
9:15	9.89	100	1.0	17.51	2.826	6.30	78.4	2.03	153.1
9:20	↓	↓	1.5	17.49	2.824	6.31	63.6	1.93	106.8
9:25			2.0	17.48	2.821	6.32	52.1	1.89	94.6
9:30			2.5	17.31	2.820	6.34	41.3	1.68	42.2
9:35			3.0	17.33	2.818	6.34	36.4	1.44	88.4
9:40			3.5	17.34	2.818	6.34	31.8	1.21	71.1
9:45	↓	↓	4.0	17.23	2.818	6.34	29.8	1.10	29.6

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GROUNDWATER SAMPLING FORM

Sheet 2 of 2

MW13

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%
9:50	9.99		4.5	17.19	2.818	6.34	30.4	0.94	73.8
9:55	9.83		5.0	17.19	2.814	6.38	30.6	0.81	74.3
10:00	9.83		5.5	19.17	2.814	6.37	31.2	0.79	72.5
10:05	9.93		6.0	17.13	2.814	6.36	31.4	0.71	76.6
10:15	9.83	↓	6.5	17.13	2.814	6.36	31.7	0.74	71.6
10:20	9.83	100	7.0	17.13	2.814	6.36	31.9	0.71	71.1

3/3/09

10 / 20

Sampling

Sampling beginning time: 10:25 Sampling completion time: 10:30

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)
10:35	9.83	100	8.3	17.18	2.813	6.37	32.9	0.73	70.1

Sample Information

Sample ID: 17wv13-030309 Sample collection date/time: 3/3/09 10:25

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s): NR

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Antimony / Thallium		1-250 mL HDPE w/ HNO3			
Perchlorate		1-250 mL HDPE			
VOCs		3-40 mL vials w/ HCl			

Comments: Purged & Sampled w/ peristaltic pump

METALS Filtered !! METALS WERE FILTERED !!

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; ft - head above pump intake; mL - milliliter; L - Liter

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GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: UHAU-D
Project Name/#: Lachem / 113591
Weather: cloudy, 60s

Sampling location ID: DTWW14-
Sample ID: DTWW14-022509
Collection Time/Date: 14:33 2/25/09

Pump Installation

Pump installation crew: A. Wilmot / M. Martinez
PID/FID reading (well head/background): 0.6
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 26.49
Initial (pre-installation) DTW/time: 13.46
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL):
Discharge tube length (ft.): 34

Installation date/beginning time: 2-25-09 13:01
Installation date/completion time: 2-25-09 13:03
Screen Interval (ft. BTOC): 16.5 to 26.5
Pump intake depth (ft BTOC): 21
Post-installation DTW/time: 13.45
Max. sustainable pump rate (mL/min): 100
Appearance of product: None
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)									
Refill Setting				NA					
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Wilmot / M. Martinez
Purge date/beginning time: 2-25-09 13:14
Initial (pre-purging) DTW (ft. BTOC): 13.46
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 0.0
Purge date/completion time: 2-25-09
Final (post-purging) DTW (ft. BTOC): 13.61
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)									
Refill Setting				NA					
Discharge Setting									
Flow rate (mL/min)									

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)
13:19	13.53	100	0.5	18.67	2.712	6.64	60.1	1.58	274.1
13:24	13.59	100	1.0	18.61	2.715	6.32	71.2	1.15	198.1
13:29	13.61	100	1.5	18.53	2.719	6.21	76.2	1.06	188.1
13:34	13.61	100	2.0	18.47	2.720	6.17	76.0	0.99	145.0
13:39	13.61	100	2.5	18.46	2.724	6.15	72.9	0.97	116.0
13:44	13.61	100	3.0	18.55	2.742	6.14	69.1	0.97	95.7
13:49	13.61	100	3.5	18.67	2.742	6.13	68.0	0.97	83.0
0.54	13.61	100	4.0	18.71	2.742	6.13	66.3	0.97	79.4

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GROUNDWATER SAMPLING FORM

Sheet 2 of 3

17GW14

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%
1359	13.41	100	4.5	18.75	2.765	6.13	652	0.85	90.0
1404	13.41	100	5.0	18.77	2.765	6.13	643	0.86	93.8
1409	13.41	100	5.5	18.77	2.767	6.13	642	0.85	91.0
1410	Sample								

10/20

Sampling

Sampling beginning time: 1410 Sampling completion time: 1416

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)
1423	12.61	100	5.5	18.81	2.777	6.13	639	0.84	72.7

Sample Information

Sample ID: 17WWN-022501 Sample collection date/time: 2-25-08 1432

Duplicate sample collected (Y/N): N Duplicate sample ID: NA

Split sample collected (Y/N): N Split sample ID: NA

COC No(s):

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
Thallium	6020B	1-250 mL HDPE			
Perchlorate	300.1	1-250 mL HDPE			
VOCs	8260	3-40 mL Vom			

Comments: Purged & Sampled w/ peristaltic pump

Filtered Thallium Sample

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089442

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: Site 17
Project Name/#: USACE - LHAAP
Weather:

Sampling location ID: 17 GWMW 15
Sample ID: 17 GWMW 15 022609
Collection Time/Date: 02-26-09 / 1401

Pump Installation

Pump installation crew: M. Martinez
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 54.90
Initial (pre-installation) DTW/time: 13.89
Final (after pump priming) DTW/time: 13.49
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): NA

Installation date/beginning time: 02-26-09/
Installation date/completion time: 02-26-09
Screen Interval (ft. BTOC): 44 to 54
Pump intake depth (ft BTOC): 49'
Post-installation DTW/time: 13.49
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: 02-26-09 / 1324
Initial (pre-purging) DTW (ft. BTOC): 13.49'
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 02-26-09 / 1425
Final (post-purging) DTW (ft. BTOC): 15.05
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	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)
1330	14.42	100	2.0	18.90	0.412	6.91	36.1	4.18	18.2
1340	14.54	100	3.6	18.82	0.397	6.67	45.1	3.84	5.4
1345	14.64	100	3.5	18.96	0.396	6.64	47.1	3.88	5.7
1350	14.72	100	4.0	18.79	0.394	6.62	47.3	3.84	4.6
1355	14.83	100	4.5	18.77	0.390	6.61	47.6	3.80	3.4
1400	14.91	100	5.0	18.82	0.388	6.60	46.5	3.80	2.7
1401	Sample								

00089443

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW15

Water Quality Parameter Measurements (continued)

Time	DTW (ft. BTOC)	Purge Rate (mL/min)	Cumulative Volume Purged (L) ± 10%	Temp. (degree C) ± 10%	Electrical Conductivity (uMhos/cm) ±3%	pH ± 0.1	Eh (mv) ± 10	DO (mg/L) ± 10%	Turbidity (NTU) ± 10% 10 20

Sampling

Sampling beginning time: 1401 Sampling completion time: 1406

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	15.05'	100	6.0	18.94	0-39.1	6.62	45.2	3.84	1.0

Sample Information

Sample ID: 17WW15 022609
Duplicate sample collected (Y/N): NO
Split sample collected (Y/N): NO
COC No(s):

Sample collection date/time: 02-26-09
Duplicate sample ID: NA
Split sample ID: NA

Requested Analysis	Method	Containers
VOC		3 x 40mL VOA
Perchlorate		1 x 250mL HDPE

Requested Analysis	Method	Containers

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089444

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: Site 17
Project Name/#: USACE-UHAAP
Weather:

Sampling location ID: 17MW16
Sample ID: 17MW16 022609
Collection Time/Date: 02-26-09 1244

Pump Installation

Pump installation crew: M. Martinez
PID/FID reading (well head/background): NA
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 153.58
Initial (pre-installation) DTW/time: 11.45
Final (after pump priming) DTW/time: 11.45
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): NA

Installation date/beginning time: 02-26-09/
Installation date/completion time: 02-26-09/
Screen Interval (ft. BTOC): 143 to 153
Pump intake depth (ft BTOC): 148'
Post-installation DTW/time: 11.45
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: 02-26-09/ 1200
Initial (pre-purging) DTW (ft. BTOC): 11.45/
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): NA
Purge date/completion time: 02-26-09/ 1300
Final (post-purging) DTW (ft. BTOC): 14.08
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)	92								20
Refill Setting	12								12
Discharge Setting	3								3
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)
1208	12.02	100	2.0	18.69	1.490	10.20	-73.8	3.08	25.5
1218	12.80	100	3.0	18.59	1.489	10.25	-118.3	1.21	20.6
1223	13.20	100	3.5	18.52	1.489	10.25	-120.4	1.10	20.2
1228	13.45	100	4.0	18.45	1.489	10.25	-123.5	1.01	19.0
1233	13.58	100	4.5	18.73	1.490	10.25	-154.3	1.00	18.7
1238	13.63	100	5.0	18.45	1.491	10.25	-157.5	0.99	18.6
1243	13.89	100	5.5	18.48	1.490	10.25	-154.5	0.98	18.7
1244	Sample								

00089445

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW16

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

Sampling

Sampling beginning time: 1244 Sampling completion time: 1249

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)
1253	14.08	100	6.5	18.69	1.490	10.25	-155.1	0.980	18.3

Sample Information

Sample ID: 17WW16 022609 Sample collection date/time: 02-26-09

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 VOA			
Perchlorate		1 x 250 mL HDPE			

Comments:

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089446

GROUNDWATER SAMPLING FORM

Sheet 1 of 2

Operable Unit/Site ID: Lyndhurst / LWMP-17
Project Name/#: Lyndhurst / 117591
Weather: Partly Cloudy / 80

Sampling location ID: 030409-MW01-7
Sample ID: LYN117-030409
Collection Time/Date: 11:45 03-04-09

Pump Installation

Pump installation crew: A. Willmore
PID/FID reading (well head/background): 0.1
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 53.71
Initial (pre-installation) DTW/time: 10.07
Final (after pump priming) DTW/time: NA
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): 14

Installation date/beginning time: 3/4/09 10:31
Installation date/completion time: 3/4/09 10:37
Screen Interval (ft. BTOC): 43.5 to 53.5
Pump intake depth (ft BTOC): 48
Post-installation DTW/time: 9.85
Max. sustainable pump rate (mL/min): 100
Appearance of product: None
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 = NR psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)									
Refill Setting				NA					
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Willmore
Purge date/beginning time: 3/4/09 10:35
Initial (pre-purging) DTW (ft. BTOC): 10.06
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 0.1
Purge date/completion time: 3/4/09 11:45
Final (post-purging) DTW (ft. BTOC): NA
No. of tubing + pump volumes purged: NR

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NR psi

	Initial	2	3	4	5	6	7	8	Final
Pressure (psi)	33								38
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)
10:40	10.08	100	0.5	19.74	1.589	6.10	-1.1	0.91	94.3
10:45	10.18	100	1.0	19.80	1.579	6.12	-2.9	0.92	67
10:50	10.21	100	1.5	19.81	1.579	6.14	-15.2	0.90	54.3
10:55	10.21	100	2.0	19.88	1.578	6.14	-15.3	0.84	49.5
11:00	10.21	100	2.5	19.94	1.578	6.14	-15.9	0.85	49.1
11:26	10.21	100	4.5	19.90	1.578	6.15	-15.9	0.81	48.3
11:40	10.21	100	6.5	19.94	1.578	6.15	-16.4	0.85	46.1

00089447

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17WW17

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

Sampling

Sampling beginning time: 11:45

Sampling completion time: 12:50

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)
12:55	10.21	100		19.92	1.578	6.15	16.5	0.84	42.8

Sample Information

Sample ID: 17WW17

Duplicate sample collected (Y/N): N

Split sample collected (Y/N): N

COC No(s): NA

Sample collection date/time: 03-04-09 11:45

Duplicate sample ID: NA

Split sample ID: NA

Requested Analysis	Method	Containers
VOC		3- 40 mL vog vials
TOC		1- 250 mL w/ H_2SO_4
Perchlorate		1- 250 mL HDPE
DRO		1- 1L Amb
Thallium		1- 250 mL HDPE w/ HNO3

Requested Analysis	Method	Containers
Anions		1- 250 mL HDPE
D-Gases		3- 40 mL vials
Sulfides		1- 500 mL w/ Zn Acetate

Comments: Purged & Sampled w/ Bladder pump.

Ferrous Iron: 2.11 mg/L

Filtered ~~samples~~ Sample (AD)

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

00089448

GROUNDWATER SAMPLING FORM

Sheet 1 of 3

Operable Unit/Site ID: UNAP-17
Project Name/#: 137591 / Longview
Weather: pdy cloudy ; 60s

Sampling location ID: 17MW18
Sample ID: 17MW18 - 030309
Collection Time/Date: 14:36 03/03/09

Pump Installation

Pump installation crew: A. Willmore
PID/FID reading (well head/background): 0.0
Casing diameter (inches): 4"
Total well Depth (ft. BTOC): 56.45
Initial (pre-installation) DTW/time: 9.68
Final (after pump priming) DTW/time:
Free product (circle): LNAPL / DNAPL
Volume of water removed during priming (mL): NA
Discharge tube length (ft.): 54'

Installation date/beginning time: 3/3/09 13:45
Installation date/completion time: 3/3/09 13:47
Screen Interval (ft. BTOC): 46.6 to 56.6
Pump intake depth (ft BTOC): 51
Post-installation DTW/time: 9.47
Max. sustainable pump rate (mL/min): 100
Appearance of product: None
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)									
Refill Setting				NA					
Discharge Setting									
Flow rate (mL/min)									

Purging

Purging/sampling crew: A. Willmore
Purge date/beginning time: 3/3/09 13:52
Initial (pre-purging) DTW (ft. BTOC): 9.47
Calculated tubing + pump volume: NA

PID/FID reading (well head/background): 0.0
Purge date/completion time: 3/3/09 14:47
Final (post-purging) DTW (ft BTOC): 9.76
No. of tubing + pump volumes purged: NR

Pneumatic Controller Tuning:
Initial air pressure = H (ft.) X 0.43 = NR psi

	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)
13:57	9.71	100	0.5	18.33	2.993	6.28	-15.4	1.48	42.9
14:07	9.76	100	1.0	18.37	3.054	6.12	-15.0	1.09	19.8
14:12	9.76	100	1.5	18.10	3.059	6.08	-10.9	0.95	20.8
14:17	9.76	100	2.0	18.10	3.080	6.07	-5.8	0.84	22.4
14:22	9.76	100	2.5	18.05	3.096	6.06	-2.8	0.80	24.7
14:27	9.76	100	3.0	18.08	3.105	6.06	-4.2	0.76	25.9

00089449

GROUNDWATER SAMPLING FORM

Sheet 2 of 2

17MW18

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%
					3/3/09				

10
20

Sampling

Sampling beginning time: 14:35

Sampling completion time: 14:40

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)
14:47	9.76	100	5.0	17.84	3.114	6.05	-6.0	0.71	24.9

Sample Information

Sample ID: 17MW18-030309

Duplicate sample collected (Y/N): N

Split sample collected (Y/N): N

COC No(s):

Sample collection date/time: 3/3/09 1435

Duplicate sample ID: NA

Split sample ID: NA

Requested Analysis	Method	Containers	Requested Analysis	Method	Containers
PerChlorate	300	1-250 mL HDPE			
VOCs	8260	3-40 mL Vos vial			

Comments: Purged and Sampled w/ bladder pump.

Abbreviations: BTOC - Below top of casing; DTW - Depth to water; H - head above pump intake; mL - milliliter; L - Liter

Attachment 4

Laboratory Reports

Laboratory Report Index

Location	Sample	Date	Analytes	Lab Report
130	MW130-120407	4-Dec-07	VOCs, perchlorate	L0712230_lv4.pdf
17WW05	17WW05-120407	4-Dec-07	VOCs, perchlorate	L0712230_lv4.pdf
17WW06	17WW06-120507	4-Dec-07	VOCs, perchlorate	L0712230_lv4.pdf
17WW04	17WW04-120507	5-Dec-07	VOCs, perchlorate	L0712230_lv4.pdf
17WW10	17WW10-120507	5-Dec-07	VOCs, perchlorate	L0712230_lv4.pdf
17WW17	17WW17-021908	19-Feb-08	VOCs	L08020523.pdf
17WW17	17WW17-031408	14-Mar-08	VOCs	L08030315.pdf
MW-19	MW19-041608	16-Apr-08	VOCs, perchlorate	L08040523.pdf
17WW18	17WW18-100808	8-Oct-08	VOCs	L08100416.pdf
17WW05	17WW05-022509	25-Feb-09	VOCs, metals	LH17(0224-0304)L09030095.pdf
17WW07	17WW07-022509	25-Feb-09	VOCs, metals	LH17(0224-0304)L09030095.pdf
17WW08	17WW08-022509	25-Feb-09	VOCs	LH17(0224-0304)L09030095.pdf
17WW14	17WW14-022509	25-Feb-09	VOCs, metals	LH17(0224-0304)L09030095.pdf
17WW09	17WW09-022609	26-Feb-09	VOCs, metals	LH17(0224-0304)L09030095.pdf
17WW10	17WW10-022609	26-Feb-09	VOCs	LH17(0224-0304)L09030095.pdf
17WW10	17WW10-022609-FD	26-Feb-09	VOCs	LH17(0224-0304)L09030095.pdf
17WW11	17WW11-022609	26-Feb-09	VOCs, metals	LH17(0224-0304)L09030095.pdf
17WW12	17WW12-022609	26-Feb-09	VOCs, metals	LH17(0224-0304)L09030095.pdf
17WW15	17WW15-022609	26-Feb-09	VOCs	LH17(0224-0304)L09030095.pdf
17WW16	17WW16-022609	26-Feb-09	VOCs	LH17(0224-0304)L09030095.pdf
17WW04	17WW04-030209	2-Mar-09	VOCs, metals	LH17(0224-0304)L09030095.pdf
17WW13	17WW13-030309	3-Mar-09	VOCs, metals	LH17(0224-0304)L09030095.pdf
17WW18	17WW18-030309	3-Mar-09	VOCs	LH17(0224-0304)L09030095.pdf
MW-18	MW-18-030309	3-Mar-09	VOCs, metals	LH17(0224-0304)L09030095.pdf
130	MW-130-030409	4-Mar-09	VOCs, metals, Gen Chem	LH17(0224-0304)L09030095.pdf
17WW01	17WW01-030409	4-Mar-09	VOCs, metals, Gen Chem	LH17(0224-0304)L09030095.pdf
17WW17	17WW17-030409	4-Mar-09	VOCs, Gen Chem	LH17(0224-0304)L09030095.pdf
17WW02	17WW02-030509	5-Mar-09	perchlorate	CLO4(0305)680-45296-1.pdf
17WW03	17WW03-030509	5-Mar-09	perchlorate	CLO4(0305)680-45296-1.pdf
17WW06	17WW06-030509	5-Mar-09	perchlorate	CLO4(0305)680-45296-1.pdf
17WW02	17WW02-030509	5-Mar-09	VOCs, metals, MNA	LH17(0305)L09030127.pdf
17WW03	17WW03-030509	5-Mar-09	VOCs, metals, MNA	LH17(0305)L09030127.pdf
17WW06	17WW06-030509	5-Mar-09	VOCs, metals, MNA	LH17(0305)L09030127.pdf
17WW11	17WW11-033009	30-Mar-09	perchlorate	CLO4(0330)680-45945-1.pdf

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ANALYTICAL REPORT

Job Number: 680-45296-1

Job Description: Shaw Longhorn

For:
Microbac Laboratories, Inc.
158 Starlite Drive
Marietta, OH 45750

Attention: Ms. Stephanie Mossburg

Approved for release.
Sheila Hoffman
Project Manager I
3/23/2009 3:07 PM

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03/23/2009

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. This report may not be reproduced, except in full, without the written approval of the laboratory. Questions should be directed to the person who signed this report.

Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

Job Narrative
680-J45296-1

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

General Chemistry
Method(s) 314.0: Sample 680-45296-2 was analyzed at a dilution of 1:4 due to the Matrix Conductivity Threshold of the instrument. The reporting limits have been adjusted accordingly.

No other analytical or quality issues were noted.

METHOD / ANALYST SUMMARY

Client: Microbac Laboratories, Inc. Job Number: 680-45296-1

Method	Analyst	Analyst ID
EPA 314.0	Brazell, Connie	CB

SAMPLE SUMMARY

Client: Microbac Laboratories, Inc. Job Number: 680-45296-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
680-45296-1	17WW02-030509	Water	03/05/2009 1208	03/06/2009 1015
680-45296-2	17WW03-030509	Water	03/05/2009 0935	03/06/2009 1015
680-45296-3	17WW06-030509	Water	03/05/2009 1100	03/06/2009 1015

Analytical Data

Microbac Laboratories, Inc.
ATTN: Ms. Stephanie Mossburg

Job Number: 680-45296-1
Project: Shaw Longhorn
SDG Number: Shaw Longhorn

Client Sample ID: 17WW02-030509

Lab Sample ID: 680-45296-1
Client Matrix: Water

Date Sampled: 03/05/2009 12:08
Date Received: 03/06/2009 10:15

Test Method	CAS Number	Result	Q	Flag	MDL	MQL	SDL	Unit	Batch	Analysis Date/Time	D.F.	Analyst
Method: EPA 314.0,Water												
Perchlorate	14797-73-0	160000			0.11	1.0	280	ug/L	132767	03/16/2009 14:06	2500	CB

Microbac Laboratories, Inc.
ATTN: Ms. Stephanie Mossburg

Job Number: 680-45296-1
Project: Shaw Longhorn
SDG Number: Shaw Longhorn

Client Sample ID: 17WW03-030509

Lab Sample ID: 680-45296-2
Client Matrix: Water

Date Sampled: 03/05/2009 09:35
Date Received: 03/06/2009 10:15

Test Method	CAS Number	Result	Q	Flag	MDL	MQL	SDL	Unit	Batch	Analysis Date/Time	D.F.	Analyst
Method: EPA 314.0,Water												
Perchlorate	14797-73-0	0.44	U		0.11	1.0	0.44	ug/L	132767	03/16/2009 15:06	4	CB

Microbac Laboratories, Inc.
ATTN: Ms. Stephanie Mossburg

Job Number: 680-45296-1
Project: Shaw Longhorn
SDG Number: Shaw Longhorn

Client Sample ID: 17WW06-030509

Lab Sample ID: 680-45296-3
Client Matrix: Water

Date Sampled: 03/05/2009 11:00
Date Received: 03/06/2009 10:15

Test Method	CAS Number	Result	Q	Flag	MDL	MQL	SDL	Unit	Batch	Analysis Date/Time	D.F.	Analyst
Method: EPA 314.0,Water												
Perchlorate	14797-73-0	74000			0.11	1.0	110	ug/L	132767	03/16/2009 14:21	1000	CB

DATA REPORTING QUALIFIERS

Client: Microbac Laboratories, Inc. Job Number: 680-45296-1

Lab Section	Qualifier	Description
HPLC		
	U	Indicates the analyte was analyzed for but not detected.

Quality Control Results

Client: Microbac Laboratories, Inc. Job Number: 680-45296-1

Method Blank - Batch: 680-132767

Method: 314.0
Preparation: N/A

Lab Sample ID: MB 680-132767/2
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 03/16/2009 1129
Date Prepared: N/A

Analysis Batch: 680-132767
Prep Batch: N/A
Units: ug/L

Instrument ID: ICCS200 - H
Lab File ID: 0005.d
Initial Weight/Volume:
Final Weight/Volume: 5 mL
Injection Volume: 0.25 uL

Analyte	Result	Qual	MDL	RL
Perchlorate	0.11	U	0.11	1.0

Lab Control Spike - Batch: 680-132767

Method: 314.0
Preparation: N/A

Lab Sample ID: LCS 680-132767/4
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 03/16/2009 1200
Date Prepared: N/A

Analysis Batch: 680-132767
Prep Batch: N/A
Units: ug/L

Instrument ID: ICCS200 - H
Lab File ID: 0007.d
Initial Weight/Volume:
Final Weight/Volume: 5 mL
Injection Volume: 0.25 uL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Perchlorate	10.0	9.81	98	85 - 115	

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 680-132767

Method: 314.0
Preparation: N/A

MS Lab Sample ID: 680-45296-2
Client Matrix: Water
Dilution: 4.0
Date Analyzed: 03/16/2009 1521
Date Prepared: N/A

Analysis Batch: 680-132767
Prep Batch: N/A

Instrument ID: ICCS200 - H
Lab File ID: 0019.d
Initial Weight/Volume:
Final Weight/Volume: 5 mL
Injection Volume: 0.25 uL

MSD Lab Sample ID: 680-45296-2
Client Matrix: Water
Dilution: 4.0
Date Analyzed: 03/16/2009 1536
Date Prepared: N/A

Analysis Batch: 680-132767
Prep Batch: N/A

Instrument ID: ICCS200 - H
Lab File ID: 0020.d
Initial Weight/Volume:
Final Weight/Volume: 5 mL
Injection Volume: 0.25 uL

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Perchlorate	100	100	80 - 120	1	15		

Calculations are performed before rounding to avoid round-off errors in calculated results.

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THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
TRRP Laboratory Data Package Cover Page
SDG / Log #: 680-45296
Fraction: Perchlorate 314.0

This data package consists of this signature page, the Laboratory Review Checklist, and the following reportable data:

- ☑ Field chain-of-custody documentation
- ☑ Sample identification cross-reference
- ☑ Test reports (analytical data sheets) for each environmental sample that includes:
  - Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - Dilution factors
  - Preparation methods
  - Clean-up methods
  - TICs (if required for the project)
- ☐ Surrogate recovery data including:
  - Calculated %R
  - Laboratory surrogate QC limits
- ☑ Test reports / Summary forms for blank samples
- ☑ Test reports / Summary forms for laboratory control samples (LCSs) including:
  - LCS spiking amounts
  - Calculated %R for each analyte
  - Laboratory LCS QC limits
- ☑ Test reports for project matrix spike/matrix spike duplicates (MS/MSD) including:
  - Samples associated with MS/MSD clearly identified
  - MS/MSD spiking amounts
  - Concentration of each MS/MSD analyte measured in the parent and spiked samples
  - Calculated %Rs and relative percent differences (RPD)
  - Laboratory MS/MSD QC limits
- ☑ Laboratory analytical duplicate (if applicable) recovery and precision
  - Amount of analyte measured in the duplicate
  - Calculated RPD
  - Laboratory QC limits for analytical duplicates
- ☑ List of method quantitation limits for each analyte for each method and matrix
- ☑ Other problems and anomalies
- ☑ The Exception Report for every "No" or "Not Reviewed (NR)" item in the 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 exception reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory as having potential to affect the quality of the data have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.*

Sheila Hoffman	Sheila Hoffman	Project Manager	03/23/09
Name (Printed)	Signature	Official Title	Date

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THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
TRRP Laboratory Review Checklist

SDG / Log #: 68045296/ 680-45296
Fraction: 314.0

Date: 03.20.09
Reviewer Name: C. Brazell
Prep Batch Numbers: 132767
Instrument ID: ICH

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI (QA/PM)	**Chain-of-Custody (COC)**					
		Did each sample meet the laboratory's sample acceptance policy upon receipt? (This includes cooler temperatures, sample IDs, correct COC, etc.)	X				
		Are all sample receipt issues described in an exception report and noted in the case narrative?	X				
R2	OI (QA/PM)	**Sample and Quality Control (QC) Identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers? (This information is included in the case narrative table and/or LIMS report.)	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data? (This information is included on the forms and/or LIMS report.)	X				
R3	OI	**Test Reports**					
		Were all samples prepared within holding times?	X				
		Were all samples analyzed within holding times?	X				
		Were all hits >MQL (RL) within the instrument's calibration range?	X				
		If hits are not within the calibration range, have the data been flagged with the appropriate qualifiers and additional runs reported?			X		
		Were calculations reviewed by a peer or supervisor?	X				
		Were analyte identifications reviewed by a peer or supervisor?	X				
		Were sample quantitation limits reported for all undetected analytes? (This information is included on the forms and/or LIMS report.)	X				
		Were the results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		If required for the project, were TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		Were surrogates added prior to extraction, as required by the method?			X		
		Were all surrogate percent recoveries within the laboratory QC limits? (Note ANY failing surrogate in the Exception Report.)			X		
R5	OI	**Test Reports / Summary Forms for Blanks**					
		Were the appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL (RL)?	X				
R6	OI	**Laboratory Control Samples (LCS):**					
		Were all COCs included in the LCS? (Were full-list spikes used?)	X				
		Was each LCS taken through the entire analytical procedure, including preparation and, if applicable, cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) % Rs within laboratory QC limits? (Note ANY failing spike analyte in the Exception Report.)			X		
		If performed, was the LCSD %RPD within QC limits? (Note ANY failing spike analyte in the Exception Report.)			X		
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Datax**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were the MS/MSD analyzed at the appropriate frequency?	X				
		Were MS/MSD %Rs within the laboratory QC limits? (Note ANY failing spike analyte in the Exception Report.)	X				
		Were MS/MSD RPDs within laboratory QC limits? (Note ANY failing spike analyte in the Exception Report.)	X				

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TestAmerica Savannah
TRRP Laboratory Review Checklist

SDG / Log #: 68045296/ 680-45296
Fraction: 314.0

Date: 03.20.09
Reviewer Name: C. Brazell
Prep Batch Numbers: 132767
Instrument ID: ICH

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R8	I	**Analytical Duplicate Data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method Quantitation Limits (MQLs):**					
		Are the MQLs (RLs) for each analyte included in the laboratory data package? (This information is included on the forms and/or LIMS report.)	X				
		Do the MQLs (RLs) correspond to the concentration of the lowest non-zero calibration standard, where applicable?	X				
		Have the unadjusted MQLs (RLs) been included in the laboratory data package? (This information is included on the forms and/or LIMS report.)	X				
R10	OI	**Other Problems/Anomalies**					
		Are all known problems, anomalies, and/or special conditions noted in the Laboratory Review Checklist and the Exception Report?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SQL (RL) to minimize the matrix interference effects on the sample results, as applicable?	X				
S1	OI	**Initial Calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSD or correlation coefficient criteria met? (Note ANY use of Grand Mean in the Exception Report.)	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard? (Note any ICV outliers in the Exception Report.)	X				
S2	OI	**Initial & Continuing Calibration Verification (ICCV & CCV)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits? (Note ANY use of Grand Mean in the Exception Report.)	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass Spectral Tuning:**					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	OI	**Internal Standards (IS):**					
		Were IS area counts within the method-required QC limits?			X		
		Were IS retention times within the method-required QC limits?			X		
S5	OI	**Raw Data**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				1
S6	O	**Dual Column Confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**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?			X		2

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THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
TRRP Laboratory Review Checklist

SDG / Log #: 68045296/ 680-45296
Fraction: 314.0

Date: 03.20.09
Reviewer Name: C. Brazell
Prep Batch Numbers: 132767
Instrument ID: ICH

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S10	OI	**Method Detection Limit (MDL) Studies**					
		Has an MDL study been performed for each analyte?	X				
		Has a DCS been performed for each analyte within the last 3 months? (If not, then list the estimated completion date in the Exception Report.)	X				
		Does the DCS meet the acceptance criteria and support the MDL?	X				
		If the DCS does not meet criteria, has the associated MDL been raised to the appropriate level?	X				
S11	OI	**Proficiency Test Reports:**					
		Has the laboratory participated in the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		Are all standards used NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound / Analyte Identification Procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		Has a DOC been performed as is consistent with NELAC Chapter 5C or ISO/IEC 4 for each analyst and analyte associated with this analysis?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification / Validation Documentation for Methods**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses; PM = Project Management; QA = Quality Assurance
3. NA = Not applicable.
4. NR = Not Reviewed.
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
TRRP Laboratory Review Checklist

SDG / Log #: 68045296/ 680-45296
Fraction: 314.0

Date: 03.20.09
Reviewer Name: C. Brazell
Prep Batch Numbers: 132767
Instrument ID: ICH

Exception Reports

ER #[1]	DESCRIPTION
1	Samples 680-45296-2MS, and –2MSD required a manual integration due to an unresolved baseline.
2	Samples 680-45296-2, -2MS, and –2MSD required a dilution due to the matrix conductivity threshold of the instrument. The reporting limit has been adjusted accordingly.
3	
4	

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on the LCR).

Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Microbac
Address : 158 Starlite Drive, Marietta OH 45750
Contact : Stephanie Mossburg
Phone: 1-800-373-4071

Pg 1 00089466

PM: Chris Long (713.996.4579) TAT: Standard/Rush
Project Contact: Jennifer Hoang Phone No: 713-996-4408
Project Name: Longhorn Site: Site 17
Location: Texas Project #:

Sampler Print: Allen Willmore
Sampler Sign: [signature]

Sample Number	Grab	Date	Time	Matrix	# of Containers	Perchlorate	COMMENTS
[illegible]				Water		X	
7WW02-030509	✓	3/5/09	12:08	Water		X	
7WW03-030509	✓	3/5/09	9:35	Water		X	
[illegible]				Water		X	
[illegible]				Water		X	
7WW08-030509	✓	3/5/09	11:00	Water		X	
[illegible]				Water		X	
[illegible]				Water		X	
[illegible]				Water		X	
[illegible]				Water		X	
[illegible]				Water		X	
[illegible]				Water		X	
[illegible]				Water		X	
[illegible]				Water		X	
[illegible]				Water		X	
[illegible]				Water		X	
[illegible]				Water		X	
[illegible]				Water		X	
				Water			

Relinquished By: [signature]
Date/Time 03/05/09 17:00

Received By:
Date/Time

Special Instructions

Relinquished By:
Date/Time

Received for Laboratory By: KL
Date/Time 3/6/09 1015

Remarks: 680-45296 1.8°C

03/23/2009

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 680-45945-1

Job Description: Shaw Longhorn

For:
Microbac Laboratories, Inc.
158 Starlite Drive
Marietta, OH 45750

Attention: Ms. Stephanie Mossburg

Approved for release.
Sheila Hoffman
Project Manager I
4/1/2009 4:59 PM

Sheila Hoffman
Project Manager I
sheila.hoffman@testamericainc.com
04/01/2009

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Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

Job Narrative
680-J45945-1

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

General Chemistry
Method(s) 314.0: Samples 680-45945-2 and -3 were analyzed at dilutions due to Matrix of the samples and Matrix Conductivity Threshold of the instrument. The reporting limits have been adjusted accordingly.

No other analytical or quality issues were noted.

METHOD / ANALYST SUMMARY

Client: Microbac Laboratories, Inc. Job Number: 680-45945-1

Method	Analyst	Analyst ID
EPA 314.0	Brazell, Connie	CB

SAMPLE SUMMARY

Client: Microbac Laboratories, Inc. Job Number: 680-45945-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
680-45945-1	17WW11-033009	Water	03/30/2009 1220	03/31/2009 1015
680-45945-2	16WW36-033009	Water	03/30/2009 0800	03/31/2009 1015
680-45945-3	16WW28-033009	Water	03/30/2009 1620	03/31/2009 1015

Analytical Data

Microbac Laboratories, Inc.
ATTN: Ms. Stephanie Mossburg

Job Number: 680-45945-1
Project: Shaw Longhorn
SDG Number: Shaw Longhorn

Client Sample ID: 17WW11-033009

Lab Sample ID: 680-45945-1
Client Matrix: Water

Date Sampled: 03/30/2009 12:20
Date Received: 03/31/2009 10:15

Test Method	CAS Number	Result	Q	Flag	MDL	MQL	SDL	Unit	Batch	Analysis Date/Time	D.F.	Analyst
Method: EPA 314.0,Water												
Perchlorate	14797-73-0	990			0.11	1.0	1.1	ug/L	134126	03/31/2009 20:31	10	CB

Microbac Laboratories, Inc.
ATTN: Ms. Stephanie Mossburg

Job Number: 680-45945-1
Project: Shaw Longhorn
SDG Number: Shaw Longhorn

Client Sample ID: 16WW36-033009

Lab Sample ID: 680-45945-2
Client Matrix: Water

Date Sampled: 03/30/2009 08:00
Date Received: 03/31/2009 10:15

Test Method	CAS Number	Result	Q	Flag	MDL	MQL	SDL	Unit	Batch	Analysis Date/Time	D.F.	Analyst
Method: EPA 314.0,Water												
Perchlorate	14797-73-0	5.5	U		0.11	1.0	5.5	ug/L	134126	03/31/2009 21:31	50	CB

Microbac Laboratories, Inc.
ATTN: Ms. Stephanie Mossburg

Job Number: 680-45945-1
Project: Shaw Longhorn
SDG Number: Shaw Longhorn

Client Sample ID: 16WW28-033009

Lab Sample ID: 680-45945-3
Client Matrix: Water

Date Sampled: 03/30/2009 16:20
Date Received: 03/31/2009 10:15

Test Method	CAS Number	Result	Q	Flag	MDL	MQL	SDL	Unit	Batch	Analysis Date/Time	D.F.	Analyst
Method: EPA 314.0,Water												
Perchlorate	14797-73-0	0.55	U		0.11	1.0	0.55	ug/L	134126	03/31/2009 22:31	5	CB

DATA REPORTING QUALIFIERS

Client: Microbac Laboratories, Inc. Job Number: 680-45945-1

Lab Section	Qualifier	Description
HPLC		
	U	Indicates the analyte was analyzed for but not detected.

Quality Control Results

Client: Microbac Laboratories, Inc. Job Number: 680-45945-1

Method Blank - Batch: 680-134126

Method: 314.0
Preparation: N/A

Lab Sample ID: MB 680-134126/2
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 03/31/2009 1816
Date Prepared: N/A

Analysis Batch: 680-134126
Prep Batch: N/A
Units: ug/L

Instrument ID: ICCS200 - H
Lab File ID: 0033.d
Initial Weight/Volume:
Final Weight/Volume: 5 mL
Injection Volume: 0.25 uL

Analyte	Result	Qual	MDL	RL
Perchlorate	0.11	U	0.11	1.0

Lab Control Spike - Batch: 680-134126

Method: 314.0
Preparation: N/A

Lab Sample ID: LCS 680-134126/4
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 03/31/2009 1846
Date Prepared: N/A

Analysis Batch: 680-134126
Prep Batch: N/A
Units: ug/L

Instrument ID: ICCS200 - H
Lab File ID: 0035.d
Initial Weight/Volume:
Final Weight/Volume: 5 mL
Injection Volume: 0.25 uL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Perchlorate	10.0	9.58	96	85 - 115	

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 680-134126

Method: 314.0
Preparation: N/A

MS Lab Sample ID: 680-45945-2
Client Matrix: Water
Dilution: 50
Date Analyzed: 03/31/2009 2146
Date Prepared: N/A

Analysis Batch: 680-134126
Prep Batch: N/A

Instrument ID: ICCS200 - H
Lab File ID: 0047.d
Initial Weight/Volume:
Final Weight/Volume: 5 mL
Injection Volume: 0.25 uL

MSD Lab Sample ID: 680-45945-2
Client Matrix: Water
Dilution: 50
Date Analyzed: 03/31/2009 2201
Date Prepared: N/A

Analysis Batch: 680-134126
Prep Batch: N/A

Instrument ID: ICCS200 - H
Lab File ID: 0048.d
Initial Weight/Volume:
Final Weight/Volume: 5 mL
Injection Volume: 0.25 uL

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Perchlorate	108	111	80 - 120	3	15		

Calculations are performed before rounding to avoid round-off errors in calculated results.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
TRRP Laboratory Data Package Cover Page
SDG / Log #: 680-45945
Fraction: Perchlorate 314.0

This data package consists of this signature page, the Laboratory Review Checklist, and the following reportable data:

- ☑ Field chain-of-custody documentation
- ☑ Sample identification cross-reference
- ☑ Test reports (analytical data sheets) for each environmental sample that includes:
  - Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - Dilution factors
  - Preparation methods
  - Clean-up methods
  - TICs (if required for the project)
- ☐ Surrogate recovery data including:
  - Calculated %R
  - Laboratory surrogate QC limits
- ☑ Test reports / Summary forms for blank samples
- ☑ Test reports / Summary forms for laboratory control samples (LCSs) including:
  - LCS spiking amounts
  - Calculated %R for each analyte
  - Laboratory LCS QC limits
- ☑ Test reports for project matrix spike/matrix spike duplicates (MS/MSD) including:
  - Samples associated with MS/MSD clearly identified
  - MS/MSD spiking amounts
  - Concentration of each MS/MSD analyte measured in the parent and spiked samples
  - Calculated %Rs and relative percent differences (RPD)
  - Laboratory MS/MSD QC limits
- ☑ Laboratory analytical duplicate (if applicable) recovery and precision
  - Amount of analyte measured in the duplicate
  - Calculated RPD
  - Laboratory QC limits for analytical duplicates
- ☑ List of method quantitation limits for each analyte for each method and matrix
- ☑ Other problems and anomalies
- ☑ The Exception Report for every "No" or "Not Reviewed (NR)" item in the 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 exception reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory as having potential to affect the quality of the data have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.*

Sheila Hoffman	[signature]	Project Manager	04/01/09
Name (Printed)	Signature	Official Title	Date

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
TRRP Laboratory Review Checklist

SDG / Log #: 68045945/ 680-45945
Fraction: 314.0

Date: 04.01.09
Reviewer Name: C. Brazell
Prep Batch Numbers: 134126
Instrument ID: ICH

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI (QA/PM)	**Chain-of-Custody (COC)**					
		Did each sample meet the laboratory's sample acceptance policy upon receipt? (This includes cooler temperatures, sample IDs, correct COC, etc.)	X				
		Are all sample receipt issues described in an exception report and noted in the case narrative?	X				
R2	OI (QA/PM)	**Sample and Quality Control (QC) Identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers? (This information is included in the case narrative table and/or LIMS report.)	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data? (This information is included on the forms and/or LIMS report.)	X				
R3	OI	**Test Reports**					
		Were all samples prepared within holding times?	X				
		Were all samples analyzed within holding times?	X				
		Were all hits >MQL (RL) within the instrument's calibration range?	X				
		If hits are not within the calibration range, have the data been flagged with the appropriate qualifiers and additional runs reported?			X		
		Were calculations reviewed by a peer or supervisor?	X				
		Were analyte identifications reviewed by a peer or supervisor?	X				
		Were sample quantitation limits reported for all undetected analytes? (This information is included on the forms and/or LIMS report.)	X				
		Were the results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		If required for the project, were TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		Were surrogates added prior to extraction, as required by the method?			X		
		Were all surrogate percent recoveries within the laboratory QC limits? (Note ANY failing surrogate in the Exception Report.)			X		
R5	OI	**Test Reports / Summary Forms for Blanks**					
		Were the appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL (RL)?	X				
R6	OI	**Laboratory Control Samples (LCS):**					
		Were all COCs included in the LCS? (Were full-list spikes used?)	X				
		Was each LCS taken through the entire analytical procedure, including preparation and, if applicable, cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) % Rs within laboratory QC limits? (Note ANY failing spike analyte in the Exception Report.)	X				
		If performed, was the LCSD %RPD within QC limits? (Note ANY failing spike analyte in the Exception Report.)			X		
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Datax**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were the MS/MSD analyzed at the appropriate frequency?	X				
		Were MS/MSD %Rs within the laboratory QC limits? (Note ANY failing spike analyte in the Exception Report.)	X				
		Were MS/MSD RPDs within laboratory QC limits? (Note ANY failing spike analyte in the Exception Report.)	X				

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
TRRP Laboratory Review Checklist

SDG / Log #: 68045945/ 680-45945
Fraction: 314.0

Date: 04.01.09
Reviewer Name: C. Brazell
Prep Batch Numbers: 134126
Instrument ID: ICH

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R8	I	**Analytical Duplicate Data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method Quantitation Limits (MQLs):**					
		Are the MQLs (RLs) for each analyte included in the laboratory data package? (This information is included on the forms and/or LIMS report.)	X				
		Do the MQLs (RLs) correspond to the concentration of the lowest non-zero calibration standard, where applicable?	X				
		Have the unadjusted MQLs (RLs) been included in the laboratory data package? (This information is included on the forms and/or LIMS report.)	X				
R10	OI	**Other Problems/Anomalies**					
		Are all known problems, anomalies, and/or special conditions noted in the Laboratory Review Checklist and the Exception Report?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SQL (RL) to minimize the matrix interference effects on the sample results, as applicable?	X				
S1	O1	**Initial Calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSD or correlation coefficient criteria met? (Note ANY use of Grand Mean in the Exception Report.)	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard? (Note any ICV outliers in the Exception Report.)	X				
S2	O1	**Initial & Continuing Calibration Verification (ICCV & CCV)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits? (Note ANY use of Grand Mean in the Exception Report.)	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass Spectral Tuning:**					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	OI	**Internal Standards (IS):**					
		Were IS area counts within the method-required QC limits?			X		
		Were IS retention times within the method-required QC limits?			X		
S5	OI	**Raw Data**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				1
S6	O	**Dual Column Confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**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?			X		2

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
TRRP Laboratory Review Checklist

SDG / Log #: 68045945/ 680-45945
Fraction: 314.0

Date: 04.01.09
Reviewer Name: C. Brazell
Prep Batch Numbers: 134126
Instrument ID: ICH

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S10	OI	**Method Detection Limit (MDL) Studies**					
		Has an MDL study been performed for each analyte?	X				
		Has a DCS been performed for each analyte within the last 3 months? (If not, then list the estimated completion date in the Exception Report.)	X				
		Does the DCS meet the acceptance criteria and support the MDL?	X				
		If the DCS does not meet criteria, has the associated MDL been raised to the appropriate level?	X				
S11	OI	**Proficiency Test Reports:**					
		Has the laboratory participated in the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		Are all standards used NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound / Analyte Identification Procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		Has a DOC been performed as is consistent with NELAC Chapter 5C or ISO/IEC 4 for each analyst and analyte associated with this analysis?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification / Validation Documentation for Methods**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses; PM = Project Management; QA = Quality Assurance
3. NA = Not applicable.
4. NR = Not Reviewed.
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
TRRP Laboratory Review Checklist

SDG / Log #: 68045945/ 680-45945
Fraction: 314.0

Date: 04.01.09
Reviewer Name: C. Brazell
Prep Batch Numbers: 134126
Instrument ID: ICH

Exception Reports

ER #[1]	DESCRIPTION
1	Samples 680-45945-1, 2MS and –2MSD required a manual integration due to an unresolved baseline.
2	Samples 680-45945-2 and –3 required a dilution due to the matrix conductivity threshold of the instrument. The reporting limit has been adjusted accordingly.
3	
4	

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on the LCR).

Chain of Custody

00089481

5810

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: TEST America Address: 5102 La Roche Ave Savannah, Ga 31404 Contact: Sheila Hoffman 912-354-7858

Project Name: Longhorn MARC Project Location: Karnack, Tx

Project No.: 117591.0005B004 Project Contact: Allen Willmore Project Telephone No.: (713) 247-9297

Point of Contact: Jennifer 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): Perchlorate	Remarks
1	17MW11-033009	3/30/09	12:20		✓	W	SITE 17	1	X	
2	16MW36-033009	3/30/09	0800		✓	W	SITE 16	1	X	
3	16MW28-033009	3/30/09	16:20		✓	W	SITE 16	1	X	
4										
5										
6										
7										
8										
9										
10										

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time
M. Hill	3/30/09 17:45	KM	3/31/09 1015
		Laboratory	

Special Instructions: 24-hour TAT on ALL Samples
2.1°C 680-45945

FedEx Airbill No.:

Sampler's Signature: M. Hill

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

04/01/2009

156 Starlite Drive, Marietta, OH 45750 • TEL 740-373-4071 • FAX 740-373-4835 • http://www.kemron.com

Laboratory Report Number: L0712230

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
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Stephanie Mossburg - Team Chemist/Data Specialist
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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 December 17, 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 December 17, 2007.

David E. Vandenberg

David Vandenberg - Vice President

FL DOH NELAP ID: E8755
This report contains a total of 155 pages.

Protecting Our Environmental Future

KEMRON REPORT L0712230
PREPARED FOR Shaw E I, Inc.
WORK ID: LONGHORN AAP KARNACK TX

1.0 Introduction

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

KEMRON Login No.: L0712230

CHAIN OF CUSTODY: The chain of custody numbers were 10302 and 10725.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 1 degree 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: 12-DEC-07
Stephanie Moushung

Laboratory Data Package Cover Page

00089486

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	December 17, 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:	L0712230
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	258142, 258250
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	December 17, 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?		✓			3
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)	ERR(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?		✓			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: Recovery results for n-butylbenzene, s-butylbenzene, 2-chlorotoluene, t-1,3-dichloropropene, p-isopropyltoluene, n-propylbenzene, and 1,1,2,2-tetrachloroethane were below the lower advisory limits in the LCS analyzed 12/11/07 on HPMS-10. Recovery results for dichlorodifluoromethane and vinyl chloride exceeded the upper advisory limits in the LCS/LCSD analyzed 12/12/07 on HPMS-10.

#2: Dichlorodifluoromethane exceeded the upper control limit.

#3: 4-Bromofluorobenzene was below the lower control limit in the LCS analyzed 12/11/07 on HPMS-10. 4-Bromofluorobenzene was below the lower control limit in the LCS/LCSD analyzed 12/12/07 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

00089490

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 12, 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:	L0712230
Project Name:	798-LONGHORN
Method:	8081
Prep Batch Number(s):	WG258131
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	December 12, 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 laboratory's 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)	RPD(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		

Checklist ID: **24074**

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0712230
Project Name:	798-LONGHORN
Method:	8081
Prep Batch Number(s):	WG258131
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	December 12, 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?	✓				
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?			✓		

Checklist ID: **24074**

KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L0712230
Project Name:	798-LONGHORN
Method:	8081
Prep Batch Number(s):	WG258131
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	December 12, 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:	L0712230
Project Name:	798-LONGHORN
Method:	8081
Prep Batch Number(s):	WG258131
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	December 12, 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

00089496

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.

ERIC C. LAWSON			December 12, 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:	L0712230
Project Name:	798-LONGHORN
Method:	314
Prep Batch Number(s):	WG258280
Reviewer Name:	ERIC C. LAWSON
LRC Date:	December 12, 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)	RPD(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?	✓				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)	RR(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:	L0712230
Project Name:	798-LONGHORN
Method:	314
Prep Batch Number(s):	WG258280
Reviewer Name:	ERIC C. LAWSON
LRC Date:	December 12, 2007

EXCEPTIONS REPORT
ER# - Description
1. Samples -04, -06, -07 and -08 were analyzed at a dilution only due to high conductivity readings.

(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

00089504

L0712230

12/17/07 14:37

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
17WW10-120507	L0712230-04	8260B	1	07-DEC-07
17WW04-120507	L0712230-05	8260B	1	07-DEC-07
17WW06-120507	L0712230-06	8260B	1	07-DEC-07
MW130-120407	L0712230-07	8260B	1	07-DEC-07
17WW05-120407	L0712230-08	8260B	1	07-DEC-07
TRIP BLANK	L0712230-09	8260B	1	07-DEC-07

Report Number: **L0712230**
Report Date : **December 17, 2007**

00089505

Sample Number: **L0712230-04**
Client ID: **17WW10-120507**
Matrix: **Water**
Workgroup Number: **WG258250**
Collect Date: **12/05/2007 09:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/12/2007 13:38**
Cal Date: **11/15/2007 16:17**
Run Date: **12/12/2007 13:38**
File ID: **10M61233**

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: **L0712230**
Report Date : **December 17, 2007**

00089506

Sample Number: **L0712230-04**
Client ID: **17WW10-120507**
Matrix: **Water**
Workgroup Number: **WG258250**
Collect Date: **12/05/2007 09:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/12/2007 13:38**
Cal Date: **11/15/2007 16:17**
Run Date: **12/12/2007 13:38**
File ID: **10M61233**

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	108	86	118	
1,2-Dichloroethane-d4	101	80	120	
Toluene-d8	94.3	88	110	
4-Bromofluorobenzene	86.9	86	115	

U Not detected at or above adjusted sample detection limit

Report Number: **L0712230**
Report Date : **December 17, 2007**

00089507

Sample Number: **L0712230-05**
Client ID: **17WW04-120507**
Matrix: **Water**
Workgroup Number: **WG258250**
Collect Date: **12/05/2007 08:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/12/2007 14:10**
Cal Date: **11/15/2007 16:17**
Run Date: **12/12/2007 14:10**
File ID: **10M61234**

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	0.763	J	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: **L0712230**
Report Date : **December 17, 2007**

00089508

Sample Number: **L0712230-05**
Client ID: **17WW04-120507**
Matrix: **Water**
Workgroup Number: **WG258250**
Collect Date: **12/05/2007 08:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/12/2007 14:10**
Cal Date: **11/15/2007 16:17**
Run Date: **12/12/2007 14:10**
File ID: **10M61234**

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	1.57		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	104	80	120	
Toluene-d8	95.3	88	110	
4-Bromofluorobenzene	90.5	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: **L0712230**
Report Date : **December 17, 2007**

00089509

Sample Number: **L0712230-06**
Client ID: **17WW06-120507**
Matrix: **Water**
Workgroup Number: **WG258250**
Collect Date: **12/04/2007 15:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/12/2007 12:03**
Cal Date: **11/15/2007 16:17**
Run Date: **12/12/2007 12:03**
File ID: **10M61230**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2	0.165	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		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	1.07		1.00	0.125
1,2-Dichloroethane	107-06-2	5.40		1.00	0.250
1,1-Dichloroethene	75-35-4	4.80		1.00	0.500
cis-1,2-Dichloroethene	156-59-2	7.52		1.00	0.250
trans-1,2-Dichloroethene	156-60-5	1.80		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: **L0712230**
Report Date : **December 17, 2007**

00089510

Sample Number: **L0712230-06**
Client ID: **17WW06-120507**
Matrix: **Water**
Workgroup Number: **WG258250**
Collect Date: **12/04/2007 15:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/12/2007 12:03**
Cal Date: **11/15/2007 16:17**
Run Date: **12/12/2007 12:03**
File ID: **10M61230**

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	168		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	112	86	118	
1,2-Dichloroethane-d4	104	80	120	
Toluene-d8	99.3	88	110	
4-Bromofluorobenzene	92.0	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: **L0712230**
Report Date : **December 17, 2007**

00089511

Sample Number: **L0712230-07**
Client ID: **MW130-120407**
Matrix: **Water**
Workgroup Number: **WG258250**
Collect Date: **12/04/2007 11:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/12/2007 12:35**
Cal Date: **11/15/2007 16:17**
Run Date: **12/12/2007 12:35**
File ID: **10M61231**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	3.80	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	4.17		1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2	0.737	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: **L0712230**
Report Date : **December 17, 2007**

00089512

Sample Number: **L0712230-07**
Client ID: **MW130-120407**
Matrix: **Water**
Workgroup Number: **WG258250**
Collect Date: **12/04/2007 11:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/12/2007 12:35**
Cal Date: **11/15/2007 16:17**
Run Date: **12/12/2007 12:35**
File ID: **10M61231**

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	23.6		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	101	80	120	
Toluene-d8	94.0	88	110	
4-Bromofluorobenzene	88.9	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: **L0712230**
Report Date : **December 17, 2007**

00089513

Sample Number: **L0712230-08**
Client ID: **17WW05-120407**
Matrix: **Water**
Workgroup Number: **WG258250**
Collect Date: **12/04/2007 13:10**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/12/2007 13:06**
Cal Date: **11/15/2007 16:17**
Run Date: **12/12/2007 13:06**
File ID: **10M61232**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	9.03	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: **L0712230**
Report Date : **December 17, 2007**

00089514

Sample Number: **L0712230-08**
Client ID: **17WW05-120407**
Matrix: **Water**
Workgroup Number: **WG258250**
Collect Date: **12/04/2007 13:10**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/12/2007 13:06**
Cal Date: **11/15/2007 16:17**
Run Date: **12/12/2007 13:06**
File ID: **10M61232**

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	0.298	J	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	108	86	118	
1,2-Dichloroethane-d4	101	80	120	
Toluene-d8	94.6	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: **L0712230**
Report Date : **December 17, 2007**

00089515

Sample Number: **L0712230-09**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG258142**
Collect Date: **12/05/2007 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/11/2007 14:31**
Cal Date: **11/15/2007 16:17**
Run Date: **12/11/2007 14:31**
File ID: **10M61202**

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: **L0712230**
Report Date : **December 17, 2007**

00089516

Sample Number: **L0712230-09**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG258142**
Collect Date: **12/05/2007 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **12/11/2007 14:31**
Cal Date: **11/15/2007 16:17**
Run Date: **12/11/2007 14:31**
File ID: **10M61202**

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	104	86	118	
1,2-Dichloroethane-d4	96.0	80	120	
Toluene-d8	97.0	88	110	
4-Bromofluorobenzene	87.8	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: HPMS10 Dataset: 111507
Analyst1: MES Analyst2: TMB
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 21779

Internal Standard: STD22714 Surrogate Standard: STD23186
CCV: STD23152 LCS: STD23156 MS/MSD: STD23156

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG255969,WG256026

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M60435	TUNING BFB	NA	1	1		11/15/07 08:52
2	10M60436	TUNING BFB	NA	1	1		11/15/07 09:07
3	10M60437	OXY STD	NA	1	1		11/15/07 09:33
4	10M60438	BLANK	NA	1	1		11/15/07 10:07
5	10M60439	WG255969-01 50NG BFB STD 8260	NA	1	1	STD22851	11/15/07 11:00
6	10M60440	WG255969-02 0.3 ug/L WATER STD 8260	NA	1	1	STD23042	11/15/07 11:27
7	10M60441	WG255969-03 0.4 ug/L WATER STD 8260	NA	1	1	STD23152	11/15/07 11:59
8	10M60442	WG255969-04 1 ug/L WATER STD 8260	NA	1	1	STD23152	11/15/07 12:33
9	10M60443	WG255969-05 2 ug/L WATER STD 8260	NA	1	1	STD23152	11/15/07 13:05
10	10M60444	WG255969-06 5 ug/L WATER STD 8260	NA	1	1	STD23152	11/15/07 13:37
11	10M60445	WG255969-07 20 ug/L WATER STD 8260	NA	1	1	STD23152	11/15/07 14:09
12	10M60446	WG255969-08 50 ug/L WATER STD 8260	NA	1	1	STD23152	11/15/07 14:41
13	10M60447	WG255969-09 100 ug/L WATER STD 8260	NA	1	1	STD23152	11/15/07 15:13
14	10M60448	WG255969-10 200 ug/L WATER STD 8260	NA	1	1	STD23152	11/15/07 15:45
15	10M60449	WG255969-11 300 ug/L WATER STD 8260	NA	1	1	STD23152	11/15/07 16:17
16	10M60450	SYSTEM BLANK	NA	1	1		11/15/07 16:49
17	10M60451	SYSTEM BLANK	NA	1	1		11/15/07 17:20
18	10M60452	WG255969-12 20ug/L ALT SOURCE	NA	1	1	STD23156	11/15/07 17:52
19	10M60453	WG256024-01 50ng BFB STD8260	NA	1	1	STD22851	11/15/07 18:24
43	10M60454	WG256024-02 50ug/L CCV STD8260	NA	1	1	STD23152	11/15/07 18:48
20	10M60455	WG256026-01 VBLK1115 BLANK 8260	NA	1	1		11/15/07 19:19
21	10M60456	WG256026-01 VBLK1115 BLANK 8260	NA	1	1		11/15/07 19:51
22	10M60457	WG256026-02 20ug/L LCS STD 8260	NA	1	1	STD23111	11/15/07 20:22
23	10M60458	L0711128-13 B D1 50X 826-LOW	<2	1	50		11/15/07 20:54
24	10M60459	L0711123-12 C 10X 826-SPE	<2	1	10		11/15/07 21:25
25	10M60460	L0711337-05 B D1 10X 826-LOW	<2	1	10		11/15/07 21:56
26	10M60461	L0711337-01 B D1 250X 826-LOW	<2	1	250		11/15/07 22:27
27	10M60462	L0711086-04 A 25X 826-SPE	<2	1	25		11/15/07 22:58
28	10M60463	L0711295-01 A 826-SPE	<2	1	1		11/15/07 23:29
29	10M60464	L0711295-02 A 20X 826-SPE	<2	1	20		11/16/07 00:00
30	10M60465	L0711295-03 A 826-SPE	<2	1	1		11/16/07 00:31
31	10M60466	L0711295-04 A 826-SPE	<2	1	1		11/16/07 01:02
32	10M60467	L0711295-05 A 25X 826-SPE	<2	1	25		11/16/07 01:33
33	10M60468	L0711295-06 A 25X 826-SPE	<2	1	25		11/16/07 02:04

Approved: November 21, 2007

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS10 Dataset: 111507
Analyst1: MES Analyst2: TMB
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 21779

Internal Standard: STD22714 Surrogate Standard: STD23186
CCV: STD23152 LCS: STD23156 MS/MSD: STD23156

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG255969,WG256026

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
34	10M60469	L0711295-07 A 826-SPE	<2	1	1		11/16/07 02:34
35	10M60470	L0711295-08 A MS 826-SPE	<2	1	1	STD23111	11/16/07 03:05
36	10M60471	L0711295-09 A MSD 826-SPE	<2	1	1	STD23111	11/16/07 03:37
37	10M60472	L0711337-06 B D1 250X 826-LOW	<2	1	250		11/16/07 04:08
38	10M60473	L0711295-10 A 10X 826-SPE	<2	1	10		11/16/07 04:39
39	10M60474	L0711295-11 A 20X 826-SPE	<2	1	20		11/16/07 05:10
40	10M60475	L0711295-12 A 10X 826-SPE	<2	1	10		11/16/07 05:41
41	10M60476	WG256026-06 624 BLANK	NA	1	1		11/16/07 06:11
42	10M60477	L0711289-08 B D1 250X 624-SPE	<2	2	250		11/16/07 06:42

Comments

Seq.	Rerun	Dil.	Reason	Analytes
29	X	10	Analyzed too dilute	
File ID: 10M60464				
Do not report.				
31	X	50	Over Calibration Range	vc and cis-12-DCE
File ID: 10M60466				
32	X	1	Carry-over contamination	
File ID: 10M60467				
Do not report.				
33	X	1	Carry-over contamination	
File ID: 10M60468				
Do not report.				
35				
File ID: 10M60470				
The MS/MSD were spike w/ 50uL of solution, rather than 40uL. Extraction data was adjusted accordingly.				
36				
File ID: 10M60471				
The MS/MSD were spike w/ 50uL of solution, rather than 40uL. Extraction data was adjusted accordingly.				
38	X	1	Analyzed too dilute	
File ID: 10M60473				
Do not report.				
40	X	1	Analyzed too dilute	
File ID: 10M60475				

Approved: November 21, 2007

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS10 Dataset: 111507
Analyst1: MES Analyst2: TMB
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 21779

Internal Standard: STD22714 Surrogate Standard: STD23186
CCV: STD23152 LCS: STD23156 MS/MSD: STD23156

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG255969,WG256026

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Do not report.

Approved: November 21, 2007

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS10 Dataset: 121107
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: 22153

Internal Standard: STD23358 Surrogate Standard: STD23368
CCV: STD23522 LCS: STD23438 MS/MSD: STD23438

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG258142

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M61191	SYSTEM BLANK	NA	1	1		12/11/07 08:41
30	10M61192	WG258141-01 50NG BFB STD 8260	NA	1	1	STD23459	12/11/07 09:34
31	10M61193	WG258141-01 50NG BFB STD 8260	NA	1	1	STD23459	12/11/07 09:47
2	10M61194	WG258141-01 50NG BFB STD 8260	NA	1	1	STD23459	12/11/07 10:26
3	10M61195	WG258141-02 50ug/L WATER STD 8260	NA	1	1	STD23522	12/11/07 10:50
4	10M61196	WG258142-01 VBLK1211 BLANK 8260	NA	1	1		12/11/07 11:22
5	10M61197	WG258142-01 VBLK1211 BLANK 8260	NA	1	1		12/11/07 11:53
6	10M61198	WG258142-02 20ug/L LCS 8260	NA	1	1	STD23522	12/11/07 12:25
7	10M61199	L0712175-08 B D1 500X 826-BETX	<2	1	500		12/11/07 12:57
8	10M61200	L0712007-07 B D1 10X 8260	<2	1	10		12/11/07 13:29
9	10M61201	L0712006-02 A 826-SPE	<2	1	1		12/11/07 14:00
10	10M61202	L0712230-09 A 826-LOW	<2	1	1		12/11/07 14:31
11	10M61203	L0712237-09 A 826-SPE	<2	1	1		12/11/07 15:02
12	10M61204	L0712063-07 A 826-SPE	<2	1	1		12/11/07 15:33
13	10M61205	L0712063-02 A 826-SPE	<2	1	1		12/11/07 16:04
14	10M61206	L0712063-03 MS A 826-SPE	<2	1	1	STD23438	12/11/07 16:35
15	10M61207	L0712063-04 MSD A 826-SPE	<2	1	1	STD23438	12/11/07 17:06
16	10M61208	L0711765-03 A D1 10X 826-SPLP	NA	18	10		12/11/07 17:37
17	10M61209	L0712006-01 A 826-SPE	<2	1	1		12/11/07 18:08
18	10M61210	L0712230-06 A 10X 826-LOW	<2	1	10		12/11/07 18:39
19	10M61211	L0712230-07 A 10X 826-LOW	<2	1	10		12/11/07 19:10
20	10M61212	L0712230-08 A 10X 826-LOW	<2	1	10		12/11/07 19:42
21	10M61213	L0712230-04 A 10X 826-LOW	<2	1	10		12/11/07 20:12
22	10M61214	L0712230-05 A 10X 826-LOW	<2	1	10		12/11/07 20:44
23	10M61215	L0712063-01 A 826-SPE	<2	1	1		12/11/07 21:15
24	10M61216	L0712063-05 A 826-SPE	<2	1	1		12/11/07 21:46
25	10M61217	L0712063-06 A 826-SPE	<2	1	1		12/11/07 22:17
26	10M61218	SYSTEM BLANK	NA	1	1		12/11/07 22:49
27	10M61219	WG258142-06 624 BLANK	NA	1	1		12/11/07 23:20
28	10M61220	L0712213-02 A 624-SPE	7	2	1		12/11/07 23:51
29	10M61221	SYSTEM CHECK	NA	1	1		12/12/07 00:23

Comments

Approved: December 16, 2007

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS10 Dataset: 121107
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: 22153

Internal Standard: STD23358 Surrogate Standard: STD23368
CCV: STD23522 LCS: STD23438 MS/MSD: STD23438

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG258142

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
30				
File ID: 10M61192				
	RR, BFB failed.			
31				
File ID: 10M61193				
	RR, BFB failed. Baked out for 30 minutes.			
18	X	1	Analyzed too dilute	
File ID: 10M61210				
	Do not report.			
19	X	1	Analyzed too dilute	
File ID: 10M61211				
	Do not report.			
20	X	1	Analyzed too dilute	
File ID: 10M61212				
	Do not report.			
21	X	1	Analyzed too dilute	
File ID: 10M61213				
	Do not report.			
22	X	1	Analyzed too dilute	
File ID: 10M61214				
	Do not report.			

Approved: December 16, 2007

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS10 Dataset: 121207
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 22155

Internal Standard: STD23358 Surrogate Standard: STD23368
CCV: STD23522 LCS: STD23438 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG258250

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M61223	WG258249-01 50NG BFB STD 8260	NA	1	1	STD23459	12/12/07 08:29
2	10M61224	WG258249-02 50ug/L WATER STD 8260	NA	1	1	STD23522	12/12/07 08:53
3	10M61225	WG258250-01 VBLK1212 BLANK 8260	NA	1	1		12/12/07 09:25
4	10M61226	WG258250-01 VBLK1212 BLANK 8260	NA	1	1		12/12/07 09:57
5	10M61227	WG258250-02 20ug/L LCS 8260	NA	1	1	STD23438	12/12/07 10:28
6	10M61228	WG258250-03 20ug/L LCSDUP 8260	NA	1	1	STD23438	12/12/07 11:00
7	10M61229	L0712257-03 A 1000X 826-LOW	<2	1	1000		12/12/07 11:31
8	10M61230	L0712230-06 B 826-LOW	<2	1	1		12/12/07 12:03
9	10M61231	L0712230-07 B 826-LOW	<2	1	1		12/12/07 12:35
10	10M61232	L0712230-08 B 826-LOW	<2	1	1		12/12/07 13:06
11	10M61233	L0712230-04 B 826-LOW	<2	1	1		12/12/07 13:38
12	10M61234	L0712230-05 B 826-LOW	<2	1	1		12/12/07 14:10
13	10M61235	L0712063-08 A 826-SPE	<2	1	1		12/12/07 14:42
14	10M61236	L0712075-02 A 826-LOW	<2	1	1		12/12/07 15:13
15	10M61237	L0712062-02 A 826-SPE	<2	1	1		12/12/07 15:44
16	10M61238	L0712062-03 A 826-SPE	<2	1	1		12/12/07 16:16
17	10M61239	L0712090-04 A 826-SPE	<2	1	1		12/12/07 16:47
18	10M61240	L0712075-01 A 826-LOW	<2	1	1		12/12/07 17:19
19	10M61241	L0712090-01 A 826-SPE	<2	1	1		12/12/07 17:50
20	10M61242	L0712090-02 A 826-SPE	<2	1	1		12/12/07 18:21
21	10M61243	L0712257-01 A 826-LOW	<2	1	1		12/12/07 18:53
22	10M61244	L0712257-02 A 826-LOW	<2	1	1		12/12/07 19:24
23	10M61245	L0712257-04 A 826-LOW	<2	1	1		12/12/07 19:56
24	10M61246	L0712257-05 A 200X 826-LOW	<2	1	200		12/12/07 20:27
25	10M61247	SYSTEM BLANK	NA	1	1		12/12/07 20:58
26	10M61248	TEST VIAL 12/12/07	NA	1	1		12/12/07 21:30
27	10M61249	SYSTEM CHECK	NA	1	1		12/12/07 22:01

Comments

Seq.	Rerun	Dil.	Reason	Analytes
7	X	1000	Carry-over contamination	
File ID: 10M61229				
Do not report.				

Approved: December 17, 2007

KEMRON Environmental Services
Data Checklist

Date: 15-NOV-2007
Analyst: MES
Analyst: TMB
Method: 8260
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 19374
Analytical Workgroups: WG255969,WG256026

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	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	LSB
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:
16-NOV-2007

Secondary Reviewer:
21-NOV-2007

Generated: NOV-21-2007 09:15:41

KEMRON Environmental Services
Data Checklist

Date: 11-DEC-2007
Analyst: MES
Analyst: NA
Method: 8260/624
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 19781
Analytical Workgroups: WG258142

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	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-DEC-2007

Secondary Reviewer:
16-DEC-2007

Generated: DEC-16-2007 17:47:27

KEMRON Environmental Services
Data Checklist

Date: 12-DEC-2007
Analyst: MES
Analyst: NA
Method: 8260
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 19817
Analytical Workgroups: WG258250

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-DEC-2007

Secondary Reviewer:
17-DEC-2007

Generated: DEC-17-2007 08:12:47

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00089529

Analytical Method: 8260B AAB#: WG258250

Login Number: L0712230

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
MW130-120407	12/04/07	12/07/07	12/12/07	14	8.07	12/12/07	14	8.07	
17WW06-120507	12/04/07	12/07/07	12/12/07	14	7.86	12/12/07	14	7.86	
17WW05-120407	12/04/07	12/07/07	12/12/07	14	8.00	12/12/07	14	8.00	
17WW04-120507	12/05/07	12/07/07	12/12/07	14	7.22	12/12/07	14	7.22	
17WW10-120507	12/05/07	12/07/07	12/12/07	14	7.16	12/12/07	14	7.16	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 971646
Report generated 12/17/2007 11:10

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00089530

Analytical Method: 8260B AAB#: WG258142

Login Number: L0712230

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	12/05/07	12/07/07	12/11/07	14	6.60	12/11/07	14	6.60	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 971646
Report generated 12/17/2007 11:10

SURROGATE STANDARDS

00089531

Login Number: L0712230
Instrument Id: HPMS10
Workgroup (AAB#): WG258250

Method: 8260
CAL ID: HPMS10-15-NOV-07
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L0712230-04	1.00	01	101	108	86.9	94.3
L0712230-05	1.00	01	104	110	90.5	95.3
L0712230-06	1.00	01	104	112	92.0	99.3
L0712230-07	1.00	01	101	110	88.9	94.0
L0712230-08	1.00	01	101	108	86.9	94.6
WG258250-01	1.00	01	102	108	90.2	98.3
WG258250-02	1.00	01	97.1	108	85.8	94.0
WG258250-03	1.00	01	99.0	108	86.6	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

KEMRON FORMS - Modified 09/27/2006
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SURROGATE STANDARDS

00089532

Login Number: L0712230
Instrument Id: HPMS10
Workgroup (AAB#): WG258142

Method: 8260
CAL ID: HPMS10-15-NOV-07
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L0712230-09	1.00	01	96.0	104	87.8	97.0
WG258142-01	1.00	01	97.8	105	88.0	94.8
WG258142-02	1.00	01	92.0	103	82.0	90.3
WG258142-06	1.00	01	99.3	105	87.8	93.8

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: 971653
Report generated 12/17/2007 11:11

METHOD BLANK SUMMARY

Login Number:	L0712230	Work Group:	WG258142
Blank File ID:	10M61197	Blank Sample ID:	WG258142-01
Prep Date:	12/11/07 11:53	Instrument ID:	HPMS10
Analyzed Date:	12/11/07 11:53	Method:	8260B
Analyst:	MES		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG258142-02	10M61198	12/11/07 12:25	01
TRIP BLANK	L0712230-09	10M61202	12/11/07 14:31	01

METHOD BLANK SUMMARY

Login Number: L0712230
Work Group: WG258250
Blank File ID: 10M61226
Blank Sample ID: WG258250-01
Prep Date: 12/12/07 09:57
Instrument ID: HPMS10
Analyzed Date: 12/12/07 09:57
Method: 8260B
Analyst: MES

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG258250-02	10M61227	12/12/07 10:28	01
LCS2	WG258250-03	10M61228	12/12/07 11:00	01
17WW06-120507	L0712230-06	10M61230	12/12/07 12:03	01
MW130-120407	L0712230-07	10M61231	12/12/07 12:35	01
17WW05-120407	L0712230-08	10M61232	12/12/07 13:06	01
17WW10-120507	L0712230-04	10M61233	12/12/07 13:38	01
17WW04-120507	L0712230-05	10M61234	12/12/07 14:10	01

METHOD BLANK REPORT

00089535

Login Number: L0712230 Prep Date: 12/11/07 11:53 Sample ID: WG258142-01
Instrument ID: HPMS10 Run Date: 12/11/07 11:53 Prep Method: 5030B
File ID: 10M61197 Analyst: MES Method: 8260B
Workgroup (AAB#): WG258142 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HPMS10-15-NOV-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

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METHOD BLANK REPORT

00089536

Login Number: L0712230 Prep Date: 12/11/07 11:53 Sample ID: WG258142-01
Instrument ID: HPMS10 Run Date: 12/11/07 11:53 Prep Method: 5030B
File ID: 10M61197 Analyst: MES Method: 8260B
Workgroup (AAB#): WG258142 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HPMS10-15-NOV-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	0.271	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	0.125	1.00	0.214	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	105	86	-	118	PASS
1,2-Dichloroethane-d4	97.8	80	-	120	PASS
Toluene-d8	94.8	88	-	110	PASS
4-Bromofluorobenzene	88.0	86	-	115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

KEMRON FORMS - Modified 12/07/2006
Version 1.5 PDF File ID: 971647
Report generated 12/17/2007 11:10

METHOD BLANK REPORT

00089537

Login Number: L0712230 Prep Date: 12/12/07 09:57 Sample ID: WG258250-01
Instrument ID: HPMS10 Run Date: 12/12/07 09:57 Prep Method: 5030B
File ID: 10M61226 Analyst: MES Method: 8260B
Workgroup (AAB#): WG258250 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HPMS10-15-NOV-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

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METHOD BLANK REPORT

00089538

Login Number: L0712230 Prep Date: 12/12/07 09:57 Sample ID: WG258250-01
Instrument ID: HPMS10 Run Date: 12/12/07 09:57 Prep Method: 5030B
File ID: 10M61226 Analyst: MES Method: 8260B
Workgroup (AAB#): WG258250 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HPMS10-15-NOV-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	0.305	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	0.125	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	108	86 - 118	PASS
1,2-Dichloroethane-d4	102	80 - 120	PASS
Toluene-d8	98.3	88 - 110	PASS
4-Bromofluorobenzene	90.2	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

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KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00089539

Login Number:L0712230 Run Date:12/11/2007 Sample ID:WG258142-02
Instrument ID:HPMS10 Run Time:12:25 Prep Method:5030B
File ID:10M61198 Analyst:MES Method:8260B
Workgroup (AAB#):WG258142 Matrix:Water Units:ug/L
QC Key:STD Lot#:STD23438 Cal ID:HPMS10-15-NOV-07

Analytes	Expected	Found	% Rec	LCS Limits	Q
Acetone	20.0	17.3	86.7	40 - 142	
Benzene	20.0	18.0	90.0	80 - 121	
Bromobenzene	20.0	17.5	87.3	80 - 120	
Bromochloromethane	20.0	21.1	106	65 - 130	
Bromodichloromethane	20.0	19.9	99.7	80 - 131	
Bromoform	20.0	22.0	110	70 - 130	
Bromomethane	20.0	21.9	109	30 - 145	
2-Butanone	20.0	15.6	78.0	30 - 150	
n-Butylbenzene	20.0	14.5	72.3	80 - 131	*
sec-Butylbenzene	20.0	15.5	77.4	80 - 127	*
tert-Butylbenzene	20.0	16.0	80.1	80 - 126	
Carbon disulfide	20.0	16.0	79.8	58 - 138	
Carbon tetrachloride	20.0	21.2	106	65 - 140	
Chlorobenzene	20.0	17.7	88.3	80 - 120	
Chlorodibromomethane	20.0	20.8	104	60 - 135	
Chloroethane	20.0	18.2	90.9	60 - 135	
2-Chloroethyl vinyl ether	20.0	16.3	81.4	58 - 151	
Chloroform	20.0	19.6	97.9	80 - 125	
Chloromethane	20.0	17.5	87.5	40 - 125	
2-Chlorotoluene	20.0	14.9	74.7	80 - 127	*
4-Chlorotoluene	20.0	16.6	83.2	80 - 126	
1,2-Dibromo-3-chloropropane	20.0	15.7	78.3	50 - 130	
1,2-Dibromoethane	20.0	18.5	92.5	80 - 125	
Dibromomethane	20.0	19.9	99.3	75 - 125	
1,2-Dichlorobenzene	20.0	16.7	83.7	80 - 125	
1,3-Dichlorobenzene	20.0	16.8	83.8	80 - 120	
1,4-Dichlorobenzene	20.0	16.7	83.7	80 - 120	
Dichlorodifluoromethane	20.0	23.5	117	50 - 133	
1,1-Dichloroethane	20.0	17.8	89.1	80 - 125	
1,2-Dichloroethane	20.0	18.5	92.4	80 - 129	
1,1-Dichloroethene	20.0	19.8	99.2	80 - 132	
cis-1,2-Dichloroethene	20.0	19.3	96.4	70 - 125	
trans-1,2-Dichloroethene	20.0	18.9	94.3	80 - 127	
1,2-Dichloropropane	20.0	16.8	83.9	80 - 120	
1,3-Dichloropropane	20.0	17.4	87.2	80 - 120	
2,2-Dichloropropane	20.0	18.5	92.5	80 - 133	
cis-1,3-Dichloropropene	20.0	17.8	89.2	70 - 130	
trans-1,3-Dichloropropene	20.0	15.7	78.7	80 - 130	*
1,1-Dichloropropene	20.0	18.8	94.0	75 - 130	
Ethylbenzene	20.0	17.5	87.7	80 - 122	
2-Hexanone	20.0	14.5	72.7	55 - 130	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 966709
Report generated 12/17/2007 12:06

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00089540

Login Number: L0712230 Run Date: 12/11/2007 Sample ID: WG258142-02
Instrument ID: HPMS10 Run Time: 12:25 Prep Method: 5030B
File ID: 10M61198 Analyst: MES Method: 8260B
Workgroup (AAB#): WG258142 Matrix: Water Units: ug/L
QC Key: STD Lot#: STD23438 Cal ID: HPMS10-15-NOV-07

Analytes	Expected	Found	% Rec	LCS Limits	Q
Hexachlorobutadiene	20.0	15.9	79.5	72 - 132	
Isopropylbenzene	20.0	16.3	81.4	80 - 122	
p-Isopropyltoluene	20.0	15.7	78.5	80 - 122	*
4-Methyl-2-pentanone	20.0	16.8	84.1	64 - 140	
Methylene chloride	20.0	18.2	91.0	80 - 123	
Naphthalene	20.0	15.1	75.5	59 - 149	
n-Propylbenzene	20.0	15.6	78.2	80 - 129	*
Styrene	20.0	17.2	86.2	80 - 123	
1,1,1,2-Tetrachloroethane	20.0	19.8	98.9	80 - 130	
1,1,2,2-Tetrachloroethane	20.0	15.2	76.0	79 - 125	*
Tetrachloroethene	20.0	19.7	98.6	80 - 124	
Toluene	20.0	17.4	86.9	80 - 124	
1,2,3-Trichlorobenzene	20.0	15.5	77.6	55 - 140	
1,2,4-Trichlorobenzene	20.0	15.8	78.9	65 - 135	
1,1,1-Trichloroethane	20.0	20.3	102	80 - 134	
1,1,2-Trichloroethane	20.0	17.6	87.9	80 - 125	
Trichloroethene	20.0	20.3	101	80 - 122	
Trichlorofluoromethane	20.0	18.0	90.2	62 - 151	
1,2,3-Trichloropropane	20.0	17.1	85.3	75 - 125	
1,2,4-Trimethylbenzene	20.0	16.6	83.0	80 - 125	
1,3,5-Trimethylbenzene	20.0	16.3	81.6	80 - 127	
Vinyl acetate	20.0	13.7	68.5	10 - 150	
Vinyl chloride	20.0	20.4	102	65 - 140	
o-Xylene	20.0	17.1	85.5	80 - 122	
m-,p-Xylene	40.0	34.7	86.9	80 - 122	

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	103	86 - 118	PASS
1,2-Dichloroethane-d4	92.0	80 - 120	PASS
Toluene-d8	90.3	88 - 110	PASS
4-Bromofluorobenzene	82.0	86 - 115	FAIL

* FAILS %REC LIMIT

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 966709
Report generated 12/17/2007 12:06

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00089541

Login Number: L0712230 Analyst: MES Prep Method: 5030B
Instrument ID: HPMS10 Matrix: Water Method: 8260B
Workgroup (AAB#): WG258250 Units: ug/L
QC Key: STD Lot #: STD23438

Sample ID: WG258250-02 LCS File ID: 10M61227 Run Date: 12/12/2007 10:28
Sample ID: WG258250-03 LCS2 File ID: 10M61228 Run Date: 12/12/2007 11:00

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	16.6	83.0	20.0	17.8	88.9	6.86	40 - 142	20	
Benzene	20.0	21.4	107	20.0	20.8	104	2.70	80 - 121	20	
Bromobenzene	20.0	20.9	105	20.0	20.2	101	3.43	80 - 120	20	
Bromochloromethane	20.0	24.4	122	20.0	24.2	121	0.742	65 - 130	20	
Bromodichloromethane	20.0	24.0	120	20.0	23.6	118	1.38	80 - 131	20	
Bromoform	20.0	24.8	124	20.0	25.2	126	1.82	70 - 130	20	
Bromomethane	20.0	26.5	133	20.0	26.9	135	1.33	30 - 145	20	
2-Butanone	20.0	15.6	78.2	20.0	14.8	74.2	5.32	30 - 150	20	
n-Butylbenzene	20.0	17.9	89.6	20.0	17.0	85.2	5.02	80 - 131	20	
sec-Butylbenzene	20.0	19.2	96.0	20.0	18.3	91.4	4.92	80 - 127	20	
tert-Butylbenzene	20.0	19.5	97.5	20.0	18.7	93.4	4.25	80 - 126	20	
Carbon disulfide	20.0	17.6	87.9	20.0	16.8	84.1	4.47	58 - 138	20	
Carbon tetrachloride	20.0	27.2	136	20.0	26.0	130	4.68	65 - 140	20	
Chlorobenzene	20.0	20.7	104	20.0	20.5	103	0.847	80 - 120	20	
Chlorodibromomethane	20.0	24.3	121	20.0	24.4	122	0.709	60 - 135	20	
Chloroethane	20.0	22.9	115	20.0	22.1	110	3.82	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	16.3	81.5	20.0	16.3	81.3	0.265	58 - 151	20	
Chloroform	20.0	23.5	118	20.0	23.0	115	2.16	80 - 125	20	
Chloromethane	20.0	24.0	120	20.0	22.9	115	4.53	40 - 125	20	
2-Chlorotoluene	20.0	17.7	88.5	20.0	19.5	97.6	9.79	80 - 127	20	
4-Chlorotoluene	20.0	20.7	104	20.0	17.7	88.4	15.9	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	15.8	78.8	20.0	15.9	79.3	0.651	50 - 130	20	
1,2-Dibromoethane	20.0	20.4	102	20.0	21.0	105	3.12	80 - 125	20	
Dibromomethane	20.0	22.5	113	20.0	22.3	112	0.778	75 - 125	20	
1,2-Dichlorobenzene	20.0	19.7	98.3	20.0	19.6	98.2	0.0602	80 - 125	20	
1,3-Dichlorobenzene	20.0	20.1	101	20.0	19.6	98.1	2.62	80 - 120	20	
1,4-Dichlorobenzene	20.0	19.9	99.3	20.0	19.3	96.7	2.72	80 - 120	20	
Dichlorodifluoromethane	20.0	34.9	175	20.0	33.2	166	5.00	50 - 133	20	*
1,1-Dichloroethane	20.0	21.3	107	20.0	20.6	103	3.35	80 - 125	20	
1,2-Dichloroethane	20.0	22.1	110	20.0	22.0	110	0.368	80 - 129	20	
1,1-Dichloroethene	20.0	24.1	121	20.0	23.3	116	3.60	80 - 132	20	
cis-1,2-Dichloroethene	20.0	22.8	114	20.0	22.2	111	2.74	70 - 125	20	
trans-1,2-Dichloroethene	20.0	22.6	113	20.0	22.2	111	1.74	80 - 127	20	
1,2-Dichloropropane	20.0	19.8	99.2	20.0	19.8	98.9	0.239	80 - 120	20	
1,3-Dichloropropane	20.0	19.7	98.7	20.0	19.9	99.4	0.736	80 - 120	20	
2,2-Dichloropropane	20.0	22.8	114	20.0	22.0	110	3.81	80 - 133	20	
cis-1,3-Dichloropropene	20.0	20.8	104	20.0	20.4	102	1.94	70 - 130	20	
trans-1,3-Dichloropropene	20.0	18.5	92.7	20.0	18.5	92.7	0.0583	80 - 130	20	
1,1-Dichloropropene	20.0	23.1	115	20.0	22.0	110	4.66	75 - 130	20	
Ethylbenzene	20.0	20.9	104	20.0	20.5	102	1.95	80 - 122	20	

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KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00089542

Login Number:L0712230 Analyst:MES Prep Method:5030B
Instrument ID:HPMS10 Matrix:Water Method:8260B
Workgroup (AAB#):WG258250 Units:ug/L
QC Key:STD Lot #:STD23438

Sample ID:WG258250-02 LCS File ID:10M61227 Run Date:12/12/2007 10:28
Sample ID:WG258250-03 LCS2 File ID:10M61228 Run Date:12/12/2007 11:00

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	15.4	76.9	20.0	15.2	76.0	1.20	55 - 130	20	
Hexachlorobutadiene	20.0	20.2	101	20.0	20.0	100	1.09	72 - 132	20	
Isopropylbenzene	20.0	19.5	97.4	20.0	19.1	95.4	2.07	80 - 122	20	
p-Isopropyltoluene	20.0	19.1	95.6	20.0	18.5	92.5	3.33	80 - 122	20	
4-Methyl-2-pentanone	20.0	17.0	85.1	20.0	17.1	85.4	0.387	64 - 140	20	
Methylene chloride	20.0	22.1	110	20.0	21.1	105	4.55	80 - 123	20	
Naphthalene	20.0	16.8	83.8	20.0	16.9	84.7	1.07	59 - 149	20	
n-Propylbenzene	20.0	19.0	94.8	20.0	18.2	91.0	3.99	80 - 129	20	
Styrene	20.0	20.0	100	20.0	19.9	99.5	0.712	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	23.8	119	20.0	23.7	118	0.389	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	17.2	86.2	20.0	17.0	85.2	1.12	79 - 125	20	
Tetrachloroethene	20.0	23.7	119	20.0	23.3	116	1.93	80 - 124	20	
Toluene	20.0	20.7	104	20.0	20.1	101	2.91	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	18.1	90.7	20.0	18.2	91.1	0.480	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	18.8	94.0	20.0	18.4	91.8	2.35	65 - 135	20	
1,1,1-Trichloroethane	20.0	25.7	129	20.0	24.5	122	5.13	80 - 134	20	
1,1,2-Trichloroethane	20.0	20.5	103	20.0	20.9	105	1.83	80 - 125	20	
Trichloroethene	20.0	24.1	120	20.0	23.3	117	3.29	80 - 122	20	
Trichlorofluoromethane	20.0	23.5	117	20.0	22.2	111	5.65	62 - 151	20	
1,2,3-Trichloropropane	20.0	19.5	97.4	20.0	19.9	99.3	1.92	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	20.3	101	20.0	19.7	98.3	3.12	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	20.0	100	20.0	19.3	96.6	3.59	80 - 127	20	
Vinyl acetate	20.0	12.9	64.3	20.0	12.8	63.8	0.702	10 - 150	20	
Vinyl chloride	20.0	29.5	148	20.0	27.3	137	7.62	65 - 140	20	*
o-Xylene	20.0	20.0	99.8	20.0	19.9	99.4	0.486	80 - 122	20	
m-,p-Xylene	40.0	41.2	103	40.0	40.3	101	2.01	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	108	108	86 - 118	PASS
1,2-Dichloroethane-d4	97.1	99.0	80 - 120	PASS
Toluene-d8	94.0	95.9	88 - 110	PASS
4-Bromofluorobenzene	85.8	86.6	86 - 115	FAIL

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 02/08/2007
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Report generated 12/17/2007 11:10

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L0712230 Tune ID: WG255969-01
Instrument: HPMS10 Run Date: 11/15/2007
Analyst: MES Run Time: 11:00
Workgroup: WG255969 File ID: 10M60439
Cal ID: HPMS10-15-NOV-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	20.0	6254	PASS
75.0	95.0	30.0	60.0	46.4	14538	PASS
95.0	95.0	100	100	100	31306	PASS
96.0	95.0	5.00	9.00	6.50	2035	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	79.4	24853	PASS
175	174	5.00	9.00	8.91	2214	PASS
176	174	95.0	101	96.0	23868	PASS
177	176	5.00	9.00	6.55	1564	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG255969-02	STD	01	11/15/2007 11:27	
WG255969-03	STD	01	11/15/2007 11:59	
WG255969-04	STD	01	11/15/2007 12:33	
WG255969-05	STD	01	11/15/2007 13:05	
WG255969-06	STD	01	11/15/2007 13:37	
WG255969-07	STD	01	11/15/2007 14:09	
WG255969-08	STD-CCV	01	11/15/2007 14:41	
WG255969-09	STD	01	11/15/2007 15:13	
WG255969-10	STD	01	11/15/2007 15:45	
WG255969-11	STD	01	11/15/2007 16:17	
WG255969-12	SSCV	01	11/15/2007 17:52	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 971650
Report generated 12/17/2007 11:10

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L0712230 Tune ID: WG258141-01
Instrument: HPMS10 Run Date: 12/11/2007
Analyst: MES Run Time: 10:26
Workgroup: WG258141 File ID: 10M61194
Cal ID: HPMS10-15-NOV-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.5	4410	PASS
75.0	95.0	30.0	60.0	46.2	10475	PASS
95.0	95.0	100	100	100	22660	PASS
96.0	95.0	5.00	9.00	6.81	1543	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	86.6	19616	PASS
175	174	5.00	9.00	7.94	1558	PASS
176	174	95.0	101	96.3	18883	PASS
177	176	5.00	9.00	6.86	1296	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG258141-02	CCV	01	12/11/2007 10:50	
WG258142-01	BLANK	01	12/11/2007 11:53	
WG258142-02	LCS	01	12/11/2007 12:25	
L0712230-09	TRIP BLANK	01	12/11/2007 14:31	
WG258142-03	REF	01	12/11/2007 16:04	
WG258142-04	MS	01	12/11/2007 16:35	
WG258142-05	MSD	01	12/11/2007 17:06	
WG258142-06	BLANK2	01	12/11/2007 23:20	*

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
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Report generated 12/17/2007 11:10

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L0712230 Tune ID: WG258249-01
Instrument: HPMS10 Run Date: 12/12/2007
Analyst: MES Run Time: 08:29
Workgroup: WG258249 File ID: 10M61223
Cal ID: HPMS10-15-NOV-07

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.2	4624	PASS
75.0	95.0	30.0	60.0	48.1	11582	PASS
95.0	95.0	100	100	100	24077	PASS
96.0	95.0	5.00	9.00	7.16	1723	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	97.4	23442	PASS
175	174	5.00	9.00	8.09	1896	PASS
176	174	95.0	101	95.5	22392	PASS
177	176	5.00	9.00	7.02	1572	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG258249-02	CCV	01	12/12/2007 08:53	
WG258250-01	BLANK	01	12/12/2007 09:57	
WG258250-02	LCS	01	12/12/2007 10:28	
WG258250-03	LCS2	01	12/12/2007 11:00	
L0712230-06	17WW06-120507	01	12/12/2007 12:03	
L0712230-07	MW130-120407	01	12/12/2007 12:35	
L0712230-08	17WW05-120407	01	12/12/2007 13:06	
L0712230-04	17WW10-120507	01	12/12/2007 13:38	
L0712230-05	17WW04-120507	01	12/12/2007 14:10	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 971650
Report generated 12/17/2007 11:10

INITIAL CALIBRATION SUMMARY

00089546

Login Number: L0712230 **Instrument ID:** HPMS10

Analytical Method: 8260B **Initial Calibration Date:** 15-NOV-07 16:17

ICAL Workgroup: WG255969 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.2836	4.46		
1,2-Dichloropropane	CCC	0.3339	4.79		
Chloroform	CCC	0.6006	6.21		
Ethylbenzene	CCC	0.5672	6.98		
Toluene	CCC	1.471	6.70		
Vinyl Chloride	CCC	0.2150	13.8		
1,1,2,2-Tetrachloroethane	SPCC	0.4705	10.8		
1,1-Dichloroethane	SPCC	0.6435	5.34		
Bromoform	SPCC	0.1557	9.25		
Chlorobenzene	SPCC	1.042	8.46		
Chloromethane	SPCC	0.3007	18.2		1.00
1,1,1,2-Tetrachloroethane		0.3698	6.04		
1,1,1-Trichloroethane		0.5266	5.07		
1,1,2-Trichloroethane		0.2398	7.18		
1,1-Dichloropropene		0.4495	5.55		
1,2,3-Trichlorobenzene		0.7896	10.4		
1,2,3-Trichloropropane		0.1592	11.3		
1,2,4-Trichlorobenzene		0.9694	9.41		
1,2,4-Trimethylbenzene		2.771	7.25		
1,2-Dibromo-3-Chloropropane		0.09656	11.5		
1,2-Dibromoethane		0.2651	5.91		
1,2-Dichlorobenzene		1.410	9.55		
1,2-Dichloroethane		0.4423	7.11		
1,3,5-Trimethylbenzene		2.680	5.61		
1,3-Dichlorobenzene		1.582	8.07		
1,3-Dichloropropane		0.4498	7.57		
1,4-Dichlorobenzene		1.616	9.13		
2,2-Dichloropropane		0.5606	4.69		
2-Butanone		0.08492	7.49		
2-Chloroethyl Vinyl Ether		0.1421	7.50		
2-Chlorotoluene		2.412	9.60		
2-Hexanone		0.1343	6.77		
4-Chlorotoluene		2.151	10.2		
4-Methyl-2-Pentanone		0.07257	6.87		
Acetone		0.05833	11.4		
Benzene		1.267	6.72		
Bromobenzene		0.8238	8.40		
Bromochloromethane		0.1546	8.12		
Bromodichloromethane		0.4124	6.12		
Bromomethane		0.2305	11.4		
Carbon Disulfide		1.022	3.33		
Carbon Tetrachloride		0.4655	5.26		
Chloroethane		0.2444	3.86		
Dibromochloromethane		0.2933	6.52		
Dibromomethane		0.1563	6.78		

KEMRON FORMS - Modified 01/18/2007
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INITIAL CALIBRATION SUMMARY

00089547

Login Number: L0712230 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 15-NOV-07 16:17
ICAL Workgroup: WG255969 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Dichlorodifluoromethane		0.3392	5.90		
Hexachlorobutadiene		0.4188	5.40		
Isopropylbenzene		1.649	5.87		
Methylene Chloride		0.4950	64.2		1.00
Naphthalene		1.553	9.99		
Styrene		1.127	7.44		
Tetrachloroethene		0.3207	4.69		
Trichloroethene		0.3645	6.81		
Trichlorofluoromethane		0.5946	5.66		
Vinyl Acetate		0.4234	6.56		
cis-1,2-Dichloroethene		0.3447	4.99		
cis-1,3-Dichloropropene		0.5127	6.71		
m-,p-Xylene		0.6895	7.33		
n-Butylbenzene		2.405	4.43		
n-Propylbenzene		3.549	5.75		
o-Xylene		0.6752	6.88		
p-Isopropyltoluene		2.817	5.06		
sec-Butylbenzene		3.262	4.92		
tert-Butylbenzene		0.6102	5.65		
trans-1,2-Dichloroethene		0.3256	3.94		
trans-1,3-Dichloropropene		0.5018	4.77		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INITIAL CALIBRATION DATA

00089548

Login Number: L0712230 **Instrument ID:** HPMS10

Analytical Method: 8260B **Initial Calibration Date:** 15-NOV-07 16:17

Column ID: F

Analyte	WG255969-02			WG255969-03			WG255969-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	3025.00000	0.2874	1.00	6939.00000	0.2613
1,2-Dichloropropane	NA	NA	NA	0.400	3642.00000	0.3461	1.00	8492.00000	0.3197
Chloroform	0.300	5290.00000	0.6080	0.400	7022.00000	0.6672	1.00	14551.0000	0.5479
Ethylbenzene	NA	NA	NA	0.400	5750.00000	0.6167	1.00	13351.0000	0.5771
Toluene	NA	NA	NA	0.400	15465.0000	1.659	1.00	32436.0000	1.402
Vinyl Chloride	NA	NA	NA	0.400	2808.00000	0.2668	1.00	6037.00000	0.2273
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	2528.00000	0.5132	1.00	5946.00000	0.4794
1,1-Dichloroethane	NA	NA	NA	0.400	7320.00000	0.6955	1.00	16108.0000	0.6065
Bromoform	NA	NA	NA	NA	NA	NA	1.00	3458.00000	0.1495
Chlorobenzene	NA	NA	NA	0.400	10518.0000	1.128	1.00	24485.0000	1.058
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	10747.0000	0.4046
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	3450.00000	0.3700	1.00	8365.00000	0.3616
1,1,1-Trichloroethane	NA	NA	NA	0.400	5438.00000	0.5167	1.00	12732.0000	0.4794
1,1,2-Trichloroethane	NA	NA	NA	0.400	2336.00000	0.2505	1.00	5546.00000	0.2397
1,1-Dichloropropene	NA	NA	NA	0.400	4547.00000	0.4320	1.00	10851.0000	0.4086
1,2,3-Trichlorobenzene	0.300	3233.00000	0.8072	0.400	4519.00000	0.9175	1.00	9333.00000	0.7525
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	1952.00000	0.1574
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	5420.00000	1.100	1.00	11881.0000	0.9580
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	15513.0000	3.150	1.00	33351.0000	2.689
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	1.00	1277.00000	0.1030
1,2-Dibromoethane	NA	NA	NA	0.400	2635.00000	0.2826	1.00	6148.00000	0.2658
1,2-Dichlorobenzene	0.300	5567.00000	1.390	0.400	7962.00000	1.617	1.00	17761.0000	1.432
1,2-Dichloroethane	NA	NA	NA	0.400	4801.00000	0.4562	1.00	10563.0000	0.3977
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	14478.0000	2.939	1.00	32224.0000	2.598
1,3-Dichlorobenzene	NA	NA	NA	0.400	8633.00000	1.753	1.00	19776.0000	1.595
1,3-Dichloropropane	NA	NA	NA	0.400	4581.00000	0.4913	1.00	9686.00000	0.4187
1,4-Dichlorobenzene	0.300	6396.00000	1.597	0.400	9065.00000	1.840	1.00	20303.0000	1.637
2,2-Dichloropropane	NA	NA	NA	0.400	6067.00000	0.5765	1.00	13845.0000	0.5213
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	1.00	3137.00000	0.1181
2-Chlorotoluene	NA	NA	NA	0.400	14128.0000	2.868	1.00	30378.0000	2.449
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	11434.0000	2.321	1.00	25797.0000	2.080
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	14793.0000	1.406	1.00	31352.0000	1.181
Bromobenzene	0.300	3182.00000	0.7944	0.400	4636.00000	0.9412	1.00	10623.0000	0.8565
Bromochloromethane	NA	NA	NA	0.400	1798.00000	0.1708	1.00	3759.00000	0.1415
Bromodichloromethane	NA	NA	NA	0.400	4855.00000	0.4613	1.00	10254.0000	0.3861
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	5159.00000	0.1942
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	26939.0000	1.014
Carbon Tetrachloride	NA	NA	NA	0.400	4893.00000	0.4649	1.00	11135.0000	0.4193

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INITIAL CALIBRATION DATA

00089549

Login Number: L0712230 **Instrument ID:** HPMS10

Analytical Method: 8260B **Initial Calibration Date:** 15-NOV-07 16:17

Column ID: F

Analyte	WG255969-05			WG255969-06			WG255969-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	15686.0000	0.2937	5.00	36289.0000	0.2803	20.0	152616.000	0.2928
1,2-Dichloropropane	2.00	18987.0000	0.3555	5.00	43037.0000	0.3325	20.0	178328.000	0.3421
Chloroform	2.00	33919.0000	0.6352	5.00	76079.0000	0.5877	20.0	313167.000	0.6009
Ethylbenzene	2.00	28396.0000	0.6005	5.00	64793.0000	0.5730	20.0	267042.000	0.5796
Toluene	2.00	72857.0000	1.541	5.00	165305.000	1.462	20.0	678809.000	1.473
Vinyl Chloride	2.00	11678.0000	0.2187	5.00	29595.0000	0.2286	20.0	109494.000	0.2101
1,1,2,2-Tetrachloroethane	2.00	14428.0000	0.5646	5.00	29167.0000	0.4744	20.0	111253.000	0.4486
1,1-Dichloroethane	2.00	35813.0000	0.6706	5.00	82175.0000	0.6348	20.0	341431.000	0.6551
Bromoform	2.00	6877.00000	0.1454	5.00	15332.0000	0.1356	20.0	69155.0000	0.1501
Chlorobenzene	2.00	54986.0000	1.163	5.00	117818.000	1.042	20.0	486169.000	1.055
Chloromethane	2.00	17427.0000	0.3263	5.00	40970.0000	0.3165	20.0	146404.000	0.2809
1,1,1,2-Tetrachloroethane	2.00	18976.0000	0.4013	5.00	41592.0000	0.3678	20.0	175653.000	0.3812
1,1,1-Trichloroethane	2.00	29541.0000	0.5532	5.00	67940.0000	0.5249	20.0	284459.000	0.5458
1,1,2-Trichloroethane	2.00	12886.0000	0.2725	5.00	26767.0000	0.2367	20.0	109767.000	0.2382
1,1-Dichloropropene	2.00	25476.0000	0.4771	5.00	57457.0000	0.4439	20.0	244143.000	0.4684
1,2,3-Trichlorobenzene	2.00	23174.0000	0.9069	5.00	49362.0000	0.8029	20.0	189215.000	0.7630
1,2,3-Trichloropropane	2.00	4974.00000	0.1946	5.00	10164.0000	0.1653	20.0	38899.0000	0.1569
1,2,4-Trichlorobenzene	2.00	27921.0000	1.093	5.00	59414.0000	0.9664	20.0	238343.000	0.9611
1,2,4-Trimethylbenzene	2.00	74820.0000	2.928	5.00	167610.000	2.726	20.0	686395.000	2.768
1,2-Dibromo-3-Chloropropane	2.00	3050.00000	0.1194	5.00	5552.00000	0.09030	20.0	22007.0000	0.08870
1,2-Dibromoethane	2.00	13666.0000	0.2890	5.00	29476.0000	0.2607	20.0	122134.000	0.2651
1,2-Dichlorobenzene	2.00	40572.0000	1.588	5.00	88327.0000	1.437	20.0	342780.000	1.382
1,2-Dichloroethane	2.00	26640.0000	0.4989	5.00	56084.0000	0.4333	20.0	234760.000	0.4504
1,3,5-Trimethylbenzene	2.00	71522.0000	2.799	5.00	162270.000	2.640	20.0	669701.000	2.701
1,3-Dichlorobenzene	2.00	44320.0000	1.734	5.00	97793.0000	1.591	20.0	389299.000	1.570
1,3-Dichloropropane	2.00	23698.0000	0.5011	5.00	51145.0000	0.4523	20.0	208176.000	0.4518
1,4-Dichlorobenzene	2.00	46087.0000	1.804	5.00	101042.000	1.644	20.0	397181.000	1.602
2,2-Dichloropropane	2.00	31501.0000	0.5899	5.00	69181.0000	0.5344	20.0	299993.000	0.5756
2-Butanone	NA	NA	NA	5.00	12059.0000	0.09320	20.0	46726.0000	0.08970
2-Chloroethyl Vinyl Ether	2.00	7869.00000	0.1474	5.00	18084.0000	0.1397	20.0	76829.0000	0.1474
2-Chlorotoluene	2.00	58974.0000	2.308	5.00	131114.000	2.133	20.0	611032.000	2.464
2-Hexanone	NA	NA	NA	5.00	16104.0000	0.1424	20.0	64860.0000	0.1408
4-Chlorotoluene	2.00	63639.0000	2.490	5.00	146287.000	2.380	20.0	510946.000	2.060
4-Methyl-2-Pentanone	NA	NA	NA	5.00	9406.00000	0.07270	20.0	40498.0000	0.07770
Acetone	NA	NA	NA	5.00	9030.00000	0.06980	20.0	31844.0000	0.06110
Benzene	2.00	71397.0000	1.337	5.00	162929.000	1.259	20.0	670871.000	1.287
Bromobenzene	2.00	22893.0000	0.8959	5.00	50403.0000	0.8199	20.0	202033.000	0.8147
Bromochloromethane	2.00	8807.00000	0.1649	5.00	20787.0000	0.1606	20.0	83882.0000	0.1609
Bromodichloromethane	2.00	22256.0000	0.4168	5.00	50001.0000	0.3863	20.0	213835.000	0.4103
Bromomethane	2.00	11095.0000	0.2078	5.00	27129.0000	0.2096	20.0	123824.000	0.2376
Carbon Disulfide	2.00	54535.0000	1.021	5.00	138538.000	1.070	20.0	537770.000	1.032
Carbon Tetrachloride	2.00	25176.0000	0.4714	5.00	57872.0000	0.4471	20.0	248264.000	0.4763

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INITIAL CALIBRATION DATA

00089550

Login Number: L0712230 **Instrument ID:** HPMS10

Analytical Method: 8260B **Initial Calibration Date:** 15-NOV-07 16:17

Column ID: F

Analyte	WG255969-08			WG255969-09			WG255969-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	376457.000	0.2951	100	727580.000	0.2900	200	1369763.00	0.2682
1,2-Dichloropropane	50.0	433058.000	0.3395	100	830234.000	0.3309	200	1555056.00	0.3045
Chloroform	50.0	778763.000	0.6105	100	1497221.00	0.5968	200	2816856.00	0.5516
Ethylbenzene	50.0	636141.000	0.5600	100	1198391.00	0.5440	200	2134010.00	0.4863
Toluene	50.0	1665818.00	1.467	100	3169420.00	1.439	200	5805029.00	1.323
Vinyl Chloride	50.0	266658.000	0.2090	100	495545.000	0.1975	200	828466.000	0.1622
1,1,2,2-Tetrachloroethane	50.0	275130.000	0.4483	100	523369.000	0.4355	200	952423.000	0.4001
1,1-Dichloroethane	50.0	836105.000	0.6554	100	1611703.00	0.6424	200	3001747.00	0.5878
Bromoform	50.0	190562.000	0.1678	100	388461.000	0.1764	200	725292.000	0.1653
Chlorobenzene	50.0	1172055.00	1.032	100	2171851.00	0.9860	200	3829790.00	0.8727
Chloromethane	50.0	352461.000	0.2763	100	654366.000	0.2608	200	1224371.00	0.2397
1,1,1,2-Tetrachloroethane	50.0	434086.000	0.3822	100	816392.000	0.3706	200	1419681.00	0.3235
1,1,1-Trichloroethane	50.0	707167.000	0.5543	100	1349513.00	0.5379	200	2555196.00	0.5003
1,1,2-Trichloroethane	50.0	270334.000	0.2380	100	509286.000	0.2312	200	928008.000	0.2115
1,1-Dichloropropene	50.0	604290.000	0.4737	100	1163435.00	0.4637	200	2188057.00	0.4285
1,2,3-Trichlorobenzene	50.0	466730.000	0.7605	100	886530.000	0.7377	200	1566293.00	0.6580
1,2,3-Trichloropropane	50.0	94488.0000	0.1540	100	179660.000	0.1495	200	325457.000	0.1367
1,2,4-Trichlorobenzene	50.0	577196.000	0.9404	100	1098502.00	0.9140	200	1956606.00	0.8220
1,2,4-Trimethylbenzene	50.0	1695577.00	2.763	100	3227980.00	2.686	200	5849587.00	2.457
1,2-Dibromo-3-Chloropropane	50.0	56388.0000	0.09190	100	112051.000	0.09320	200	212803.000	0.08940
1,2-Dibromoethane	50.0	297391.000	0.2618	100	569029.000	0.2583	200	1042226.00	0.2375
1,2-Dichlorobenzene	50.0	837606.000	1.365	100	1572652.00	1.309	200	2792361.00	1.173
1,2-Dichloroethane	50.0	580089.000	0.4547	100	1103769.00	0.4399	200	2079380.00	0.4072
1,3,5-Trimethylbenzene	50.0	1656553.00	2.699	100	3174959.00	2.642	200	5765799.00	2.422
1,3-Dichlorobenzene	50.0	958760.000	1.562	100	1801662.00	1.499	200	3212722.00	1.350
1,3-Dichloropropane	50.0	510340.000	0.4493	100	957929.000	0.4349	200	1752449.00	0.3993
1,4-Dichlorobenzene	50.0	961777.000	1.567	100	1810612.00	1.507	200	3206762.00	1.347
2,2-Dichloropropane	50.0	744108.000	0.5833	100	1427891.00	0.5691	200	2729406.00	0.5345
2-Butanone	50.0	111067.000	0.08710	100	208241.000	0.08300	200	386067.000	0.07560
2-Chloroethyl Vinyl Ether	50.0	194064.000	0.1521	100	373737.000	0.1490	200	711661.000	0.1394
2-Chlorotoluene	50.0	1537089.00	2.504	100	2898518.00	2.412	200	5130835.00	2.155
2-Hexanone	50.0	162156.000	0.1428	100	291751.000	0.1324	200	533259.000	0.1215
4-Chlorotoluene	50.0	1241003.00	2.022	100	2410582.00	2.006	200	4396077.00	1.847
4-Methyl-2-Pentanone	50.0	99601.0000	0.07810	100	180450.000	0.07190	200	330115.000	0.06460
Acetone	50.0	73982.0000	0.05800	100	143323.000	0.05710	200	269382.000	0.05270
Benzene	50.0	1640842.00	1.286	100	3123794.00	1.245	200	5788819.00	1.134
Bromobenzene	50.0	498343.000	0.8120	100	935935.000	0.7788	200	1668076.00	0.7008
Bromochloromethane	50.0	198201.000	0.1554	100	374210.000	0.1492	200	680637.000	0.1333
Bromodichloromethane	50.0	541054.000	0.4241	100	1060450.00	0.4227	200	2000012.00	0.3916
Bromomethane	50.0	324487.000	0.2544	100	654049.000	0.2607	200	1272316.00	0.2491
Carbon Disulfide	50.0	1325839.00	1.039	100	2563394.00	1.022	200	4888901.00	0.9573
Carbon Tetrachloride	50.0	631290.000	0.4949	100	1232696.00	0.4913	200	2343733.00	0.4589

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 971648
Report generated 12/17/2007 11:10

INITIAL CALIBRATION DATA

00089551

Login Number: L0712230
Analytical Method: 8260B

Instrument ID: HPMS10
Initial Calibration Date: 15-NOV-07 16:17
Column ID: F

Analyte	WG255969-11		
	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	605784.000	0.08090
2-Chloroethyl Vinyl Ether	300	1074262.00	0.1434
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	834270.000	0.1261
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	527683.000	0.07040
Acetone	300	384335.000	0.05130
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

00089552

Login Number: L0712230 **Instrument ID:** HPMS10

Analytical Method: 8260B **Initial Calibration Date:** 15-NOV-07 16:17

Column ID: F

Analyte	WG255969-02			WG255969-03			WG255969-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	0.400	2511.00000	0.2386	1.00	6409.00000	0.2413
Dibromochloromethane	NA	NA	NA	0.400	2636.00000	0.2827	1.00	6365.00000	0.2751
Dibromomethane	NA	NA	NA	0.400	1591.00000	0.1512	1.00	3791.00000	0.1427
Dichlorodifluoromethane	NA	NA	NA	0.400	3389.00000	0.3220	1.00	8096.00000	0.3048
Hexachlorobutadiene	NA	NA	NA	0.400	2200.00000	0.4467	1.00	4649.00000	0.3748
Isopropylbenzene	NA	NA	NA	0.400	16641.0000	1.785	1.00	36064.0000	1.559
Methylene Chloride	NA	NA	NA	0.400	12826.0000	1.219	1.00	17233.0000	0.6489
Naphthalene	NA	NA	NA	0.400	8294.00000	1.684	1.00	19403.0000	1.565
Styrene	NA	NA	NA	0.400	11826.0000	1.268	1.00	24680.0000	1.067
Tetrachloroethene	NA	NA	NA	0.400	3161.00000	0.3390	1.00	7053.00000	0.3049
Trichloroethene	NA	NA	NA	0.400	4289.00000	0.4075	1.00	9355.00000	0.3522
Trichlorofluoromethane	NA	NA	NA	0.400	5853.00000	0.5561	1.00	14369.0000	0.5410
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	3823.00000	0.3633	1.00	8500.00000	0.3200
cis-1,3-Dichloropropene	NA	NA	NA	0.400	5976.00000	0.5678	1.00	12717.0000	0.4788
m-,p-Xylene	NA	NA	NA	0.800	14033.0000	0.7525	2.00	31722.0000	0.6856
n-Butylbenzene	NA	NA	NA	0.400	12643.0000	2.567	1.00	28893.0000	2.330
n-Propylbenzene	NA	NA	NA	0.400	18974.0000	3.852	1.00	41735.0000	3.365
o-Xylene	NA	NA	NA	0.400	6913.00000	0.7414	1.00	15242.0000	0.6589
p-Isopropyltoluene	NA	NA	NA	0.400	14559.0000	2.956	1.00	33241.0000	2.680
sec-Butylbenzene	NA	NA	NA	0.400	17160.0000	3.484	1.00	39351.0000	3.173
tert-Butylbenzene	NA	NA	NA	0.400	3265.00000	0.6629	1.00	7241.00000	0.5838
trans-1,2-Dichloroethene	NA	NA	NA	0.400	3458.00000	0.3286	1.00	8227.00000	0.3098
trans-1,3-Dichloropropene	NA	NA	NA	0.400	4822.00000	0.5171	1.00	11066.0000	0.4783

INITIAL CALIBRATION DATA

00089553

Login Number: L0712230
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 15-NOV-07 16:17
Column ID: F

Analyte	WG255969-05			WG255969-06			WG255969-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	12461.0000	0.2333	5.00	33162.0000	0.2562	20.0	129439.000	0.2483
Dibromochloromethane	2.00	13896.0000	0.2939	5.00	29963.0000	0.2650	20.0	135060.000	0.2931
Dibromomethane	2.00	9348.00000	0.1750	5.00	20440.0000	0.1579	20.0	83301.0000	0.1598
Dichlorodifluoromethane	2.00	18162.0000	0.3401	5.00	45523.0000	0.3517	20.0	183451.000	0.3520
Hexachlorobutadiene	2.00	11010.0000	0.4309	5.00	24960.0000	0.4060	20.0	104511.000	0.4214
Isopropylbenzene	2.00	82055.0000	1.735	5.00	186236.000	1.647	20.0	774439.000	1.681
Methylene Chloride	2.00	26447.0000	0.4952	5.00	48890.0000	0.3777	20.0	167537.000	0.3214
Naphthalene	2.00	46499.0000	1.820	5.00	99080.0000	1.612	20.0	369033.000	1.488
Styrene	2.00	57271.0000	1.211	5.00	125237.000	1.108	20.0	523984.000	1.137
Tetrachloroethene	2.00	15699.0000	0.3320	5.00	35821.0000	0.3168	20.0	152247.000	0.3304
Trichloroethene	2.00	20454.0000	0.3830	5.00	46817.0000	0.3617	20.0	191801.000	0.3680
Trichlorofluoromethane	2.00	31824.0000	0.5959	5.00	79964.0000	0.6178	20.0	324923.000	0.6234
Vinyl Acetate	2.00	25610.0000	0.4796	5.00	53084.0000	0.4101	20.0	224566.000	0.4309
cis-1,2-Dichloroethene	2.00	18973.0000	0.3553	5.00	44874.0000	0.3467	20.0	182847.000	0.3508
cis-1,3-Dichloropropene	2.00	28969.0000	0.5425	5.00	63728.0000	0.4923	20.0	270862.000	0.5197
m-,p-Xylene	4.00	70028.0000	0.7404	10.0	159122.000	0.7036	40.0	641119.000	0.6958
n-Butylbenzene	2.00	63268.0000	2.476	5.00	143049.000	2.327	20.0	604475.000	2.438
n-Propylbenzene	2.00	95319.0000	3.730	5.00	215867.000	3.511	20.0	896431.000	3.615
o-Xylene	2.00	34637.0000	0.7325	5.00	75622.0000	0.6687	20.0	312749.000	0.6788
p-Isopropyltoluene	2.00	76081.0000	2.977	5.00	171695.000	2.793	20.0	718654.000	2.898
sec-Butylbenzene	2.00	87330.0000	3.418	5.00	197280.000	3.209	20.0	821857.000	3.314
tert-Butylbenzene	2.00	16273.0000	0.6368	5.00	37575.0000	0.6112	20.0	154429.000	0.6227
trans-1,2-Dichloroethene	2.00	18165.0000	0.3402	5.00	42053.0000	0.3249	20.0	172452.000	0.3309
trans-1,3-Dichloropropene	2.00	25683.0000	0.5431	5.00	55189.0000	0.4880	20.0	234090.000	0.5081

INITIAL CALIBRATION DATA

00089554

Login Number: L0712230
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 15-NOV-07 16:17
Column ID: F

Analyte	WG255969-08			WG255969-09			WG255969-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	325346.000	0.2550	100	628714.000	0.2506	200	1184914.00	0.2320
Dibromochloromethane	50.0	357883.000	0.3151	100	708301.000	0.3215	200	1317147.00	0.3001
Dibromomethane	50.0	208016.000	0.1631	100	394908.000	0.1574	200	732905.000	0.1435
Dichlorodifluoromethane	50.0	458991.000	0.3598	100	899975.000	0.3587	200	1658703.00	0.3248
Hexachlorobutadiene	50.0	266292.000	0.4339	100	518243.000	0.4312	200	965300.000	0.4055
Isopropylbenzene	50.0	1895840.00	1.669	100	3606057.00	1.637	200	6477125.00	1.476
Methylene Chloride	50.0	402619.000	0.3156	100	765249.000	0.3050	200	1417569.00	0.2776
Naphthalene	50.0	912551.000	1.487	100	1755079.00	1.460	200	3116186.00	1.309
Styrene	50.0	1282154.00	1.129	100	2430102.00	1.103	200	4364325.00	0.9945
Tetrachloroethene	50.0	371132.000	0.3267	100	709139.000	0.3219	200	1289677.00	0.2939
Trichloroethene	50.0	469310.000	0.3679	100	888782.000	0.3543	200	1643028.00	0.3217
Trichlorofluoromethane	50.0	802326.000	0.6289	100	1553975.00	0.6194	200	2931907.00	0.5741
Vinyl Acetate	50.0	541739.000	0.4247	100	1044313.00	0.4162	200	1999359.00	0.3915
cis-1,2-Dichloroethene	50.0	458386.000	0.3593	100	864603.000	0.3446	200	1620252.00	0.3173
cis-1,3-Dichloropropene	50.0	675059.000	0.5292	100	1274628.00	0.5080	200	2365365.00	0.4632
m-,p-Xylene	100	1566127.00	0.6894	200	2911284.00	0.6608	400	5163209.00	0.5882
n-Butylbenzene	50.0	1510421.00	2.461	100	2907771.00	2.420	200	5298087.00	2.226
n-Propylbenzene	50.0	2209829.00	3.601	100	4225862.00	3.516	200	7613085.00	3.198
o-Xylene	50.0	764762.000	0.6733	100	1440994.00	0.6542	200	2605139.00	0.5936
p-Isopropyltoluene	50.0	1763258.00	2.873	100	3363693.00	2.799	200	6085414.00	2.557
sec-Butylbenzene	50.0	2033048.00	3.313	100	3876063.00	3.225	200	7052497.00	2.963
tert-Butylbenzene	50.0	378429.000	0.6166	100	719673.000	0.5988	200	1305680.00	0.5485
trans-1,2-Dichloroethene	50.0	431302.000	0.3381	100	824081.000	0.3285	200	1550256.00	0.3036
trans-1,3-Dichloropropene	50.0	578653.000	0.5094	100	1108693.00	0.5033	200	2048121.00	0.4667

Login Number: L0712230 **Instrument ID:** HPMS10

Analytical Method: 8260B **Initial Calibration Date:** 15-NOV-07 16:17

Column ID: F

Analyte	WG255969-11		
	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	3076047.00	0.4106
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

KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00089556

Login Number: L0712230 Run Date: 11/15/2007 Sample ID: WG255969-12

Instrument ID: HPMS10 Run Time: 17:52 Method: 8260B

File ID: 10M60452 Analyst: MES QC Key: STD

ICal Workgroup: WG255969 Cal ID: HPMS10 - 15-NOV-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	21.3	ug/L	0.639	6.30	30	
1,1-Dichloroethene	CCC	20.0	22.9	ug/L	0.325	14.5	30	
1,2-Dichloropropane	CCC	20.0	21.5	ug/L	0.358	7.30	30	
Ethylbenzene	CCC	20.0	21.5	ug/L	0.611	7.70	30	
Toluene	CCC	20.0	21.3	ug/L	1.57	6.60	30	
Vinyl Chloride	CCC	20.0	23.9	ug/L	0.258	19.7	30	
Bromoform	SPCC	20.0	20.3	ug/L	0.158	1.40	30	
Chlorobenzene	SPCC	20.0	21.0	ug/L	1.10	5.20	30	
Chloromethane	SPCC	20.0	23.8	ug/L	0.336	19.0	30	
1,1-Dichloroethane	SPCC	20.0	21.1	ug/L	0.680	5.60	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	20.2	ug/L	0.476	1.20	30	
Acetone		20.0	20.8	ug/L	0.0606	3.90	30	
Benzene		20.0	21.3	ug/L	1.35	6.40	30	
Bromobenzene		20.0	20.9	ug/L	0.861	4.50	30	
Bromochloromethane		20.0	22.2	ug/L	0.171	10.8	30	
Bromodichloromethane		20.0	22.0	ug/L	0.453	9.80	30	
Bromomethane		20.0	25.1	ug/L	0.289	25.5	30	
2-Butanone		20.0	22.4	ug/L	0.0951	12.0	30	
n-Butylbenzene		20.0	21.1	ug/L	2.54	5.60	30	
sec-Butylbenzene		20.0	20.9	ug/L	3.41	4.40	30	
tert-Butylbenzene		20.0	20.7	ug/L	0.633	3.70	30	
Carbon Disulfide		20.0	16.7	ug/L	0.852	16.6	30	
Carbon Tetrachloride		20.0	21.8	ug/L	0.508	9.20	30	
Dibromochloromethane		20.0	21.2	ug/L	0.312	6.20	30	
Chloroethane		20.0	23.1	ug/L	0.282	15.5	30	
2-Chloroethyl Vinyl Ether		20.0	21.1	ug/L	0.150	5.30	30	
2-Chlorotoluene		20.0	21.1	ug/L	2.55	5.60	30	
4-Chlorotoluene		20.0	19.4	ug/L	2.08	3.10	30	
1,2-Dibromo-3-Chloropropane		20.0	18.8	ug/L	0.0909	5.80	30	
1,2-Dibromoethane		20.0	21.2	ug/L	0.281	6.10	30	
Dibromomethane		20.0	21.7	ug/L	0.170	8.40	30	
1,2-Dichlorobenzene		20.0	20.5	ug/L	1.44	2.40	30	
1,3-Dichlorobenzene		20.0	20.5	ug/L	1.62	2.60	30	
1,4-Dichlorobenzene		20.0	20.1	ug/L	1.63	0.600	30	
Dichlorodifluoromethane		20.0	30.7	ug/L	0.521	53.6	30	*
1,2-Dichloroethane		20.0	21.4	ug/L	0.473	6.90	30	
cis-1,2-Dichloroethene		20.0	21.8	ug/L	0.375	8.80	30	
trans-1,2-Dichloroethene		20.0	21.5	ug/L	0.350	7.60	30	
1,3-Dichloropropane		20.0	21.6	ug/L	0.485	7.80	30	
2,2-Dichloropropane		20.0	21.5	ug/L	0.603	7.60	30	
cis-1,3-Dichloropropene		20.0	21.4	ug/L	0.548	6.80	30	
trans-1,3-Dichloropropene		20.0	19.9	ug/L	0.499	0.500	30	

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 971649
Report generated 12/17/2007 11:10

KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00089557

Login Number: L0712230 Run Date: 11/15/2007 Sample ID: WG255969-12
Instrument ID: HPMS10 Run Time: 17:52 Method: 8260B
File ID: 10M60452 Analyst: MES QC Key: STD
ICal Workgroup: WG255969 Cal ID: HPMS10 - 15-NOV-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	22.1	ug/L	0.496	10.4	30	
2-Hexanone		20.0	21.1	ug/L	0.142	5.40	30	
Hexachlorobutadiene		20.0	21.7	ug/L	0.455	8.60	30	
Isopropylbenzene		20.0	19.5	ug/L	1.61	2.30	30	
p-Isopropyltoluene		20.0	20.7	ug/L	2.91	3.40	30	
4-Methyl-2-Pentanone		20.0	21.0	ug/L	0.0761	4.80	30	
Methylene Chloride		20.0	21.1	ug/L	0.351	5.40	30	
Naphthalene		20.0	19.8	ug/L	1.54	1.10	30	
n-Propylbenzene		20.0	20.8	ug/L	3.70	4.20	30	
Styrene		20.0	21.3	ug/L	1.20	6.60	30	
1,1,1,2-Tetrachloroethane		20.0	21.9	ug/L	0.405	9.60	30	
Tetrachloroethene		20.0	22.0	ug/L	0.353	10.1	30	
1,2,3-Trichlorobenzene		20.0	20.3	ug/L	0.801	1.40	30	
1,2,4-Trichlorobenzene		20.0	20.4	ug/L	0.988	1.90	30	
1,1,1-Trichloroethane		20.0	22.0	ug/L	0.578	9.80	30	
1,1,2-Trichloroethane		20.0	21.6	ug/L	0.259	7.90	30	
Trichloroethene		20.0	21.6	ug/L	0.393	7.90	30	
Trichlorofluoromethane		20.0	19.3	ug/L	0.574	3.50	30	
1,2,3-Trichloropropane		20.0	20.6	ug/L	0.164	3.00	30	
1,2,4-Trimethylbenzene		20.0	21.6	ug/L	2.99	7.80	30	
1,3,5-Trimethylbenzene		20.0	21.0	ug/L	2.82	5.20	30	
Vinyl Acetate		20.0	17.9	ug/L	0.379	10.5	40	
o-Xylene		20.0	20.9	ug/L	0.705	4.40	30	
m-,p-Xylene		40.0	42.4	ug/L	0.731	6.00	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: 971649
Report generated 12/17/2007 11:10

CONTINUING CALIBRATION VERIFICATION (CCV)

00089558

Login Number: L0712230 Run Date: 12/11/2007 Sample ID: WG258141-02
Instrument ID: HPMS10 Run Time: 10:50 Method: 8260B
File ID: 10M61195 Analyst: MES QC Key: STD
Workgroup (AAB#): WG258142 Cal ID: HPMS10 - 15-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	50.3	ug/L	0.605	0.654	20	
1,1-Dichloroethene	CCC	50.0	52.9	ug/L	0.300	5.83	20	
1,2-Dichloropropane	CCC	50.0	45.0	ug/L	0.300	10.1	20	
Ethylbenzene	CCC	50.0	45.7	ug/L	0.519	8.58	20	
Toluene	CCC	50.0	46.1	ug/L	1.36	7.70	20	
Vinyl Chloride	CCC	50.0	51.2	ug/L	0.220	2.34	20	
Bromoform	SPCC	50.0	62.3	ug/L	0.194	24.6	40	
Chlorobenzene	SPCC	50.0	46.8	ug/L	0.975	6.41	40	
Chloromethane	SPCC	50.0	48.3	ug/L	0.265	3.45	40	
1,1-Dichloroethane	SPCC	50.0	47.1	ug/L	0.606	5.80	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	38.3	ug/L	0.361	23.3	40	
Acetone		50.0	40.4	ug/L	0.0471	19.3	40	
Benzene		50.0	47.4	ug/L	1.20	5.27	40	
Bromobenzene		50.0	45.8	ug/L	0.755	8.30	40	
Bromochloromethane		50.0	52.9	ug/L	0.164	5.87	40	
Bromodichloromethane		50.0	51.3	ug/L	0.423	2.50	40	
Bromomethane		50.0	50.9	ug/L	0.235	1.87	40	
2-Butanone		50.0	37.1	ug/L	0.0629	25.9	40	
n-Butylbenzene		50.0	38.8	ug/L	1.87	22.4	40	
sec-Butylbenzene		50.0	41.8	ug/L	2.72	16.5	40	
tert-Butylbenzene		50.0	43.3	ug/L	0.529	13.4	40	
Carbon Disulfide		50.0	44.9	ug/L	0.919	10.2	40	
Carbon Tetrachloride		50.0	57.3	ug/L	0.534	14.7	40	
Dibromochloromethane		50.0	55.7	ug/L	0.327	11.5	40	
Chloroethane		50.0	47.4	ug/L	0.232	5.23	40	
2-Chloroethyl Vinyl Ether		50.0	31.8	ug/L	0.0903	36.4	40	
2-Chlorotoluene		50.0	40.1	ug/L	1.93	19.9	40	
4-Chlorotoluene		50.0	45.7	ug/L	1.97	8.54	40	
1,2-Dibromo-3-Chloropropane		50.0	40.5	ug/L	0.0783	18.9	40	
1,2-Dibromoethane		50.0	45.8	ug/L	0.243	8.31	40	
Dibromomethane		50.0	49.3	ug/L	0.154	1.31	40	
1,2-Dichlorobenzene		50.0	43.7	ug/L	1.23	12.5	40	
1,3-Dichlorobenzene		50.0	44.6	ug/L	1.41	10.8	40	
1,4-Dichlorobenzene		50.0	44.5	ug/L	1.44	10.9	40	
Dichlorodifluoromethane		50.0	60.8	ug/L	0.413	21.7	40	
1,2-Dichloroethane		50.0	46.8	ug/L	0.414	6.45	40	
cis-1,2-Dichloroethene		50.0	50.2	ug/L	0.346	0.319	40	
trans-1,2-Dichloroethene		50.0	51.3	ug/L	0.334	2.68	40	
1,3-Dichloropropane		50.0	43.0	ug/L	0.387	14.1	40	
2,2-Dichloropropane		50.0	49.1	ug/L	0.551	1.78	40	
cis-1,3-Dichloropropene		50.0	47.1	ug/L	0.483	5.72	40	
trans-1,3-Dichloropropene		50.0	44.6	ug/L	0.447	10.9	40	

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 971651
Report generated 12/17/2007 11:11

CONTINUING CALIBRATION VERIFICATION (CCV)

00089559

Login Number: L0712230 Run Date: 12/11/2007 Sample ID: WG258141-02
Instrument ID: HPMS10 Run Time: 10:50 Method: 8260B
File ID: 10M61195 Analyst: MES QC Key: STD
Workgroup (AAB#): WG258142 Cal ID: HPMS10 - 15-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	50.1	ug/L	0.450	0.153	40	
2-Hexanone		50.0	34.6	ug/L	0.0931	30.7	40	
Hexachlorobutadiene		50.0	41.4	ug/L	0.347	17.2	40	
Isopropylbenzene		50.0	46.8	ug/L	1.54	6.47	40	
p-Isopropyltoluene		50.0	42.4	ug/L	2.39	15.3	40	
4-Methyl-2-Pentanone		50.0	41.5	ug/L	0.0602	17.1	40	
Methylene Chloride		50.0	47.9	ug/L	0.305	4.27	40	
Naphthalene		50.0	37.4	ug/L	1.16	25.3	40	
n-Propylbenzene		50.0	42.3	ug/L	3.00	15.5	40	
Styrene		50.0	45.6	ug/L	1.03	8.88	40	
1,1,1,2-Tetrachloroethane		50.0	52.9	ug/L	0.391	5.72	40	
Tetrachloroethene		50.0	51.4	ug/L	0.330	2.89	40	
1,2,3-Trichlorobenzene		50.0	39.3	ug/L	0.621	21.4	40	
1,2,4-Trichlorobenzene		50.0	40.7	ug/L	0.789	18.6	40	
1,1,1-Trichloroethane		50.0	53.9	ug/L	0.568	7.89	40	
1,1,2-Trichloroethane		50.0	44.5	ug/L	0.213	11.0	40	
Trichloroethene		50.0	51.8	ug/L	0.377	3.51	40	
Trichlorofluoromethane		50.0	57.3	ug/L	0.681	14.5	40	
1,2,3-Trichloropropane		50.0	42.1	ug/L	0.134	15.8	40	
1,2,4-Trimethylbenzene		50.0	42.9	ug/L	2.38	14.1	40	
1,3,5-Trimethylbenzene		50.0	43.7	ug/L	2.34	12.6	40	
Vinyl Acetate		50.0	37.8	ug/L	0.320	24.5	40	
o-Xylene		50.0	45.5	ug/L	0.614	9.09	40	
m-,p-Xylene		100	92.4	ug/L	0.637	7.56	40	
1,2-Dichloroethene		100	102	ug/L	0.340	1.50	40	
Xylenes		150	138	ug/L	0.626	8.07	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: 971651
Report generated 12/17/2007 11:11

CONTINUING CALIBRATION VERIFICATION (CCV)

00089560

Login Number: L0712230 Run Date: 12/12/2007 Sample ID: WG258249-02
Instrument ID: HPMS10 Run Time: 08:53 Method: 8260B
File ID: 10M61224 Analyst: MES QC Key: STD
Workgroup (AAB#): WG258250 Cal ID: HPMS10 - 15-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	55.5	ug/L	0.667	11.0	20	
1,1-Dichloroethene	CCC	50.0	57.4	ug/L	0.326	14.9	20	
1,2-Dichloropropane	CCC	50.0	46.8	ug/L	0.313	6.36	20	
Ethylbenzene	CCC	50.0	49.3	ug/L	0.559	1.48	20	
Toluene	CCC	50.0	49.3	ug/L	1.45	1.48	20	
Vinyl Chloride	CCC	50.0	59.6	ug/L	0.256	19.1	20	
Bromoform	SPCC	50.0	64.5	ug/L	0.201	29.1	40	
Chlorobenzene	SPCC	50.0	49.2	ug/L	1.03	1.61	40	
Chloromethane	SPCC	50.0	53.5	ug/L	0.292	7.01	40	
1,1-Dichloroethane	SPCC	50.0	50.8	ug/L	0.653	1.54	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	38.5	ug/L	0.363	22.9	40	
Acetone		50.0	43.2	ug/L	0.0504	13.5	40	
Benzene		50.0	50.9	ug/L	1.29	1.84	40	
Bromobenzene		50.0	48.8	ug/L	0.803	2.48	40	
Bromochloromethane		50.0	55.6	ug/L	0.172	11.2	40	
Bromodichloromethane		50.0	55.8	ug/L	0.460	11.6	40	
Bromomethane		50.0	50.7	ug/L	0.234	1.38	40	
2-Butanone		50.0	37.7	ug/L	0.0641	24.5	40	
n-Butylbenzene		50.0	43.8	ug/L	2.11	12.4	40	
sec-Butylbenzene		50.0	46.5	ug/L	3.03	7.09	40	
tert-Butylbenzene		50.0	47.4	ug/L	0.578	5.28	40	
Carbon Disulfide		50.0	48.3	ug/L	0.987	3.45	40	
Carbon Tetrachloride		50.0	64.9	ug/L	0.604	29.8	40	
Dibromochloromethane		50.0	58.2	ug/L	0.342	16.4	40	
Chloroethane		50.0	52.8	ug/L	0.258	5.57	40	
2-Chloroethyl Vinyl Ether		50.0	34.9	ug/L	0.0990	30.3	40	
2-Chlorotoluene		50.0	48.2	ug/L	2.33	3.55	40	
4-Chlorotoluene		50.0	44.2	ug/L	1.90	11.6	40	
1,2-Dibromo-3-Chloropropane		50.0	39.8	ug/L	0.0768	20.5	40	
1,2-Dibromoethane		50.0	46.8	ug/L	0.248	6.46	40	
Dibromomethane		50.0	51.2	ug/L	0.160	2.32	40	
1,2-Dichlorobenzene		50.0	46.0	ug/L	1.30	8.00	40	
1,3-Dichlorobenzene		50.0	48.6	ug/L	1.54	2.89	40	
1,4-Dichlorobenzene		50.0	47.8	ug/L	1.54	4.43	40	
Dichlorodifluoromethane		50.0	66.8	ug/L	0.453	33.7	40	
1,2-Dichloroethane		50.0	50.6	ug/L	0.448	1.19	40	
cis-1,2-Dichloroethene		50.0	54.3	ug/L	0.374	8.54	40	
trans-1,2-Dichloroethene		50.0	55.7	ug/L	0.363	11.4	40	
1,3-Dichloropropane		50.0	44.0	ug/L	0.395	12.1	40	
2,2-Dichloropropane		50.0	56.6	ug/L	0.635	13.2	40	
cis-1,3-Dichloropropene		50.0	49.6	ug/L	0.509	0.799	40	
trans-1,3-Dichloropropene		50.0	47.1	ug/L	0.473	5.75	40	

KEMRON FORMS - Modified 09/06/2007 - (CCV)
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CONTINUING CALIBRATION VERIFICATION (CCV)

00089561

Login Number: L0712230 Run Date: 12/12/2007 Sample ID: WG258249-02
Instrument ID: HPMS10 Run Time: 08:53 Method: 8260B
File ID: 10M61224 Analyst: MES QC Key: STD
Workgroup (AAB#): WG258250 Cal ID: HPMS10 - 15-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	55.1	ug/L	0.495	10.2	40	
2-Hexanone		50.0	35.3	ug/L	0.0948	29.4	40	
Hexachlorobutadiene		50.0	49.0	ug/L	0.411	1.92	40	
Isopropylbenzene		50.0	50.9	ug/L	1.68	1.77	40	
p-Isopropyltoluene		50.0	47.4	ug/L	2.67	5.25	40	
4-Methyl-2-Pentanone		50.0	41.7	ug/L	0.0605	16.7	40	
Methylene Chloride		50.0	51.2	ug/L	0.326	2.47	40	
Naphthalene		50.0	38.3	ug/L	1.19	23.5	40	
n-Propylbenzene		50.0	46.6	ug/L	3.30	6.88	40	
Styrene		50.0	47.9	ug/L	1.08	4.19	40	
1,1,1,2-Tetrachloroethane		50.0	56.1	ug/L	0.415	12.3	40	
Tetrachloroethene		50.0	55.5	ug/L	0.356	11.0	40	
1,2,3-Trichlorobenzene		50.0	41.0	ug/L	0.648	18.0	40	
1,2,4-Trichlorobenzene		50.0	42.9	ug/L	0.831	14.3	40	
1,1,1-Trichloroethane		50.0	61.3	ug/L	0.646	22.7	40	
1,1,2-Trichloroethane		50.0	45.3	ug/L	0.217	9.33	40	
Trichloroethene		50.0	56.0	ug/L	0.408	12.0	40	
Trichlorofluoromethane		50.0	65.9	ug/L	0.784	31.8	40	
1,2,3-Trichloropropane		50.0	43.4	ug/L	0.138	13.2	40	
1,2,4-Trimethylbenzene		50.0	47.7	ug/L	2.64	4.65	40	
1,3,5-Trimethylbenzene		50.0	48.8	ug/L	2.61	2.48	40	
Vinyl Acetate		50.0	37.4	ug/L	0.317	25.2	40	
o-Xylene		50.0	48.0	ug/L	0.648	4.03	40	
m-,p-Xylene		100	98.1	ug/L	0.677	1.86	40	
1,2-Dichloroethene		100	110	ug/L	0.368	9.99	40	
Xylenes		150	146	ug/L	0.662	2.58	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: 971651
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KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number: L0712230
Instrument ID: HPMS10
Workgroup (AAB#): WG258142

CCV Number: WG258141-02
CAL ID: HPMS10-15-NOV-07
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG258141-02	NA	NA	267308	465074	498036
Upper Limit	NA	NA	534616	930148	996072
Lower Limit	NA	NA	133654	232537	249018
L0712230-09	1.00	01	232027	408806	438214
WG258142-01	1.00	01	248134	436846	457638
WG258142-02	1.00	01	268680	460768	479156
WG258142-03	1.00	01	229595	397454	422002
WG258142-04	1.00	01	235494	412348	433755
WG258142-05	1.00	01	238317	419012	443475
WG258142-06	1.00	01	209937	371254	392593

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: 971652
Report generated 12/17/2007 11:11

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number: L0712230
Instrument ID: HPMS10
Workgroup (AAB#): WG258250

CCV Number: WG258249-02
CAL ID: HPMS10-15-NOV-07
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG258249-02	NA	NA	258108	456081	485634
Upper Limit	NA	NA	516216	912162	971268
Lower Limit	NA	NA	129054	228041	242817
L0712230-04	1.00	01	214592	373220	396797
L0712230-05	1.00	01	204651	363158	382571
L0712230-06	1.00	01	211967	369186	392689
L0712230-07	1.00	01	217732	379274	396833
L0712230-08	1.00	01	215929	373481	391586
WG258250-01	1.00	01	222732	384344	410689
WG258250-02	1.00	01	235906	408298	426180
WG258250-03	1.00	01	236530	404749	424798

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: 971652
Report generated 12/17/2007 11:11

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number: L0712230 **CCV Number:** WG258141-02
Instrument ID: HPMS10 **CAL ID:** HPMS10-15-NOV-07
Workgroup (AAB#): WG258142 **Matrix:** WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG258141-02	NA	NA	17.74	14.72	10.85
Upper Limit	NA	NA	18.24	15.22	11.35
Lower Limit	NA	NA	17.24	14.22	10.35
L0712230-09	1.00	01	17.73	14.73	10.85
WG258142-01	1.00	01	17.73	14.73	10.85
WG258142-02	1.00	01	17.74	14.72	10.85
WG258142-03	1.00	01	17.73	14.73	10.85
WG258142-04	1.00	01	17.73	14.73	10.85
WG258142-05	1.00	01	17.73	14.73	10.85
WG258142-06	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: 971654
Report generated 12/17/2007 11:11

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number: L0712230 **CCV Number:** WG258249-02
Instrument ID: HPMS10 **CAL ID:** HPMS10-15-NOV-07
Workgroup (AAB#): WG258250 **Matrix:** WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG258249-02	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
L0712230-04	1.00	01	17.74	14.72	10.85
L0712230-05	1.00	01	17.73	14.73	10.85
L0712230-06	1.00	01	17.74	14.73	10.85
L0712230-07	1.00	01	17.74	14.72	10.85
L0712230-08	1.00	01	17.73	14.72	10.85
WG258250-01	1.00	01	17.74	14.73	10.85
WG258250-02	1.00	01	17.74	14.73	10.85
WG258250-03	1.00	01	17.73	14.72	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: 971654
Report generated 12/17/2007 11:11

2.2 Semivolatiles Data

2.2.1 Pesticide GC Data (8081)

2.2.1.1 Summary Data

KEMRON ENVIRONMENTAL SERVICES
GC PESTICIDES

KEMRON Login No.: L0712230

METHOD

Preparation: SW- 846 3550B(Soils) 3510C(Waters)

Analysis: SW-846 8081

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 20 %, 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.

Labortory Control Sample: All acceptance criteria were met.

Matrix Spikes: There were no MS/MSD results associated with this sample delivery group, 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 qualification.

SAMPLES

Surrogates: All acceptance criteria were met.

Endrin/DDT Breakdown: All acceptance criteria were met.

Samples: For all samples which yielded results with an RPD of greater than 40% between the primary and confirmation column the appropriate flag was applied. All acceptance criteria were met.

Manual Integration Reason Codes

KEMRON laboratory management has identified four general cases with valid reasons supporting the use of manual integration techniques.

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 Laboratory Director or the QA/QC Supervisor will be required.

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: ECL

Approved: 12-DEC-07

LABORATORY REPORT

00089571

L0712230

12/17/07 14:37

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
LHSMW06-120507	L0712230-01	8081A	1	07-DEC-07
LHSMW06-120507	L0712230-02	8081A	1	07-DEC-07
LHSMW02-120507	L0712230-03	8081A	1	07-DEC-07

Report Number: **L0712230**
Report Date : **December 17, 2007**

00089572

Sample Number: **L0712230-01**
Client ID: **LHSMW06-120507**
Matrix: **Water**
Workgroup Number: **WG258131**
Collect Date: **12/05/2007 12:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3510C**
Analytical Method: **8081A**
Analyst: **ECL**
Dilution: **1**
Units: **ug/L**

Instrument: **HP15**
Prep Date: **12/10/2007 08:00**
Cal Date: **11/16/2007 21:36**
Run Date: **12/11/2007 15:30**
File ID: **15G12564.F**

Analyte	CAS. Number	Result	Qual	PQL	SDL
4,4'-DDD	72-54-8		U	0.0473	0.00945
4,4'-DDE	72-55-9		U	0.0473	0.00945
4,4'-DDT	50-29-3		U	0.0473	0.00945
Aldrin	309-00-2		U	0.0473	0.00945
alpha-BHC	319-84-6		U	0.0473	0.00945
beta-BHC	319-85-7		U	0.0473	0.00945
delta-BHC	319-86-8		U	0.0473	0.00945
Dieldrin	60-57-1		U	0.0473	0.00945
Endosulfan I	959-98-8		U	0.0473	0.00945
Endosulfan II	33213-65-9		U	0.0473	0.00945
Endosulfan sulfate	1031-07-8		U	0.0473	0.00945
Endrin	72-20-8		U	0.0473	0.00945
Endrin aldehyde	7421-93-4		U	0.0473	0.00945
gamma-BHC (Lindane)	58-89-9		U	0.0473	0.00945
Heptachlor	76-44-8		U	0.0473	0.00945
Heptachlor epoxide	1024-57-3		U	0.0473	0.00945
Methoxychlor	72-43-5		U	0.0473	0.00945
Endrin ketone	53494-70-5		U	0.0473	0.00945
alpha Chlordane	5103-71-9		U	0.0473	0.00945
gamma Chlordane	5103-74-2		U	0.0473	0.00945
Toxaphene	8001-35-2		U	0.945	0.284

Surrogate	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	70.0	20	180	
Decachlorobiphenyl	95.2	25	140	

U Not detected at or above adjusted sample detection limit

Report Number: **L0712230**
Report Date : **December 17, 2007**

00089573

Sample Number: **L0712230-02**
Client ID: **LHSMW06-120507**
Matrix: **Water**
Workgroup Number: **WG258131**
Collect Date: **12/05/2007 12:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3510C**
Analytical Method: **8081A**
Analyst: **ECL**
Dilution: **1**
Units: **ug/L**

Instrument: **HP15**
Prep Date: **12/10/2007 08:00**
Cal Date: **11/16/2007 21:36**
Run Date: **12/11/2007 15:58**
File ID: **15G12565.F**

Analyte	CAS. Number	Result	Qual	PQL	SDL
4,4'-DDD	72-54-8		U	0.0500	0.0100
4,4'-DDE	72-55-9		U	0.0500	0.0100
4,4'-DDT	50-29-3		U	0.0500	0.0100
Aldrin	309-00-2		U	0.0500	0.0100
alpha-BHC	319-84-6		U	0.0500	0.0100
beta-BHC	319-85-7		U	0.0500	0.0100
delta-BHC	319-86-8		U	0.0500	0.0100
Dieldrin	60-57-1		U	0.0500	0.0100
Endosulfan I	959-98-8		U	0.0500	0.0100
Endosulfan II	33213-65-9		U	0.0500	0.0100
Endosulfan sulfate	1031-07-8		U	0.0500	0.0100
Endrin	72-20-8		U	0.0500	0.0100
Endrin aldehyde	7421-93-4		U	0.0500	0.0100
gamma-BHC (Lindane)	58-89-9		U	0.0500	0.0100
Heptachlor	76-44-8		U	0.0500	0.0100
Heptachlor epoxide	1024-57-3		U	0.0500	0.0100
Methoxychlor	72-43-5		U	0.0500	0.0100
Endrin ketone	53494-70-5		U	0.0500	0.0100
alpha Chlordane	5103-71-9		U	0.0500	0.0100
gamma Chlordane	5103-74-2		U	0.0500	0.0100
Toxaphene	8001-35-2		U	1.00	0.300

Surrogate	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	61.9	20	180	
Decachlorobiphenyl	86.2	25	140	

U Not detected at or above adjusted sample detection limit

Report Number: **L0712230**
Report Date : **December 17, 2007**

00089574

Sample Number: **L0712230-03**
Client ID: **LHSMW02-120507**
Matrix: **Water**
Workgroup Number: **WG258131**
Collect Date: **12/05/2007 13:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3510C**
Analytical Method: **8081A**
Analyst: **ECL**
Dilution: **1**
Units: **ug/L**

Instrument: **HP15**
Prep Date: **12/10/2007 08:00**
Cal Date: **11/16/2007 21:36**
Run Date: **12/11/2007 16:26**
File ID: **15G12566.F**

Analyte	CAS. Number	Result	Qual	PQL	SDL
4,4'-DDD	72-54-8		U	0.0543	0.0109
4,4'-DDE	72-55-9		U	0.0543	0.0109
4,4'-DDT	50-29-3		U	0.0543	0.0109
Aldrin	309-00-2		U	0.0543	0.0109
alpha-BHC	319-84-6		U	0.0543	0.0109
beta-BHC	319-85-7		U	0.0543	0.0109
delta-BHC	319-86-8		U	0.0543	0.0109
Dieldrin	60-57-1		U	0.0543	0.0109
Endosulfan I	959-98-8		U	0.0543	0.0109
Endosulfan II	33213-65-9		U	0.0543	0.0109
Endosulfan sulfate	1031-07-8		U	0.0543	0.0109
Endrin	72-20-8		U	0.0543	0.0109
Endrin aldehyde	7421-93-4		U	0.0543	0.0109
gamma-BHC (Lindane)	58-89-9		U	0.0543	0.0109
Heptachlor	76-44-8		U	0.0543	0.0109
Heptachlor epoxide	1024-57-3		U	0.0543	0.0109
Methoxychlor	72-43-5		U	0.0543	0.0109
Endrin ketone	53494-70-5		U	0.0543	0.0109
alpha Chlordane	5103-71-9		U	0.0543	0.0109
gamma Chlordane	5103-74-2		U	0.0543	0.0109
Toxaphene	8001-35-2		U	1.09	0.326

Surrogate	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	71.2	20	180	
Decachlorobiphenyl	28.5	25	140	

U Not detected at or above adjusted sample detection limit

2.2.1.2 QC Summary Data

Example 8081 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

$$RF = \frac{As}{Cs}$$

where:	Example:
A_s = Area of the compound being measured in the standard	10000
C_s = Concentration of the compound being measured (ng/mL)	100
	RF = 100

2.0 Calculating the concentration (C) of a compound in water using data from prep log and quantitation report:*

$$C = \frac{(A_x)(Vf)(D)}{(RF)(Vi)}$$

where:	Example:
A_x = Area of the compound begin measured	10000
Vf = Final volume of sample extract (mL). (prep log)	1
D = Dilution factor for sample as a multiplier (10X=10)	1
RF = Response factor from ICAL calculated above.	100
Vi = Initial volume of sample (mL). (prep log)	1000
	C(ug/L) = 0.1

3.0 Calculating the concentration (C) of a compound in soil using data from prep log and quantitation report:*

$$C = \frac{(A_x)(Vf)(D)}{(RF)(Wi)}$$

where:	Example:
A_x = Area of the compound begin measured	10000
Vf = Final volume of sample extract (mL). (prep log)	1
D = Dilution factor for sample as a multiplier (10X=10)	1
RF = Response factor from ICAL calculated above.	100
Wi = Initial weight of sample (g).	30
	C(ug/kg) = 3.333333

* Concentrations appearing on instrument quantitation reports are on-column results and do not take into account initial volume, final volume and dilution factor.

Sample Extract Log Sheet R1334514

KEMRON 7 ENVIRONMENTAL SERVICES

Parameter: Pest H_2O SOP #: EXP01 Revision #: 12
Extraction Analyst(s): CAF, RAH TV/KD Analyst(s): CPD
Date/Time Extracted: 12-10-07 @ 0800 Date TV/KD: 12-10-07
Spike/Surrogate Analyst: RAH Witness: CAF
Surrogate #: STD 22709 Earliest Hold Date: 12-12-07
Spike #: A = STD 22711 #1 Spike #: B = TECH CHLORDANE STD 22277

Extraction Work Group WG 257986
Extract Relinquished By: RAH
Extract Received By & Date: EC 12/10/07

	Sample ID	Test Code	pH √ <2	pH √ N	pH √ >12	Initial Vol / Wt	Amount Surrogate	Amount Spike	Final Volume	Extract Color	Emulsions √ A	Emulsions √ BN	Emulsions √ N	Comments
1	Blank			✓		1000 mL	200 µL		10 mL	T				WG 257986-01
2	LCS			✓				100 µL (A)						WG -02
3	LCS Dup			✓										WG -03
4	LCS Chlordane			✓				(B)						WG -04
5	12-134-02	608		✓										
6	12-262-08	8081		✓		795								
7	12-230-01			✓	CAF 12-10	~~1000~~ 1058 mL *								
8	-02			✓		~~1000~~ mL *								
9	-03			✓		920 mL							✓	
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														

CAF 12-10-07

Methylene Chloride Lot #: E35E77
Hexane Lot #: E16E21
Ether Lot #: —
Methanol Lot #: —
Solvent: — Lot #: —
Reagent: 94:6 Lot #: RGT12246
Reagent: — Lot #: —
Reagent: — Lot #: —
Acid: — Lot #: —
Florisil Lot #: E28559
Silica Gel Lot #: —
IR Analyst / Date / Time: —
Dried Na_2SO_4 Lot #: COA12614

Color Code
T = Transparent
C = Colored
O = Opaque

SW-846 Method			On	Off	On	Off
Continuous	3520C					
Soxhlet	3540C					
ASE*	3545					
Sep Funnel	3510C	✓				
Sonication	3550B					
Waste	3580A					

* Accelerated Solvent Extractor (ASE)

Clean-ups			
Florisil 3620B	✓	GPC 3640A	
Silica Gel 3630C		Other	
Acid 3665A		N/A	
Sulfur 3660B			

Peer Reviewed By: Roy Halstead II Date: 12/10/07

Extraction Notes For Volume # 291 Page # 95

General Comments: * SX Vol. 12-230-01 → 1058 mL 12-230-02 → 1000 mL

Extraction Anomalies: None

Concentration Anomalies: None

Clean-Up Anomalies: None

Supervisor Review: _____ Date: _____

KEMRON Environmental Services

Instrument Run Log

Instrument: HP15 Dataset: 111607
Analyst1: ECL Analyst2: NA
Method: 8081 SOP: GCS09 Rev: 8

Maintenance Log ID:

Column 1 ID: RTX-CLP Column 2 ID: RTX-CLP2
Workgroups: WG256067, WG256068, WG256152
Internal STD: NA Surrogate STD: STD22709 Calibration STD

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	15G12243.F	ENDRIN/DDT	1	1	STD21936	11/16/07 10:36
2	15G12243.R	ENDRIN/DDT	1	1	STD21936	11/16/07 11:04
3	15G12244.F	PEST CCV 20 PPB	1	1	STD23109	11/16/07 11:04
4	15G12244.R	PEST CCV 20 PPB	1	1	STD23109	11/16/07 11:32
5	15G12245.F	WG256138-01 ENDRIN/DDT	1	1	STD21936	11/16/07 15:27
6	15G12245.R	WG256138-01 ENDRIN/DDT	1	1	STD21936	11/16/07 15:56
7	15G12246.F	WG256131-01 TOX ICAL 2000 PPB	1	1	STD20867	11/16/07 15:56
8	15G12246.R	WG256131-01 TOX ICAL 2000 PPB	1	1	STD20867	11/16/07 16:24
9	15G12247.F	WG256131-02 TOX ICAL 1000 PPB	1	1	STD20867	11/16/07 16:24
10	15G12247.R	WG256131-02 TOX ICAL 1000 PPB	1	1	STD20867	11/16/07 16:52
11	15G12248.F	WG256131-03 TOX ICAL 500 PPB	1	1	STD20867	11/16/07 16:52
12	15G12248.R	WG256131-03 TOX ICAL 500 PPB	1	1	STD20867	11/16/07 17:21
13	15G12249.F	WG256131-04 TOX ICAL 250 PPB	1	1	STD20867	11/16/07 17:21
14	15G12249.R	WG256131-04 TOX ICAL 250 PPB	1	1	STD20867	11/16/07 17:49
15	15G12250.F	WG256131-05 TOX ICAL 100 PPB	1	1	STD20867	11/16/07 17:49
16	15G12250.R	WG256131-05 TOX ICAL 100 PPB	1	1	STD20867	11/16/07 18:18
17	15G12251.F	WG256131-06 TOX ALT 500 PPB	1	1	STD22383	11/16/07 18:18
18	15G12251.R	WG256131-06 TOX ALT 500 PPB	1	1	STD22383	11/16/07 18:46
19	15G12252.F	WG256136-01 PEST ICAL 200 PPB	1	1	STD23109	11/16/07 18:46
20	15G12252.R	WG256136-01 PEST ICAL 200 PPB	1	1	STD23109	11/16/07 19:14
21	15G12253.F	WG256136-02 PEST ICAL 50 PPB	1	1	STD23109	11/16/07 19:14
22	15G12253.R	WG256136-02 PEST ICAL 50 PPB	1	1	STD23109	11/16/07 19:43
23	15G12254.F	WG256136-03 PEST ICAL 20 PPB	1	1	STD23109	11/16/07 19:43
24	15G12254.R	WG256136-03 PEST ICAL 20 PPB	1	1	STD23109	11/16/07 20:11
25	15G12255.F	WG256136-04 PEST ICAL 10 PPB	1	1	STD23109	11/16/07 20:11
26	15G12255.R	WG256136-04 PEST ICAL 10 PPB	1	1	STD23109	11/16/07 20:39
27	15G12256.F	WG256136-05 PEST ICAL 4 PPB	1	1	STD23109	11/16/07 20:39
28	15G12256.R	WG256136-05 PEST ICAL 4 PPB	1	1	STD23109	11/16/07 21:08
29	15G12257.F	WG256136-06 PEST ICAL 1 PPB	1	1	STD23109	11/16/07 21:08
30	15G12257.R	WG256136-06 PEST ICAL 1 PPB	1	1	STD23109	11/16/07 21:36
31	15G12258.F	WG256136-07 PEST ALT 20 PPB	1	1	STD19689	11/16/07 21:36
32	15G12258.R	WG256136-07 PEST ALT 20 PPB	1	1	STD19689	11/16/07 22:04
33	15G12259.F	WG255920-01 BLANK V289 P173	17	1		11/16/07 22:04
34	15G12259.R	WG255920-01 BLANK V289 P173	17	1		11/16/07 22:33
35	15G12260.F	WG255920-02 LCS V289 P173	17	1		11/16/07 22:33

Page: 1 Approved: 19-NOV-07

KEMRON Environmental Services

Instrument Run Log

Instrument: HP15 Dataset: 111607
Analyst1: ECL Analyst2: NA
Method: 8081 SOP: GCS09 Rev: 8

Maintenance Log ID:

Column 1 ID: RTX-CLP Column 2 ID: RTX-CLP2
Workgroups: WG256067, WG256068, WG256152
Internal STD: NA Surrogate STD: STD22709

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
36	15G12260.R	WG255920-02 LCS V289 P173	17	1		11/16/07 23:01
37	15G12261.F	WG255920-03 LCS DUP V289 P173	17	1		11/16/07 23:01
38	15G12261.R	WG255920-03 LCS DUP V289 P173	17	1		11/16/07 23:30
39	15G12262.F	L0711355-01	17	1		11/16/07 23:30
40	15G12262.R	L0711355-01	17	1		11/16/07 23:58
41	15G12263.F	L0711355-02	17	1		11/16/07 23:58
42	15G12263.R	L0711355-02	17	1		11/17/07 00:26
43	15G12264.F	L0711355-03	17	1		11/17/07 00:26
44	15G12264.R	L0711355-03	17	1		11/17/07 00:55
45	15G12265.F	L0711355-04	17	1		11/17/07 00:55
46	15G12265.R	L0711355-04	17	1		11/17/07 01:23
47	15G12266.F	L0711355-05	17	1		11/17/07 01:23
48	15G12266.R	L0711355-05	17	1		11/17/07 01:51
49	15G12267.F	L0711355-06	17	1		11/17/07 01:51
50	15G12267.R	L0711355-06	17	1		11/17/07 02:20
51	15G12268.F	L0711355-07	17	1		11/17/07 02:20
52	15G12268.R	L0711355-07	17	1		11/17/07 02:48
53	15G12269.F	WG256138-02 ENDRIN/DDT	1	1	STD21936	11/17/07 02:48
54	15G12269.R	WG256138-02 ENDRIN/DDT	1	1	STD21936	11/17/07 03:16
55	15G12270.F	WG256138-03 PEST CCV 20 PPB	1	1	STD23109	11/17/07 03:16
56	15G12270.R	WG256138-03 PEST CCV 20 PPB	1	1	STD23109	11/17/07 03:45
57	15G12271.F	WG256133-01 TOX CCV 500 PPB	1	1	STD20867	11/17/07 03:45
58	15G12271.R	WG256133-01 TOX CCV 500 PPB	1	1	STD20867	11/17/07 04:14
59	15G12272.F	L0711418-01	7	1	SOIL	11/17/07 04:14
60	15G12272.R	L0711418-01	7	1	SOIL	11/17/07 04:42
61	15G12273.F	WG255924-01 BLANK V290 P139	7	1	SOIL	11/17/07 04:42
62	15G12273.R	WG255924-01 BLANK V290 P139	7	1	SOIL	11/17/07 05:10
63	15G12274.F	WG255924-02 LCS V290 P139	7	1	SOIL	11/17/07 05:10
64	15G12274.R	WG255924-02 LCS V290 P139	7	1	SOIL	11/17/07 05:38
65	15G12275.F	WG255924-03 LCS DUP V290 P139	7	1	SOIL	11/17/07 05:38
66	15G12275.R	WG255924-03 LCS DUP V290 P139	7	1	SOIL	11/17/07 06:07
67	15G12276.F	L0711386-01	17	1		11/17/07 06:07
68	15G12276.R	L0711386-01	17	1		11/17/07 06:35
69	15G12277.F	L0711386-02	17	1		11/17/07 06:35
70	15G12277.R	L0711386-02	17	1		11/17/07 07:03
71	15G12278.F	L0711483-01 10x	7	10	SOIL	11/17/07 07:03
72	15G12278.R	L0711483-01 10x	7	10	SOIL	11/17/07 07:32

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Approved: 19-NOV-07

KEMRON Environmental Services

Instrument Run Log

Instrument: HP15 Dataset: 111607
Analyst1: ECL Analyst2: NA
Method: 8081 SOP: GCS09 Rev: 8

Maintenance Log ID:

Column 1 ID: RTX-CLP Column 2 ID: RTX-CLP2
Workgroups: WG256067, WG256068, WG256152
Internal STD: NA Surrogate STD: STD22709

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
73	15G12279.F	WG256057-01 BLANK V290 P149	7	1	SOIL	11/17/07 07:32
74	15G12279.R	WG256057-01 BLANK V290 P149	7	1	SOIL	11/17/07 08:00
75	15G12280.F	WG256057-02 LCS V290 P149	7	1	SOIL	11/17/07 08:00
76	15G12280.R	WG256057-02 LCS V290 P149	7	1	SOIL	11/17/07 08:28
77	15G12281.F	WG256057-03 LCS DUP V290 P149	7	1	SOIL	11/17/07 08:28
78	15G12281.R	WG256057-03 LCS DUP V290 P149	7	1	SOIL	11/17/07 08:57
79	15G12282.F	WG256138-04 ENDRIN/DDT	1	1	STD21936	11/17/07 08:57
80	15G12282.R	WG256138-04 ENDRIN/DDT	1	1	STD21936	11/17/07 09:25
81	15G12283.F	WG256138-05 PEST CCV 10 PPB	1	1	STD23109	11/17/07 09:25
82	15G12283.R	WG256138-05 PEST CCV 10 PPB	1	1	STD23109	11/17/07 09:53
83	15G12284.F	WG256133-02 TOX CCV 250 PPB	1	1	STD20867	11/17/07 09:53
84	15G12284.R	WG256133-02 TOX CCV 250 PPB	1	1	STD20867	11/17/07 10:22

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Page: 3 Approved: 19-NOV-07

KEMRON Environmental Services

Instrument Run Log

Instrument: HP15 Dataset: 121107
Analyst1: ECL Analyst2: NA
Method: 8081 SOP: GCS09 Rev: 8

Maintenance Log ID:

Column 1 ID: RTX-CLP Column 2 ID: RTX-CLP2
Workgroups: WG258131
Internal STD: NA Surrogate STD: STD22709 Calibration STD

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	15G12554.F	WG258178-01 ENDRIN/DDT	1	1	STD21936	12/11/07 09:57
2	15G12554.R	WG258178-01 ENDRIN/DDT	1	1	STD21936	12/11/07 10:26
3	15G12555.F	WG258178-02 PEST CCV 20 PPB	1	1	STD23109	12/11/07 10:26
4	15G12555.R	WG258178-02 PEST CCV 20 PPB	1	1	STD23109	12/11/07 10:54
5	15G12556.F	WG258179-01 TOX CCV 500 PPB	1	1	STD20867	12/11/07 11:42
6	15G12556.R	WG258179-01 TOX CCV 500 PPB	1	1	STD20867	12/11/07 12:11
7	15G12557.F	CHLORDANE CCV 500 PPB	1	1	STD19944	12/11/07 12:11
8	15G12557.R	CHLORDANE CCV 500 PPB	1	1	STD19944	12/11/07 12:39
9	15G12558.F	WG257986-01 BLANK V291 P95	1	1		12/11/07 12:39
10	15G12558.R	WG257986-01 BLANK V291 P95	1	1		12/11/07 13:07
11	15G12559.F	WG257986-02 LCS V291 P95	1	1		12/11/07 13:07
12	15G12559.R	WG257986-02 LCS V291 P95	1	1		12/11/07 13:36
13	15G12560.F	WG257986-03 LCS DUP V291 P95	1	1		12/11/07 13:36
14	15G12560.R	WG257986-03 LCS DUP V291 P95	1	1		12/11/07 14:04
15	15G12561.F	WG257986-04 CHLOR LCS V291 P95	1	1		12/11/07 14:04
16	15G12561.R	WG257986-04 CHLOR LCS V291 P95	1	1		12/11/07 14:33
17	15G12562.F	L0712134-02	2	1		12/11/07 14:33
18	15G12562.R	L0712134-02	2	1		12/11/07 15:01
19	15G12563.F	L0712212-08	1	1		12/11/07 15:01
20	15G12563.R	L0712212-08	1	1		12/11/07 15:30
21	15G12564.F	L0712230-01	1	1		12/11/07 15:30
22	15G12564.R	L0712230-01	1	1		12/11/07 15:58
23	15G12565.F	L0712230-02	1	1		12/11/07 15:58
24	15G12565.R	L0712230-02	1	1		12/11/07 16:26
25	15G12566.F	L0712230-03	1	1		12/11/07 16:26
26	15G12566.R	L0712230-03	1	1		12/11/07 16:55
27	15G12567.F	WG258178-03 ENDRIN/DDT	1	1	STD21936	12/11/07 16:55
28	15G12567.R	WG258178-03 ENDRIN/DDT	1	1	STD21936	12/11/07 17:23
29	15G12568.F	WG258178-04 PEST CCV 10 PPB	1	1	STD23109	12/11/07 17:23
30	15G12568.R	WG258178-04 PEST CCV 10 PPB	1	1	STD23109	12/11/07 17:52
31	15G12569.F	WG258179-02 TOX CCV 250 PPB	1	1	STD20867	12/11/07 17:52
32	15G12569.R	WG258179-02 TOX CCV 250 PPB	1	1	STD20867	12/11/07 18:20
33	15G12570.F	CHLORDANE CCV 500 PPB	1	1	STD19944	12/11/07 18:20
34	15G12570.R	CHLORDANE CCV 500 PPB	1	1	STD19944	12/11/07 18:48

Page: 1

Approved: 12-DEC-07

KEMRON Environmental Services

Instrument Run Log

Instrument: HP15 Dataset: 121107
Analyst1: ECL Analyst2: NA
Method: 8081 SOP: GCS09 Rev: 8

Maintenance Log ID:

Column 1 ID: RTX-CLP Column 2 ID: RTX-CLP2
Workgroups: WG258131
Internal STD: NA Surrogate STD: STD22709

Comments

Seq.	Rerun	Dil.	Reason	Analytes
30				
	WG258178-04 PEST CCV 10 PPB: 6 analytes failed high on the rear column.			

Approved: 12-DEC-07

KEMRON Environmental Services
Data Checklist

Date: 16-NOV-2007
Analyst: ECL
Analyst: NA
Method: 8081
Instrument: HP15
Curve Workgroup: NA
Runlog ID: 19384
Analytical Workgroups: L0711355, L0711418, L0711386, L0711483

ANALYTICAL	
System Performance Check	NA
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	X
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	X
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	X
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	X
Surrogate recoveries	X
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	X
Check for completeness	X
Primary Reviewer	ECL
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:
19-NOV-2007

Secondary Reviewer:
19-NOV-2007

Generated: NOV-19-2007 10:32:45

KEMRON Environmental Services
Data Checklist

Date: 11-DEC-2007
Analyst: ECL
Analyst: NA
Method: 8081
Instrument: HP15
Curve Workgroup: NA
Runlog ID: 19760
Analytical Workgroups: L0712134, L0712212, L0712230

ANALYTICAL	
System Performance Check	NA
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
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)	NA
Special standards	X
Blanks	X
TCL hits	X
Surrogate recoveries	X
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	X
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	X
Surrogate recoveries	X
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	X
Check for completeness	X
Primary Reviewer	ECL
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:
12-DEC-2007

Secondary Reviewer:
12-DEC-2007

Generated: DEC-12-2007 10:05:04

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8081A **AAB#:** WG258131
Login Number: L0712230

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
LHSMW02-120507	12/05/07	12/07/07	12/10/07	7	4.79	12/11/07	40	1.35	
LHSMW06-120507	12/05/07	12/07/07	12/10/07	7	4.81	12/11/07	40	1.33	
LHSMW06-120507	12/05/07	12/07/07	12/10/07	7	4.81	12/11/07	40	1.31	

*** EXT = SEE PROJECT QAPP REQUIREMENTS**
***ANAL = SEE PROJECT QAPP REQUIREMENTS**

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 965999
Report generated 12/12/2007 10:32

SURROGATE STANDARDS

00089587

Login Number: L0712230
Instrument Id: HP15
Workgroup (AAB#): WG258131

Method: 8081
CAL ID: HP15-16-NOV-07
Matrix: Water

Sample Number	Dilution	Tag	1	2
L0712230-01	1.00	01	70.0	95.2
L0712230-02	1.00	01	61.9	86.2
L0712230-03	1.00	01	71.2	28.5
WG257986-01	1.00	01	86.4	74.7
WG257986-02	1.00	01	82.5	57.2
WG257986-03	1.00	01	87.4	79.0
WG257986-04	1.00	01	97.6	83.3

Surrogates	Surrogate Limits
1 - 2,4,5,6-Tetrachloro-m-xylene	20 - 180
2 - Decachlorobiphenyl	25 - 140

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: 966008
Report generated 12/12/2007 10:32

METHOD BLANK SUMMARY

Login Number: L0712230
Work Group: WG258131
Blank File ID: 15G12558.F
Blank Sample ID: WG257986-01
Prep Date: 12/10/07 08:00
Instrument ID: HP15
Analyzed Date: 12/11/07 12:39
Method: 8081A
Analyst: ECL

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG257986-02	15G12559.F	12/11/07 13:07	01
LCS2	WG257986-03	15G12560.F	12/11/07 13:36	01
LCS	WG257986-04	15G12561.F	12/11/07 14:04	01
LHSMW06-120507	L0712230-01	15G12564.F	12/11/07 15:30	01
LHSMW06-120507	L0712230-02	15G12565.F	12/11/07 15:58	01
LHSMW02-120507	L0712230-03	15G12566.F	12/11/07 16:26	01

METHOD BLANK REPORT

00089589

Login Number: L0712230 Prep Date: 12/10/07 08:00 Sample ID: WG257986-01
Instrument ID: HP15 Run Date: 12/11/07 12:39 Prep Method: 3510C
File ID: 15G12558.F Analyst: ECL Method: 8081A
Workgroup (AAB#): WG258131 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HP15-16-NOV-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
4,4'-DDD	0.0100	0.0500	0.0100	1	U
4,4'-DDE	0.0100	0.0500	0.0100	1	U
4,4'-DDT	0.0100	0.0500	0.0100	1	U
Aldrin	0.0100	0.0500	0.0100	1	U
alpha-BHC	0.0100	0.0500	0.0100	1	U
beta-BHC	0.0100	0.0500	0.0100	1	U
delta-BHC	0.0100	0.0500	0.0100	1	U
Dieldrin	0.0100	0.0500	0.0100	1	U
Endosulfan I	0.0100	0.0500	0.0100	1	U
Endosulfan II	0.0100	0.0500	0.0100	1	U
Endosulfan sulfate	0.0100	0.0500	0.0100	1	U
Endrin	0.0100	0.0500	0.0100	1	U
Endrin aldehyde	0.0100	0.0500	0.0100	1	U
gamma-BHC (Lindane)	0.0100	0.0500	0.0100	1	U
Heptachlor	0.0100	0.0500	0.0100	1	U
Heptachlor epoxide	0.0100	0.0500	0.0100	1	U
Methoxychlor	0.0100	0.0500	0.0100	1	U
Endrin ketone	0.0100	0.0500	0.0100	1	U
alpha Chlordane	0.0100	0.0500	0.0100	1	U
gamma Chlordane	0.0100	0.0500	0.0100	1	U
Toxaphene	0.300	1.00	0.300	1	U

Surrogates	% Recovery	Surrogate Limits			Qualifier
2,4,5,6-Tetrachloro-m-xylene	86.4	20	-	180	PASS
Decachlorobiphenyl	74.7	25	-	140	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: 966001
Report generated 12/12/2007 10:32

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00089590

Login Number: L0712230 Analyst: ECL Prep Method: 3510C
Instrument ID: HP15 Matrix: Water Method: 8081A
Workgroup (AAB#): WG258131 Units: ug/L
QC Key: STD Lot #: STD22711

Sample ID: WG257986-02 LCS File ID: 15G12559.F Run Date: 12/11/2007 13:07
Sample ID: WG257986-03 LCS2 File ID: 15G12560.F Run Date: 12/11/2007 13:36

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
4,4'-DDD	0.500	0.572	114	0.500	0.639	128	11.1	50 - 141	30	
4,4'-DDE	0.500	0.555	111	0.500	0.628	126	12.3	50 - 145	30	
4,4'-DDT	0.500	0.529	106	0.500	0.602	120	12.9	45 - 150	30	
Aldrin	0.500	0.495	99.1	0.500	0.544	109	9.28	42 - 122	30	
alpha-BHC	0.500	0.519	104	0.500	0.558	112	7.15	50 - 130	30	
beta-BHC	0.500	0.507	101	0.500	0.556	111	9.29	50 - 130	30	
delta-BHC	0.500	0.544	109	0.500	0.598	120	9.56	45 - 140	30	
Dieldrin	0.500	0.565	113	0.500	0.616	123	8.57	60 - 140	30	
Endosulfan I	0.500	0.389	77.8	0.500	0.426	85.2	9.05	45 - 120	30	
Endosulfan II	0.500	0.412	82.5	0.500	0.449	89.7	8.39	30 - 130	30	
Endosulfan sulfate	0.500	0.524	105	0.500	0.570	114	8.45	40 - 135	30	
Endrin	0.500	0.543	109	0.500	0.598	120	9.70	55 - 140	30	
Endrin aldehyde	0.500	0.409	81.8	0.500	0.450	89.9	9.39	40 - 130	30	
gamma-BHC (Lindane)	0.500	0.517	103	0.500	0.557	111	7.43	40 - 127	30	
Heptachlor	0.500	0.474	94.8	0.500	0.514	103	8.10	40 - 111	30	
Heptachlor epoxide	0.500	0.479	95.9	0.500	0.526	105	9.31	60 - 130	30	
Methoxychlor	0.500	0.499	99.8	0.500	0.554	111	10.5	55 - 150	30	
Endrin ketone	0.500	0.476	95.1	0.500	0.515	103	7.90	50 - 140	30	
alpha Chlordane	0.500	0.514	103	0.500	0.569	114	10.2	65 - 130	30	
gamma Chlordane	0.500	0.504	101	0.500	0.558	112	10.2	60 - 135	30	

Surogates	LCS	LCS2	LCS	Surrogate Limits	Qualifier
	% Recovery	% Recovery	% Recovery		
Decachlorobiphenyl	57.2	79.0	83.3	25 - 140	PASS
2,4,5,6-Tetrachloro-m-xylene	82.5	87.4	97.6	20 - 180	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 966002
Report generated 12/12/2007 10:32

INITIAL CALIBRATION SUMMARY

00089591

Login Number: L0712230 **Instrument ID:** HP15
Analytical Method: 8081A **Initial Calibration Date:** 16-NOV-07 18:18
ICAL Workgroup: WG256131 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Toxaphene-1		940500	2.55		
Toxaphene-2		1268000	2.90		
Toxaphene-3		1828000	3.46		
Toxaphene-4		1039000	5.01		
Toxaphene-5		1577000	2.89		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INITIAL CALIBRATION SUMMARY

Login Number: L0712230 **Instrument ID:** HP15
Analytical Method: 8081A **Initial Calibration Date:** 16-NOV-07 21:36
ICAL Workgroup: WG256136 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
4,4'-DDD		60940000	7.18		
4,4'-DDE		74160000	7.47		
4,4'-DDT		69630000	4.53		
Aldrin		85190000	4.63		
Dieldrin		76700000	4.34		
Endosulfan I		79150000	6.32		
Endosulfan II		70880000	4.41		
Endosulfan Sulfate		62430000	4.75		
Endrin		73850000	3.35		
Endrin Aldehyde		58620000	8.62		
Endrin Ketone		72050000	3.57		
Heptachlor		94570000	4.69		
Heptachlor Epoxide		81660000	5.40		
Methoxychlor		35620000	5.96		
alpha-BHC		100900000	11.6		
alpha-Chlordane		82340000	1.45		
beta-BHC		42270000	2.70		
delta-BHC		97570000	12.9		
gamma-BHC		95180000	9.42		
gamma-Chlordane		85950000	0.838		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

KEMRON FORMS - Modified 01/18/2007
Version 1.5 PDF File ID: 966004
Report generated 12/12/2007 10:32

INITIAL CALIBRATION DATA

Login Number: L0712230
Analytical Method: 8081A
Instrument ID: HP15
Initial Calibration Date: 16-NOV-07 18:18
Column ID: F

Analyte	WG256131-01			WG256131-02			WG256131-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Toxaphene-1	2000	1907679440	953800	1000	912358868	912400	500	486946272	973900
Toxaphene-2	2000	2486298980	1243000	1000	1294682100	1295000	500	658495212	1317000
Toxaphene-3	2000	3712265910	1856000	1000	1899272030	1899000	500	924146024	1848000
Toxaphene-4	2000	2156544940	1078000	1000	1083010910	1083000	500	533676953	1067000
Toxaphene-5	2000	3177331070	1589000	1000	1610087150	1610000	500	812126205	1624000

KEMRON Environmental Services

INITIAL CALIBRATION DATA

00089594

Login Number: L0712230
Analytical Method: 8081A

Instrument ID: HP15
Initial Calibration Date: 16-NOV-07 18:18
Column ID: F

Analyte	WG256131-04			WG256131-05		
	CONC	RESP	RF	CONC	RESP	RF
Toxaphene-1	250	233830528	935300	100	92697856.0	927000
Toxaphene-2	250	314607920	1258000	100	122821551	1228000
Toxaphene-3	250	450426112	1802000	100	173305960	1733000
Toxaphene-4	250	249709420	998800	100	96875044.0	968800
Toxaphene-5	250	386563688	1546000	100	151444369	1514000

INITIAL CALIBRATION DATA

Login Number: L0712230
Instrument ID: HP15
Analytical Method: 8081A
Initial Calibration Date: 16-NOV-07 21:36
Column ID: F

Analyte	WG256136-01			WG256136-02			WG256136-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
4,4'-DDD	200	12663433300	63320000	50.0	3237816100	64760000	20.0	1271998790	63600000
4,4'-DDE	200	15365332300	76830000	50.0	3947638460	78950000	20.0	1543427330	77170000
4,4'-DDT	200	13821895500	69110000	50.0	3580367250	71610000	20.0	1421927250	71100000
Aldrin	200	16536130400	82680000	50.0	4436729870	88730000	20.0	1775197440	88760000
Dieldrin	200	14979846400	74900000	50.0	4069859770	81400000	20.0	1577537200	78880000
Endosulfan I	200	13960001900	69800000	50.0	3878788340	77580000	20.0	1604599590	80230000
Endosulfan II	200	13019057500	65100000	50.0	3499861420	70000000	20.0	1424643010	71230000
Endosulfan Sulfate	200	11549064000	57750000	50.0	3029862840	60600000	20.0	1240850000	62040000
Endrin	200	14204620100	71020000	50.0	3775829060	75520000	20.0	1524333060	76220000
Endrin Aldehyde	200	10250435100	51250000	50.0	2777306400	55550000	20.0	1185869840	59290000
Endrin Ketone	200	13474694700	67370000	50.0	3551900520	71040000	20.0	1449226380	72460000
Heptachlor	200	17246263100	86230000	50.0	4772590160	95450000	20.0	1948516590	97430000
Heptachlor Epoxide	200	14702490100	73510000	50.0	4012786890	80260000	20.0	1651847210	82590000
Methoxychlor	200	6403814200	32020000	50.0	1713845660	34280000	20.0	717759677	35890000
alpha-BHC	200	22721264900	113600000	50.0	5532305540	110600000	20.0	2104822760	105200000
alpha-Chlordane	200	16037116100	80190000	50.0	4138250890	82770000	20.0	1650670960	82530000
beta-BHC	200	8635164120	43180000	50.0	2158149240	43160000	20.0	865352333	43270000
delta-BHC	200	21918161200	109600000	50.0	5358575160	107200000	20.0	2068357880	103400000
gamma-BHC	200	20685472600	103400000	50.0	5137135180	102700000	20.0	1988255490	99410000
gamma-Chlordane	200	17111432400	85560000	50.0	4322846350	86460000	20.0	1724126280	86210000

INITIAL CALIBRATION DATA

Login Number: L0712230
Instrument ID: HP15
Analytical Method: 8081A
Initial Calibration Date: 16-NOV-07 21:36
Column ID: F

Analyte	WG256136-04			WG256136-05			WG256136-06		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
4,4'-DDD	10.0	627090137	62710000	4.00	230740872	57690000	1.00	53543879.0	53540000
4,4'-DDE	10.0	775780033	77580000	4.00	275728398	68930000	1.00	65494773.0	65490000
4,4'-DDT	10.0	738303543	73830000	4.00	265393679	66350000	1.00	65770746.0	65770000
Aldrin	10.0	884020632	88400000	4.00	331538922	82880000	1.00	79653957.0	79650000
Dieldrin	10.0	719960525	72000000	4.00	311212868	77800000	1.00	75256064.0	75260000
Endosulfan I	10.0	817348259	81730000	4.00	328044442	82010000	1.00	83547607.0	83550000
Endosulfan II	10.0	737647687	73760000	4.00	288837371	72210000	1.00	72975510.0	72980000
Endosulfan Sulfate	10.0	643036311	64300000	4.00	255461369	63870000	1.00	66035862.0	66040000
Endrin	10.0	763590665	76360000	4.00	290990263	72750000	1.00	71245780.0	71250000
Endrin Aldehyde	10.0	641133801	64110000	4.00	256935140	64230000	1.00	57262192.0	57260000
Endrin Ketone	10.0	742792312	74280000	4.00	292533728	73130000	1.00	74039920.0	74040000
Heptachlor	10.0	990043602	99000000	4.00	380125636	95030000	1.00	94248153.0	94250000
Heptachlor Epoxide	10.0	850164625	85020000	4.00	332484891	83120000	1.00	85476576.0	85480000
Methoxychlor	10.0	373800689	37380000	4.00	149760985	37440000	1.00	36737402.0	36740000
alpha-BHC	10.0	1016733200	101700000	4.00	363910324	90980000	1.00	83266451.0	83270000
alpha-Chlordane	10.0	827961650	82800000	4.00	327994146	82000000	1.00	83731262.0	83730000
beta-BHC	10.0	422730136	42270000	4.00	163210272	40800000	1.00	40948055.0	40950000
delta-BHC	10.0	1005216910	100500000	4.00	348367695	87090000	1.00	77617538.0	77620000
gamma-BHC	10.0	968603499	96860000	4.00	349923264	87480000	1.00	81157005.0	81160000
gamma-Chlordane	10.0	869717323	86970000	4.00	340123317	85030000	1.00	85475526.0	85480000

KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00089597

Login Number: L0712230 Run Date: 11/16/2007 Sample ID: WG256131-06

Instrument ID: HP15 Run Time: 18:18 Method: 8081A

File ID: 15G12251.F Analyst: ECL QC Key: STD

ICal Workgroup: WG256131 Cal ID: HP15 - 16-NOV-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Toxaphene		500	481	ug/L	1300000	3.80	15	

* Exceeds %D Limit

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 966005
Report generated 12/12/2007 10:32

KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00089598

Login Number: L0712230 Run Date: 11/16/2007 Sample ID: WG256136-07

Instrument ID: HP15 Run Time: 21:36 Method: 8081A

File ID: 15G12258.F Analyst: ECL QC Key: STD

ICal Workgroup: WG256136 Cal ID: HP15 - 16-NOV-07

Analyte		Expected	Found	Units	RF	%D	UCL	Q
4,4'-DDD		20.0	20.3	ug/L	61900000	1.60	15	
4,4'-DDE		20.0	20.1	ug/L	74700000	0.700	15	
4,4'-DDT		20.0	19.4	ug/L	67600000	2.90	15	
Aldrin		20.0	20.1	ug/L	85700000	0.600	15	
alpha-BHC		20.0	20.6	ug/L	104000000	2.90	15	
beta-BHC		20.0	20.0	ug/L	42300000	0	15	
delta-BHC		20.0	19.5	ug/L	95100000	2.50	15	
Dieldrin		20.0	21.0	ug/L	80500000	5.00	15	
Endosulfan I		20.0	19.6	ug/L	77700000	1.90	15	
Endosulfan II		20.0	19.8	ug/L	70100000	1.20	15	
Endosulfan Sulfate		20.0	19.5	ug/L	61000000	2.30	15	
Endrin		20.0	20.2	ug/L	74500000	0.900	15	
Endrin Aldehyde		20.0	19.4	ug/L	56900000	3.00	15	
gamma-BHC		20.0	20.3	ug/L	96700000	1.60	15	
Heptachlor		20.0	20.1	ug/L	94800000	0.300	15	
Heptachlor Epoxide		20.0	20.0	ug/L	81700000	0.100	15	
Methoxychlor		20.0	19.4	ug/L	34600000	2.80	15	
Endrin Ketone		20.0	19.3	ug/L	69700000	3.30	15	
alpha-Chlordane		20.0	19.7	ug/L	81300000	1.30	15	
gamma-Chlordane		20.0	19.7	ug/L	84500000	1.60	15	

* Exceeds %D Limit

KEMRON FORMS - Modified 09/06/2007 - (ALT)
Version 1.5 PDF File ID: 966005
Report generated 12/12/2007 10:32

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00089599

Login Number: L0712230 Run Date: 12/11/2007 Sample ID: WG258178-02
Instrument ID: HP15 Run Time: 10:26 Method: 8081A
File ID: 15G12555.F Analyst: ECL QC Key: STD
Workgroup (AAB#): WG258131 Cal ID: HP15 - 16-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
4,4'-DDD		20.0	22.6	ug/L	68800000	13.0	15	
4,4'-DDE		20.0	22.0	ug/L	81500000	9.91	15	
4,4'-DDT		20.0	20.0	ug/L	69700000	0.132	15	
Aldrin		20.0	22.1	ug/L	94200000	10.6	15	
alpha-BHC		20.0	21.7	ug/L	109000000	8.49	15	
beta-BHC		20.0	20.2	ug/L	42600000	0.886	15	
delta-BHC		20.0	22.3	ug/L	109000000	11.3	15	
Dieldrin		20.0	22.2	ug/L	85000000	10.8	15	
Endosulfan I		20.0	21.5	ug/L	85200000	7.62	15	
Endosulfan II		20.0	21.2	ug/L	75100000	5.95	15	
Endosulfan Sulfate		20.0	20.8	ug/L	64900000	3.90	15	
Endrin		20.0	20.6	ug/L	76000000	2.90	15	
Endrin Aldehyde		20.0	20.2	ug/L	59200000	0.930	15	
gamma-BHC		20.0	21.3	ug/L	101000000	6.61	15	
Heptachlor		20.0	21.0	ug/L	99500000	5.24	15	
Heptachlor Epoxide		20.0	21.2	ug/L	86700000	6.20	15	
Methoxychlor		20.0	19.6	ug/L	34900000	2.16	15	
Endrin Ketone		20.0	21.5	ug/L	77600000	7.64	15	
alpha-Chlordane		20.0	21.4	ug/L	88200000	7.07	15	
gamma-Chlordane		20.0	21.3	ug/L	91700000	6.69	15	
Toxaphene		NA		ug/L			15	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 966006
Report generated 12/12/2007 10:32

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00089600

Login Number: L0712230 Run Date: 12/11/2007 Sample ID: WG258179-01
Instrument ID: HP15 Run Time: 11:42 Method: 8081A
File ID: 15G12556.F Analyst: ECL QC Key: STD
Workgroup (AAB#): WG258131 Cal ID: HP15 - 16-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Toxaphene		500	501	ug/L	1330000	0.230	15	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 966006
Report generated 12/12/2007 10:32

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00089601

Login Number: L0712230 Run Date: 12/11/2007 Sample ID: WG258178-04
Instrument ID: HP15 Run Time: 17:23 Method: 8081A
File ID: 15G12568.F Analyst: ECL QC Key: STD
Workgroup (AAB#): WG258131 Cal ID: HP15 - 16-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
4,4'-DDD		10.0	11.0	ug/L	66700000	9.51	15	
4,4'-DDE		10.0	11.0	ug/L	81900000	10.5	15	
4,4'-DDT		10.0	9.68	ug/L	67400000	3.21	15	
Aldrin		10.0	10.6	ug/L	90200000	5.88	15	
alpha-BHC		10.0	10.3	ug/L	104000000	3.43	15	
beta-BHC		10.0	9.98	ug/L	42200000	0.181	15	
delta-BHC		10.0	10.2	ug/L	99700000	2.18	15	
Dieldrin		10.0	10.8	ug/L	82600000	7.71	15	
Endosulfan I		10.0	10.8	ug/L	85700000	8.24	15	
Endosulfan II		10.0	10.6	ug/L	75300000	6.17	15	
Endosulfan Sulfate		10.0	10.6	ug/L	66000000	5.75	15	
Endrin		10.0	10.1	ug/L	74800000	1.25	15	
Endrin Aldehyde		10.0	10.3	ug/L	60400000	3.07	15	
gamma-BHC		10.0	10.3	ug/L	97800000	2.78	15	
Heptachlor		10.0	10.4	ug/L	98500000	4.19	15	
Heptachlor Epoxide		10.0	10.6	ug/L	86800000	6.33	15	
Methoxychlor		10.0	9.96	ug/L	35500000	0.354	15	
Endrin Ketone		10.0	10.9	ug/L	78200000	8.58	15	
alpha-Chlordane		10.0	10.7	ug/L	88300000	7.30	15	
gamma-Chlordane		10.0	10.4	ug/L	89600000	4.21	15	
Toxaphene		NA		ug/L			15	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 966006
Report generated 12/12/2007 10:32

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00089602

Login Number: L0712230 Run Date: 12/11/2007 Sample ID: WG258179-02
Instrument ID: HP15 Run Time: 17:52 Method: 8081A
File ID: 15G12569.F Analyst: ECL QC Key: STD
Workgroup (AAB#): WG258131 Cal ID: HP15 - 16-NOV-07

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Toxaphene		250	246	ug/L	1310000	1.56	15	

* Exceeds %D Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 966006
Report generated 12/12/2007 10:32

KEMRON Environmental Services

ENDRIN/4,4'-DDT BREAKDOWN (BRKDWN)

00089603

Login Number: L0712230 Run Date: 12/11/2007 Sample ID: WG258178-01
Instrument ID: HP15 Run Time: 09:57 Method: 8081
File ID: 15G12554.F Analyst: ECL Column ID: FRONT

DDT BREAKDOWN	
Analyte	Response
4,4'-DDD	61856736
4,4'-DDE	0
4,4'-DDT	3541378848

DDT % BREAKDOWN: 1.72

ENDRIN BREAKDOWN	
Analyte	Response
ENDRIN	3873054059
ENDRIN ALDEHYDE	135052349
ENDRIN KETONE	144233030

ENDRIN % BREAKDOWN: 6.73

* Exceeds 15% Criteria

KEMRON FORMS - Modified 05/25/2006
Version 1.0 PDF File ID: 966003
Report generated 12/12/2007 10:32

KEMRON Environmental Services

ENDRIN/4,4'-DDT BREAKDOWN (BRKDWN)

00089604

Login Number: L0712230 Run Date: 12/11/2007 Sample ID: WG258178-03
Instrument ID: HP15 Run Time: 16:55 Method: 8081
File ID: 15G12567.F Analyst: ECL Column ID: FRONT

DDT BREAKDOWN	
Analyte	Response
4,4'-DDD	0
4,4'-DDE	0
4,4'-DDT	3594031896

DDT % BREAKDOWN: 0.00

ENDRIN BREAKDOWN	
Analyte	Response
ENDRIN	3851037295
ENDRIN ALDEHYDE	0
ENDRIN KETONE	88935656

ENDRIN % BREAKDOWN: 2.26

* Exceeds 15% Criteria

KEMRON FORMS - Modified 05/25/2006
Version 1.0 PDF File ID: 966003
Report generated 12/12/2007 10:32

2.3 General Chemistry Data

2.3.1 Perchlorate Data

2.3.1.1 Summary Data

LABORATORY REPORT

00089608

L0712230

12/17/07 14:37

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
17WW10-120507	L0712230-04	314.0	4	07-DEC-07
17WW04-120507	L0712230-05	314.0	1	07-DEC-07
17WW06-120507	L0712230-06	314.0	5	07-DEC-07
17WW06-120507	L0712230-06	314.0	1000	07-DEC-07
MW130-120407	L0712230-07	314.0	5	07-DEC-07
MW130-120407	L0712230-07	314.0	500	07-DEC-07
17WW05-120407	L0712230-08	314.0	2	07-DEC-07

Report Number: **L0712230**
Report Date : **December 17, 2007**

00089609

Sample Number: **L0712230-04**
Client ID: **17WW10-120507**
Matrix: **Water**
Workgroup Number: **WG258280**
Collect Date: **12/05/2007 09:45**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **314.0**
Analytical Method: **314.0**
Analyst: **DSF**
Dilution: **4**
Units: **ug/L**

Instrument: **IC1**
Prep Date: **12/11/2007 15:25**
Cal Date: **12/11/2007 11:00**
Run Date: **12/11/2007 15:25**
File ID: **I11211071525.19**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**		**U**	**4.00**	**2.00**

U Not detected at or above adjusted sample detection limit

Report Number: **L0712230**
Report Date : **December 17, 2007**

00089610

Sample Number: **L0712230-05**
Client ID: **17WW04-120507**
Matrix: **Water**
Workgroup Number: **WG258280**
Collect Date: **12/05/2007 08:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **314.0**
Analytical Method: **314.0**
Analyst: **DSF**
Dilution: **1**
Units: **ug/L**

Instrument: **IC1**
Prep Date: **12/11/2007 15:45**
Cal Date: **12/11/2007 11:00**
Run Date: **12/11/2007 15:45**
File ID: **I11211071545.20**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**		**U**	**1.00**	**0.500**

U Not detected at or above adjusted sample detection limit

Report Number: **L0712230**
Report Date : **December 17, 2007**

00089611

Sample Number: **L0712230-06**
Client ID: **17WW06-120507**
Matrix: **Water**
Workgroup Number: **WG258280**
Collect Date: **12/04/2007 15:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **314.0**
Analytical Method: **314.0**
Analyst: **DSF**
Dilution: **5**
Units: **ug/L**

Instrument: **IC1**
Prep Date: **12/11/2007 16:06**
Cal Date: **12/11/2007 11:00**
Run Date: **12/11/2007 16:06**
File ID: **I11211071606.21**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**	**26300**	**I**	**5.00**	**2.50**

I Semiquantitative result (out of instrument calibration range)

Report Number: **L0712230**
Report Date : **December 17, 2007**

00089612

Sample Number: **L0712230-06**
Client ID: **17WW06-120507**
Matrix: **Water**
Workgroup Number: **WG258280**
Collect Date: **12/04/2007 15:30**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **314.0**
Analytical Method: **314.0**
Analyst: **DSF**
Dilution: **1000**
Units: **ug/L**

Instrument: **IC1**
Prep Date: **12/12/2007 08:58**
Cal Date: **12/11/2007 11:00**
Run Date: **12/12/2007 08:58**
File ID: **I11212070858.30**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**	**77800**		**1000**	**500**

Report Number: **L0712230**
Report Date : **December 17, 2007**

00089613

Sample Number: **L0712230-07**
Client ID: **MW130-120407**
Matrix: **Water**
Workgroup Number: **WG258280**
Collect Date: **12/04/2007 11:00**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **314.0**
Analytical Method: **314.0**
Analyst: **DSF**
Dilution: **5**
Units: **ug/L**

Instrument: **IC1**
Prep Date: **12/11/2007 16:47**
Cal Date: **12/11/2007 11:00**
Run Date: **12/11/2007 16:47**
File ID: **I11211071647.23**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**	**11400**	**I**	**5.00**	**2.50**

I Semiquantitative result (out of instrument calibration range)

Report Number: **L0712230**
Report Date : **December 17, 2007**

00089614

Sample Number: **L0712230-07**
Client ID: **MW130-120407**
Matrix: **Water**
Workgroup Number: **WG258280**
Collect Date: **12/04/2007 11:00**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **314.0**
Analytical Method: **314.0**
Analyst: **DSF**
Dilution: **500**
Units: **ug/L**

Instrument: **IC1**
Prep Date: **12/12/2007 08:37**
Cal Date: **12/11/2007 11:00**
Run Date: **12/12/2007 08:37**
File ID: **I11212070837.29**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**	**19400**		**500**	**250**

Report Number: **L0712230**
Report Date : **December 17, 2007**

00089615

Sample Number: **L0712230-08**
Client ID: **17WW05-120407**
Matrix: **Water**
Workgroup Number: **WG258280**
Collect Date: **12/04/2007 13:10**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **314.0**
Analytical Method: **314.0**
Analyst: **DSF**
Dilution: **2**
Units: **ug/L**

Instrument: **IC1**
Prep Date: **12/11/2007 17:07**
Cal Date: **12/11/2007 11:00**
Run Date: **12/11/2007 17:07**
File ID: **I11211071707.24**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**	**4.71**		**2.00**	**1.00**

2.3.1.2 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: 121107 CLO4 IC1.SEQ
Analyst1: DSF Analyst2: NA
Method: CLO4 SOP: IC2 Rev: 4

Maintenance Log ID: 22107

Column 1 ID: AS16-4MM Column 2 ID: NA

Workgroups: WG258280

Internal STD: NA Surrogate STD: NA Calibration STD STD20008

Comments: L0712210-01 and -02 were analyzed at a dilution only due to high conductivity readings.
L0712230-04, -06, -07 and -08 were analyzed at a dilution only due to high conducitivy readings.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I11211070918.01	CLO4 @ 100 ppb	1	1		12/11/07 09:18
2	I11211070938.02	CLO4 @ 50 ppb	1	1		12/11/07 09:38
3	I11211070958.03	CLO4 @ 25 ppb	1	1		12/11/07 09:58
4	I11211071019.04	CLO4 @ 10 ppb	1	1		12/11/07 10:19
5	I11211071039.05	CLO4 @ 4 ppb	1	1		12/11/07 10:39
6	I11211071100.06	CLO4 @ 1 ppb	1	1		12/11/07 11:00
7	I11211071120.07	CLO4 ALT @ 25 ppb	1	1		12/11/07 11:20
8	I11211071140.08	ELUENT	1	1		12/11/07 11:40
9	I11211071201.09	MCT \#5 (@25 ppb)	1	1		12/11/07 12:01
10	I11211071221.10	MCT \#6 (@25 ppb)	1	1		12/11/07 12:21
11	I11211071242.11	CCV (1 ppb) CLO4	1	1		12/11/07 12:42
12	I11211071302.12	WG258280-01 BLANK	1	1		12/11/07 13:02
13	I11211071322.13	WG258280-02 LCS (25 ppb)	1	1		12/11/07 13:22
14	I11211071343.14	L0712210-01 1/3	1	3		12/11/07 13:43
15	I11211071403.15	L0712210-02 1/3 REF	1	3		12/11/07 14:03
16	I11211071424.16	WG258280-04 DUP 210-02 1/3	1	3		12/11/07 14:24
17	I11211071444.17	WG258280-05 MS 210-02 1/3	1	3		12/11/07 14:44
18	I11211071505.18	WG258280-06 MSD 210-02 1/3	1	3		12/11/07 15:05
19	I11211071525.19	L0712230-04 1/4	1	4		12/11/07 15:25
20	I11211071545.20	L0712230-05	1	1		12/11/07 15:45
21	I11211071606.21	L0712230-06 1/5	1	5		12/11/07 16:06
22	I11211071626.22	CCV (25 ppb) CLO4	1	1		12/11/07 16:26
23	I11211071647.23	L0712230-07 1/5	1	5		12/11/07 16:47
24	I11211071707.24	L0712230-08 1/2	1	2		12/11/07 17:07
25	I11211071727.25	CCV (50 ppb) CLO4	1	1		12/11/07 17:27
26	I11212070757.27	CCV (25 ppb) CLO4	1	1		12/12/07 07:57
27	I11212070817.28	L0712230-06 RR 1/500 (NR)	1	500		12/12/07 08:17
28	I11212070837.29	L0712230-07 RR 1/500	1	500		12/12/07 08:37
29	I11212070858.30	L0712230-06 RR 1/1000	1	1000		12/12/07 08:58
30	I11212070918.31	CCV (50 ppb) CLO4	1	1		12/12/07 09:18

Comments

Seq.	Rerun	Dil.	Reason	Analytes
21	X	1000	Over Calibration Range	Perchlorate

Page: 1 Approved: 12-DEC-07

KEMRON Environmental Services

Instrument Run Log

Instrument: IC1 Dataset: 121107 CLO4 IC1.SEQ

Analyst1: DSF Analyst2: NA

Method: CLO4 SOP: IC2 Rev: 4

Maintenance Log ID: 22107

Column 1 ID: AS16-4MM Column 2 ID: NA

Workgroups: WG258280

Internal STD: NA Surrogate STD: NA STD20008

Comments

Seq.	Rerun	Dil.	Reason	Analytes
23	X	500	Over Calibration Range	Perchlorate

Approved: 12-DEC-07

KEMRON Environmental Services
Data Checklist

Date: 11-DEC-2007
Analyst: DSF
Analyst: NA
Method: CLO4
Instrument: IC1
Curve Workgroup: NA
Runlog ID: 19764
Analytical Workgroups: L0712210, L0712230

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)	NA
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	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	ECL

Primary Reviewer:
12-DEC-2007
Debra S. Frederick

Secondary Reviewer:
12-DEC-2007
Eric C. Zumwalt

Generated: DEC-12-2007 12:47:54

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00089621

Analytical Method: 314.0 AAB#: WG258280

Login Number: L0712230

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
MW130-120407	12/04/07	12/07/07	12/12/07	28	7.90	12/12/07	28	7.90	
MW130-120407	12/04/07	12/07/07	12/11/07	28	7.24	12/11/07	28	7.24	
17WW05-120407	12/04/07	12/07/07	12/11/07	28	7.16	12/11/07	28	7.16	
17WW10-120507	12/05/07	12/07/07	12/11/07	28	6.24	12/11/07	28	6.24	
17WW06-120507	12/04/07	12/07/07	12/12/07	28	7.73	12/12/07	28	7.73	
17WW06-120507	12/04/07	12/07/07	12/11/07	28	7.03	12/11/07	28	7.03	
17WW04-120507	12/05/07	12/07/07	12/11/07	28	6.29	12/11/07	28	6.29	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 966270
Report generated 12/12/2007 13:54

METHOD BLANK SUMMARY

Login Number: L0712230
Work Group: WG258280
Blank File ID: I11211071302.12
Blank Sample ID: WG258280-01
Prep Date: 12/11/07 13:02
Instrument ID: IC1
Analyzed Date: 12/11/07 13:02
Method: 314.0
Analyst: DSF

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG258280-02	I11211071322.13	12/11/07 13:22	01
DUP	WG258280-04	I11211071424.16	12/11/07 14:24	DL01
17WW10-120507	L0712230-04	I11211071525.19	12/11/07 15:25	DL01
17WW04-120507	L0712230-05	I11211071545.20	12/11/07 15:45	01
17WW06-120507	L0712230-06	I11211071606.21	12/11/07 16:06	DL01
MW130-120407	L0712230-07	I11211071647.23	12/11/07 16:47	DL01
17WW05-120407	L0712230-08	I11211071707.24	12/11/07 17:07	DL01
MW130-120407	L0712230-07	I11212070837.29	12/12/07 08:37	DL02
17WW06-120507	L0712230-06	I11212070858.30	12/12/07 08:58	DL02

KEMRON Environmental Services

METHOD BLANK REPORT

00089623

Login Number: L0712230 Prep Date: 12/11/07 13:02 Sample ID: WG258280-01
Instrument ID: IC1 Run Date: 12/11/07 13:02 Prep Method: 314.0
File ID: I11211071302.12 Analyst: DSF Method: 314.0
Workgroup (AAB#): WG258280 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: IC1-11-DEC-07

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	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: 966273
Report generated 12/12/2007 13:55

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00089624

Login Number: L0712230 Run Date: 12/11/2007 Sample ID: WG258280-02
Instrument ID: IC1 Run Time: 13:22 Prep Method: 314.0
File ID: I11211071322.13 Analyst: DSF Method: 314.0
Workgroup (AAB#): WG258280 Matrix: Water Units: ug/L
QC Key: STD Lot#: STD20008 Cal ID: IC1 -

Analytes	Expected	Found	% Rec	LCS Limits	Q
Perchlorate	25.0	24.8	99.1	85 - 115	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 966275
Report generated 12/12/2007 11:43

KEMRON
ENVIRONMENTAL SERVICES

Conductivity Probe Calibration Check: 1414 /1410 µs/cm

Perchlorate Conductivity Check

Working MCT Level: 1079 µs/cm

Sample	Conductivity (µs/cm)	Pretreatment or Dilution Needed
L0712210-01	2170, 757	1/3 Due to Conductivity
-02	2190, 762	1/3 " "
L0712230-04	3720, 986	1/4 " "
-05	868	
-06	4080, 874	1/5 Due to Conductivity
-07	4580, 991	1/5 " "
-08	1240, 627	~~1/2~~ 1/2 " " DSF

DSF
Analyst

12/11/07 0900
Date/Time

DCN#72316

3.0 Attachments

Kemron Environmental Services
Analyst Listing
December 17, 2007

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
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

December 17, 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.

00089629

Chain of Custody

NO. 10302

Shaw® Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Kemron Address: 156 Starlite Drive Marrietta, Ohio Contact: Stephanie Massburg

Project Name: LHAAP Project Location: Karnack, Texas

Project No.: 117591 .0009A350 Project Contact: Larry Duty Project Telephone No.: (713) 996-4547

Point of Contact: Allen Willmore Project Manager/Supervisor: Praveen Srivastav

Telephone No: (713) 247-9292

Item No.	~~Telephone~~ SAMPLE Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	Organochlorine Pesticides (8081)							Remarks
1	LHSMW06-120507	12/5/07	12:30		X	W	LHAAP-60	2	X							* 7 day TAT
2	LHSMW06-120507	12/5/07	12:30		X	W	LHAAP-60	2	X							
3	LHSMW03-120507	12/5/07	13:00		X	W	LHAAP-66	2	X							
4																
5																
6																
7																
8																
9																
10																

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time
[signature]	12/6/07 11:00	Erin Elder	12-7-07 1000
		Laboratory	

Special Instructions * 7 day TAT

FedEx Airbill No.:

Sampler's Signature [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_1
Rev. 03-19-07

Shaw® Shaw Environmental, Inc.
3010 Briarpark Drive, Suite 4N
Houston, TX 77042 (713) 996-4400

CHAIN-OF-CUSTODY

No. 10725

Laboratory Name: Kemron Address: 156 Starlite Drive Marrietta, Ohio Contact: Stephanie Mossburg

Project Name: LHAAP Project Location: Karnack, Texas

Project No.: 117591.0004B800 Project Contact: Larry Duty Project Telephone No.: (713) 996-4547

Point of contact: Allen Willmore Telephone No.: (713) 247-9292

Project Manager/Supervisor: Praveen Srivastav

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOCs 8260	Perchlorate 6850							Remarks
1	MWW10-120507	12/5/07	09:45		X	W	LHAAP-17	4	3	1							* 7-day TAT
2	MWW04-120507	12/5/07	08:50		X	W	LHAAP-17	4	3	1							
3	MWW04-120407	12/4/07	15:30		X	W	LHAAP-17	4	3	1							
4	~~MW130~~ MW130-120407	12/4/07	11:00		X	W	LHAAP-17	4	3	1							
5	MWW05-120407	12/4/07	13:10		X	W	LHAAP-17	4	3	1							
6																	
7																	
8																	
9																	
10																	

Transfers Relinquished By (Signature)	Date/Time	Transfers Accepted By (Signature)	Date/Time
M. Willmore	12/6/07 11:00	Erin Elder 12-7-07	1000
		Laboratory	

Special Instructions: * 7 day TAT

FedEx Airbill No.:

Sampler's Signature: M. Willmore

TAT: ____ Standard ____ Rush Due: ___ Seals Intact? ____ Y ____ N Received Good Condition ____ Y ____ N ____ Cold

White - Lab Copy Canary - Field Copy Pink - File Copy

KEMRON Environmental Services

SAMPLE RECEIPT FORM

00089631

156 Starlite Drive
Marietta, OH 45750
(740) 373-4071

Client: SHAW	
Workorder Number: B	
Date Received: 12-7-07	
Delivered by: ( ) Fedx (✓) UPS ( ) Client ( ) Courier	**Time:** 1000
Opened by: EE	
IR Temp Gun: ( ) D (✓) G	
Logged by: BLG	L 12-230

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
615	1	1Z66U7250197609709		7 DAY TAT

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: L0712230
Account: 2773
Project: 2773.025
Samples: 9
Due Date: 12-DEC-2007

Samplenum	Container ID	Products
L0712230-08	406598	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:54	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:54	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:54	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Samplenum	Container ID	Products
L0712230-08	406599	CLO4

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-DEC-2007 16:54	BRG	
2	ANALYZ	W1	SEM	11-DEC-2007 08:23	DSF	JKT
3	STORE	SEM	A1	12-DEC-2007 13:22	ERE	DSF

Samplenum	Container ID	Products
L0712230-06	406595	CLO4

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-DEC-2007 16:54	BRG	
2	ANALYZ	W1	SEM	11-DEC-2007 08:23	DSF	JKT
3	STORE	SEM	A1	12-DEC-2007 13:22	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: L0712230
Account: 2773
Project: 2773.025
Samples: 9
Due Date: 12-DEC-2007

Samplenum	Container ID	Products
L0712230-07	406596	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:54	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:54	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:54	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Samplenum	Container ID	Products
L0712230-05	406593	CLO4

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-DEC-2007 16:54	BRG	
2	ANALYZ	W1	SEM	11-DEC-2007 08:23	DSF	JKT
3	STORE	SEM	A1	12-DEC-2007 13:22	ERE	DSF

Samplenum	Container ID	Products
L0712230-07	406597	CLO4

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-DEC-2007 16:54	BRG	
2	ANALYZ	W1	SEM	11-DEC-2007 08:23	DSF	JKT
3	STORE	SEM	A1	12-DEC-2007 13:22	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: L0712230
Account: 2773
Project: 2773.025
Samples: 9
Due Date: 12-DEC-2007

Samplenum	Container ID	Products
L0712230-09	406659	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	10-DEC-2007 09:11	AML	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	10-DEC-2007 09:11	AML	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Samplenum	Container ID	Products
L0712230-01	406587	8081

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-DEC-2007 16:52	BRG	
2	PREP	W1	EXT	10-DEC-2007 07:01	CEB	ERE
3	DISP	EXT	DISP	10-DEC-2007 17:39	RB	RB

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-DEC-2007 16:52	BRG	
2	STORE	W1	A1	08-DEC-2007 08:52	ERE	ERE

Samplenum	Container ID	Products
L0712230-02	406588	8081

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-DEC-2007 16:53	BRG	
2	PREP	W1	EXT	10-DEC-2007 07:01	CEB	ERE
3	DISP	EXT	DISP	10-DEC-2007 17:39	RB	RB

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-DEC-2007 16:53	BRG	
2	STORE	W1	A1	08-DEC-2007 08:52	ERE	ERE

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: L0712230
Account: 2773
Project: 2773.025
Samples: 9
Due Date: 12-DEC-2007

Samplenum	Container ID	Products
L0712230-03	406589	8081

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-DEC-2007 16:53	BRG	
2	PREP	W1	EXT	10-DEC-2007 07:01	CEB	ERE
3	DISP	EXT	DISP	10-DEC-2007 17:39	RB	RB

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-DEC-2007 16:53	BRG	
2	STORE	W1	A1	08-DEC-2007 08:52	ERE	ERE

Samplenum	Container ID	Products
L0712230-04	406590	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:53	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:53	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:53	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Samplenum	Container ID	Products
L0712230-04	406591	CLO4

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-DEC-2007 16:53	BRG	
2	ANALYZ	W1	SEM	11-DEC-2007 08:23	DSF	JKT
3	STORE	SEM	A1	12-DEC-2007 13:22	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: L0712230
Account: 2773
Project: 2773.025
Samples: 9
Due Date: 12-DEC-2007

Samplenum	Container ID	Products
L0712230-05	406592	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:53	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:53	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:53	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Samplenum	Container ID	Products
L0712230-06	406594	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:54	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:54	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	MRT	JKT

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	07-DEC-2007 16:54	BRG	
2	ANALYZ	V1	ORG4	10-DEC-2007 11:17	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

156 Starlite Drive, Marietta, OH 45750 • TEL 740-373-4071 • FAX 740-373-4835 • http://www.kemron.com

Laboratory Report Number: L08020523

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

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Jacqueline Parsons - Team Assistant
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Tony Long - Client Services Specialist
tlong@kemron-lab.com

This report was reviewed on March 04, 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 04, 2008.

David E. Vandenberg

David Vandenberg - Vice President

FL DOH NELAP ID: E8755
This report contains a total of 231 pages.

Protecting Our Environmental Future

KEMRON REPORT L08020523
PREPARED FOR Shaw E I, Inc.
WORK ID: LONGHORN AAP KARNACK TX

1.0 Introduction

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

KEMRON Login No.: L08020523

CHAIN OF CUSTODY: The chain of custody number was 5420.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 0 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: 27-FEB-08
Stephanie Mossburg

Laboratory Data Package Cover Page

00089641

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 Hesson	Conventional Lab Supervisor	March 3, 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:	L08020523
Project Name:	798-LONGHORN
Method:	PH
Prep Batch Number(s):	WG263971
Reviewer Name:	DEANNA I. HESSON
LRC Date:	March 03, 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)	RPD(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:	L08020523
Project Name:	798-LONGHORN
Method:	PH
Prep Batch Number(s):	WG263971
Reviewer Name:	DEANNA I. HESSON
LRC Date:	March 03, 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

00089646

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 Hesson	Conventional Lab Supervisor	March 3, 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:	L08020523
Project Name:	798-LONGHORN
Method:	FLASHPOINT
Prep Batch Number(s):	WG264517
Reviewer Name:	DEANNA I. HESSON
LRC Date:	March 03, 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)	RPD(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:	L08020523
Project Name:	798-LONGHORN
Method:	FLASHPOINT
Prep Batch Number(s):	WG264517
Reviewer Name:	DEANNA I. HESSON
LRC Date:	March 03, 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

00089651

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 Hesson	Conventional Lab Supervisor	March 3, 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:	L08020523
Project Name:	798-LONGHORN
Method:	REACTIVITY
Prep Batch Number(s):	WG264186, WG264187
Reviewer Name:	DEANNA I. HESSON
LRC Date:	March 03, 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)	RPD(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:	L08020523
Project Name:	798-LONGHORN
Method:	REACTIVITY
Prep Batch Number(s):	WG264186, WG264187
Reviewer Name:	DEANNA I. HESSON
LRC Date:	March 03, 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

00089656

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.

MAREN M. BEERY	Maren Beery	Metals Supervisor	March 3, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

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KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L08020523
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG264386
Reviewer Name:	MAREN M. BEERY
LRC Date:	March 03, 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 <RL?	✓				
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 laboratory's 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 <RL?	✓				
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)	RPD(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:	L08020523
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG264386
Reviewer Name:	MAREN M. BEERY
LRC Date:	March 03, 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

00089661

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 4, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

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KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L08020523
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	263965, 264034, 264296
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	March 03, 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?		✓			2
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?	✓				
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: Dichlorodifluoromethane exceeded the upper advisory limit in the LCS/LCSD analyzed 02/25/08 and analyzed 02/26/08.

#2: Due to quadratic curve-fitting, the calculated concentration for methylene chloride in the un-diluted analysis of sample 01 was below the reporting limit although the response exceeded the upper calibration limit. The dilution analysis of sample 01 yielded an on-scale methylene chloride result.

Footnotes:

(1) NA = Not applicable to method or project

(2) NR = Not reviewed

(3) ER# = Exception report number

Laboratory Data Package Cover Page

00089665

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.

MAREN M. BEERY	Maren Beery	Metals Supervisor	February 29, 2008
Name (Printed)	Signature	Official Title (printed)	DATE

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KEMRON Environmental Services
Laboratory Review Checklist

Laboratory Name:	KEMRON
Laboratory Log Number:	L08020523
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG264260
Reviewer Name:	MAREN M. BEERY
LRC Date:	February 29, 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 <RL?	✓				
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 laboratory's 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 <RL?	✓				
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)	RPD(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:	L08020523
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG264260
Reviewer Name:	MAREN M. BEERY
LRC Date:	February 29, 2008

EXCEPTIONS REPORT
ER# - Description
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

00089673

L08020523

03/04/08 10:58

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
17WW17-021908	L08020523-01	8260B	1	23-FEB-08
17WW17-021908	L08020523-01	8260B	10	23-FEB-08
WASTE CHARACTERATON	L08020523-02	8260B	10	23-FEB-08

Report Number: **L08020523**
Report Date : **March 4, 2008**

00089674

Sample Number: **L08020523-01**
Client ID: **17WW17-021908**
Matrix: **Water**
Workgroup Number: **WG263965**
Collect Date: **02/19/2008 13:10**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS14**
Prep Date: **02/25/2008 19:18**
Cal Date: **02/11/2008 22:54**
Run Date: **02/25/2008 19:18**
File ID: **14M03788**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	48.9		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	0.724	J	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	0.287	J	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	3.27		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	0.603	J	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	1.09		1.00	0.125
1,2-Dichloroethane	107-06-2	1.87		1.00	0.250
1,1-Dichloroethene	75-35-4	2.68		1.00	0.500
cis-1,2-Dichloroethene	156-59-2	6.62		1.00	0.250
trans-1,2-Dichloroethene	156-60-5	0.328	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	0.379	J	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	0.445	J	1.00	0.200
n-Propylbenzene	103-65-1	0.362	J	1.00	0.125

Report Number: **L08020523**
Report Date : **March 4, 2008**

00089675

Sample Number: **L08020523-01**
Client ID: **17WW17-021908**
Matrix: **Water**
Workgroup Number: **WG263965**
Collect Date: **02/19/2008 13:10**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS14**
Prep Date: **02/25/2008 19:18**
Cal Date: **02/11/2008 22:54**
Run Date: **02/25/2008 19:18**
File ID: **14M03788**

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	0.296	J	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	2.77		1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	56.6		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	2.85		1.00	0.250
1,3,5-Trimethylbenzene	108-67-8	0.799	J	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	0.800	J	1.00	0.250
m-,p-Xylene	136777-61-2	1.71		1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	104	86	118	
1,2-Dichloroethane-d4	104	80	120	
Toluene-d8	105	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: **L08020523**
Report Date : **March 4, 2008**

00089676

Sample Number: **L08020523-01**
Client ID: **17WW17-021908**
Matrix: **Water**
Workgroup Number: **WG264034**
Collect Date: **02/19/2008 13:10**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **10**
Units: **ug/L**

Instrument: **HPMS14**
Prep Date: **02/26/2008 15:33**
Cal Date: **02/11/2008 22:54**
Run Date: **02/26/2008 15:33**
File ID: **14M03815**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	53.1	J	100	25.0
Benzene	71-43-2		U	10.0	1.25
Bromobenzene	108-86-1		U	10.0	1.25
Bromochloromethane	74-97-5		U	10.0	2.00
Bromodichloromethane	75-27-4		U	10.0	2.50
Bromoform	75-25-2		U	10.0	5.00
Bromomethane	74-83-9	13.0		10.0	5.00
2-Butanone	78-93-3		U	100	25.0
n-Butylbenzene	104-51-8		U	10.0	2.50
sec-Butylbenzene	135-98-8		U	10.0	2.50
tert-Butylbenzene	98-06-6		U	10.0	2.50
Carbon disulfide	75-15-0	6.15	J	10.0	5.00
Carbon tetrachloride	56-23-5		U	10.0	2.50
Chlorobenzene	108-90-7		U	10.0	1.25
Chlorodibromomethane	124-48-1		U	10.0	2.50
Chloroethane	75-00-3		U	10.0	5.00
2-Chloroethyl vinyl ether	110-75-8		U	100	20.0
Chloroform	67-66-3		U	10.0	1.25
Chloromethane	74-87-3		U	10.0	2.50
2-Chlorotoluene	95-49-8		U	10.0	1.25
4-Chlorotoluene	106-43-4		U	10.0	2.50
1,2-Dibromo-3-chloropropane	96-12-8		U	50.0	10.0
1,2-Dibromoethane	106-93-4		U	10.0	2.50
Dibromomethane	74-95-3		U	10.0	2.50
1,2-Dichlorobenzene	95-50-1		U	10.0	1.25
1,3-Dichlorobenzene	541-73-1		U	10.0	2.50
1,4-Dichlorobenzene	106-46-7		U	10.0	1.25
Dichlorodifluoromethane	75-71-8		U	10.0	2.50
1,1-Dichloroethane	75-34-3		U	10.0	1.25
1,2-Dichloroethane	107-06-2		U	10.0	2.50
1,1-Dichloroethene	75-35-4		U	10.0	5.00
cis-1,2-Dichloroethene	156-59-2	5.05	J	10.0	2.50
trans-1,2-Dichloroethene	156-60-5		U	10.0	2.50
1,2-Dichloropropane	78-87-5		U	10.0	2.00
1,3-Dichloropropane	142-28-9		U	10.0	2.00
2,2-Dichloropropane	594-20-7		U	10.0	2.50
cis-1,3-Dichloropropene	10061-01-5		U	10.0	2.50
trans-1,3-Dichloropropene	10061-02-6		U	10.0	5.00
1,1-Dichloropropene	563-58-6		U	10.0	2.50
Ethylbenzene	100-41-4		U	10.0	2.50
2-Hexanone	591-78-6		U	100	25.0
Hexachlorobutadiene	87-68-3		U	10.0	2.50
Isopropylbenzene	98-82-8		U	10.0	2.50
p-Isopropyltoluene	99-87-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	100	25.0
Methylene chloride	75-09-2	1040		50.0	2.50
Naphthalene	91-20-3		U	10.0	2.00
n-Propylbenzene	103-65-1		U	10.0	1.25

Report Number: **L08020523**
Report Date : **March 4, 2008**

00089677

Sample Number: **L08020523-01**
Client ID: **17WW17-021908**
Matrix: **Water**
Workgroup Number: **WG264034**
Collect Date: **02/19/2008 13:10**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **10**
Units: **ug/L**

Instrument: **HPMS14**
Prep Date: **02/26/2008 15:33**
Cal Date: **02/11/2008 22:54**
Run Date: **02/26/2008 15:33**
File ID: **14M03815**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	10.0	1.25
1,1,1,2-Tetrachloroethane	630-20-6		U	10.0	2.50
1,1,2,2-Tetrachloroethane	79-34-5		U	10.0	1.25
Tetrachloroethene	127-18-4		U	10.0	2.50
Toluene	108-88-3		U	10.0	2.50
1,2,3-Trichlorobenzene	87-61-6		U	10.0	1.25
1,2,4-Trichlorobenzene	120-82-1		U	10.0	2.00
1,1,1-Trichloroethane	71-55-6		U	10.0	2.50
1,1,2-Trichloroethane	79-00-5		U	10.0	2.50
Trichloroethene	79-01-6	46.0		10.0	2.50
Trichlorofluoromethane	75-69-4		U	10.0	2.50
1,2,3-Trichloropropane	96-18-4		U	10.0	5.00
1,2,4-Trimethylbenzene	95-63-6		U	10.0	2.50
1,3,5-Trimethylbenzene	108-67-8		U	10.0	2.50
Vinyl acetate	108-05-4		U	100	25.0
Vinyl chloride	75-01-4		U	10.0	2.50
o-Xylene	95-47-6		U	10.0	2.50
m-,p-Xylene	136777-61-2		U	10.0	5.00

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	103	86	118	
1,2-Dichloroethane-d4	102	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: **L08020523**
Report Date : **March 4, 2008**

00089678

Sample Number: **L08020523-02**
Client ID: **WASTE CHARACTERATON**
Matrix: **Leachate**
Workgroup Number: **WG264296**
Collect Date: **02/20/2008 11:25**
Sample Tag: **DL01**

PrePrep Method: **1311**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **SMH**
Dilution: **10**
Units: **ug/L**

Instrument: **HPMS14**
Prep Date: **02/28/2008 21:55**
Cal Date: **02/11/2008 22:54**
Run Date: **02/28/2008 21:55**
File ID: **14M03874**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Benzene	71-43-2		U	50	1.25	D018	500
Carbon tetrachloride	56-23-5		U	50	2.5	D019	500
Chlorobenzene	108-90-7		U	50	1.25	D021	100000
Chloroform	67-66-3		U	50	1.25	D022	6000
1,2-Dichloroethane	107-06-2		U	50	2.5	D028	500
1,1-Dichloroethene	75-35-4		U	50	5	D029	700
Methyl Ethyl Ketone	78-93-3		U	100	25	D035	200000
Tetrachloroethene	127-18-4		U	50	2.5	D039	700
Trichloroethene	79-01-6	8.17	J	50	2.5	D040	500
Vinyl chloride	75-01-4		U	100	2.5	D043	200

Surrogate	% Recovery	Lower	Upper
Dibromofluoromethane	100	86	118
1,2-Dichloroethane-d4	106	80	120
Toluene-d8	106	88	110
4-Bromofluorobenzene	95.9	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

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

TCLP Volatile

Analyst(s): RWC
Date: 02-27-08

Analyst/Date		Analyst/Date	
RWC 2-27-08		RWC 2-28-08	
Time On	Temp On °C	Time Off	Temp Off °C
1400	23	0600	23

ZHE	Sample #	Tests	PSI ON	PSI OFF	Method	Fluid #	Matrix*	%Solid	Size Reduction Yes	Size Reduction No	Int. Wt. (g)	Fluid Vol. (mL)
A												
B												
C												
D												
E												
F												
G												
H												
I												
J	02-52302	VOA	10	10	1311	FT-680	S/S	100		✓	25.02	500
K	02-55401	〃	〃	〃	〃	〃	S	〃		✓	25.05	〃
L												
M												
N												
O												
P												
Q												
R												
S												
N/A	FBLK	VOA	N/A	N/A	1311	FT-680	N/A	N/A		✓	40	40

RWC 2-27-08

*Matrix Code = (S-solid) (SS-sand, soil or sludge) (P-paint) (O-organic) (W-water or waste)
Agitator speed is 30 ± 2 rpm unless otherwise noted.

Comments: _____

Peer Review By: _____ Supervisor Review: _____

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: HPMS14 Dataset: 022508
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 624 SOP: MSV10 Rev: 7

Maintenance Log ID: 23076

Internal Standard: STD24496 Surrogate Standard: STD24497
CCV: STD24688 LCS: STD24700 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG263965

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	14M03774	WG263964-01 50ng BFB STD	NA	1	1	STD24474	02/25/08 12:07
2	14M03775	WG263964-02 50ug/L STD 8260	NA	1	1	STD24688	02/25/08 12:34
3	14M03776	WG263964-02 50ug/L STD 8260	NA	1	1	STD24688	02/25/08 13:07
4	14M03777	WG263965-01 VBLK0225 BLANK 8260	NA	1	1		02/25/08 13:38
5	14M03778	WG263965-01 VBLK0225 BLANK 8261	NA	1	1		02/25/08 14:09
6	14M03779	WG263965-02 20ug/L LCS STD 8260	NA	1	1	STD24700	02/25/08 14:39
7	14M03780	WG263965-03 20ug/L LCSDUP STD 8260	NA	1	1	STD24700	02/25/08 15:10
8	14M03781	WG263965-04 624 BLANK	NA	2	1		02/25/08 15:41
9	14M03782	L08020478-02 B 2.5X 624	7	2	2.5		02/25/08 16:13
10	14M03783	L08020479-02 B 5X 625	7	2	5		02/25/08 16:44
11	14M03784	L08020402-01 B 826-LOW	<2	1	1		02/25/08 17:15
12	14M03785	L08020444-04 B 50X 826-LOW	<2	1	50		02/25/08 17:46
13	14M03786	L08020414-01 A 25X 826-SPE	<2	1	25		02/25/08 18:16
14	14M03787	L08020377-03 A 826-SPLP	NA	18	1		02/25/08 18:47
15	14M03788	L08020523-01 A 826-LOW	<2	1	1		02/25/08 19:18
16	14M03789	L08020524-01 A 826-LOW	<2	1	1		02/25/08 19:50
17	14M03790	L08020525-01 A 826-LOW	<2	1	1		02/25/08 20:20
18	14M03791	L08020525-02 A 826-LOW	<2	1	1		02/25/08 20:52
19	14M03792	L08020525-03 A 826-LOW	<2	1	1		02/25/08 21:23
20	14M03793	L08020513-03 A 826-LOW	<2	1	1		02/25/08 21:54
21	14M03794	L08020513-05 A 826-LOW	<2	1	1		02/25/08 22:25
22	14M03795	L08020513-01 A 826-LOW	<2	1	1		02/25/08 22:56
23	14M03796	L08020513-07 A 826-LOW	<2	1	1		02/25/08 23:27
24	14M03797	L08020376-01 A 500X 8260	11	12	500		02/25/08 23:58
25	14M03798	SYSTEM BLANK	NA	1	1		02/26/08 00:29
26	14M03799	SYSTEM BLANK	NA	1	1		02/26/08 01:01

Comments

Seq.	Rerun	Dil.	Reason	Analytes
2	X			
File ID: 14M03775				
4	X			

Approved: February 28, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS14 Dataset: 022508
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 624 SOP: MSV10 Rev: 7

Maintenance Log ID: 23076

Internal Standard: STD24496 Surrogate Standard: STD24497
CCV: STD24688 LCS: STD24700 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG263965

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 14M03777				
9	X	10	Over Calibration Range	VC
File ID: 14M03782				
13	X	100	Over Calibration Range	CT
File ID: 14M03786				
15	X	10	Over Calibration Range	MECL
File ID: 14M03788				
18	X	50	Over Calibration Range	CIS12DCE, TCE
File ID: 14M03791				
19	X		Carry-over contamination	
File ID: 14M03792				
20	X		Carry-over contamination	
File ID: 14M03793				
21	X		Carry-over contamination	
File ID: 14M03794				
22	X		Carry-over contamination	
File ID: 14M03795				

Approved: February 28, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS14 Dataset: 022608
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10

Maintenance Log ID: 23123

Internal Standard: STD24496 Surrogate Standard: STD24497
CCV: STD24688 LCS: STD24700 MS/MSD: STD24700

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG264034

Comments: NO REANALYSIS REQUIRED

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	14M03800	WG264032-01 BFB 50ng STD 8260	NA	1	1	STD24474	02/26/08 07:52
2	14M03801	WG264032-02 50ug/L STD 8260	NA	1	1	STD24688	02/26/08 08:16
3	14M03802	WG264032-02 50ug/L STD 8260	NA	1	1	STD24688	02/26/08 08:48
4	14M03803	WG264035-01 100ug/L A9FOO STD 8260	NA	1	1	STD24461	02/26/08 09:19
5	14M03804	WG264034-01 VBLK0226 BLANK 8260	NA	1	1		02/26/08 09:50
6	14M03805	WG264034-02 20ug/L LCS STD 8260	NA	1	1	STD24791	02/26/08 10:21
7	14M03806	WG264034-03 100ug/L A9FOOLCS STD 82	NA	1	1	STD24462	02/26/08 10:53
8	14M03807	L08020414-01 B 100X 826-SPE	<2	1	100		02/26/08 11:23
9	14M03808	L08020433-06 A 826-A9	<2	1	1		02/26/08 11:55
10	14M03809	L08020467-03 A 826-A9/LS	<2	1	1		02/26/08 12:26
11	14M03810	L08020510-01 A 826-A9	<2	1	1		02/26/08 12:57
12	14M03811	L08020510-06 A 826-A9	<2	1	1		02/26/08 13:28
13	14M03812	L08020433-02 A 826-A9	<2	1	1		02/26/08 13:59
14	14M03813	L08020433-03 MS A 826-A9	<2	1	1	STD24823	02/26/08 14:31
15	14M03814	L08020433-04 MSD A 826-A9	<2	1	1	STD24823	02/26/08 15:02
16	14M03815	L08020523-01 B 10X 826-LOW	<2	1	10		02/26/08 15:33
17	14M03816	L08020525-02 B 50X 826-LOW	<2	1	50		02/26/08 16:04
18	14M03817	L08020433-01 A 826-A9	<2	1	1		02/26/08 16:35
19	14M03818	L08020433-05 A 826-A9	<2	1	1		02/26/08 17:06
20	14M03819	L08020467-01 A 826-A9	<2	1	1		02/26/08 17:37
21	14M03820	L08020467-02 A 826-A9	<2	1	1		02/26/08 18:08
22	14M03821	L08020510-02 A 826-A9	<2	1	1		02/26/08 18:39
23	14M03822	L08020510-03 A 826-A9	<2	1	1		02/26/08 19:09
24	14M03823	L08020510-04 A 826-A9	<2	1	1		02/26/08 19:40
25	14M03824	SYSTEM BLANK	NA	1	1		02/26/08 20:11

Approved: March 03, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS14 Dataset: 022808
Analyst1: SMH Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10

Maintenance Log ID: 23104

Internal Standard: STD24496 Surrogate Standard: STD24497
CCV: STD24688 LCS: STD24700 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG264296

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	14M03853	WG264295-01 BFB 50ng STD 8260	NA	1	1	STD24474	02/28/08 10:48
2	14M03854	WG264295-02 50ug/L STD 8260	NA	1	1	STD24688	02/28/08 11:11
3	14M03855	WG264296-01 VBLK 0228 BLANK 8260	NA	1	1		02/28/08 11:45
4	14M03856	WG264296-01 VBLK 0228 BLANK 8260	NA	1	1		02/28/08 12:16
5	14M03857	WG264296-02 20ug/L LCS STD8260	NA	1	1	STD24700	02/28/08 13:09
6	14M03858	WG264296-03 20ug/L LCSDUP STD 8260	NA	1	1	STD24700	02/28/08 13:40
7	14M03859	L08020437-06 B 5X 826-SPE1	7	1	5		02/28/08 14:11
8	14M03860	L08020586-12 A 826-SPE6	<2	1	1		02/28/08 14:42
9	14M03861	L08020587-03 A 826-SPE	<2	1	1		02/28/08 15:13
10	14M03862	L08020487-02 A 826-SPLP	NA	18	1		02/28/08 15:44
11	14M03863	L08020487-04 A 826-SPLP	NA	18	1		02/28/08 16:15
12	14M03864	L08020486-02 A 826-SPLP	NA	18	1		02/28/08 16:46
13	14M03865	L08020487-07 A 826-SPE	<2	1	1		02/28/08 17:17
14	14M03866	L08020489-01 A 826-SPE1	<2	1	1		02/28/08 17:47
15	14M03867	L08020489-02 A 826-SPE1	<2	1	1		02/28/08 18:18
16	14M03868	L08020489-03 A 826-SPE1	<2	1	1		02/28/08 18:49
17	14M03869	L08020503-01 A 10X 826-TC	NA	17	10		02/28/08 19:21
18	14M03870	L08020503-02 A 10X 826-TC	NA	17	10		02/28/08 19:52
19	14M03871	L08020503-03 A 10X 826-TC	NA	17	10		02/28/08 20:23
20	14M03872	L08020503-04 A 10X 826-TC	NA	17	10		02/28/08 20:54
21	14M03873	L08020503-05 A 10X 826-TC	NA	17	10		02/28/08 21:24
22	14M03874	L08020523-02 A 10X 826-TC	NA	17	10		02/28/08 21:55
23	14M03875	L08020554-01 A 10X 826-TC	NA	17	10		02/28/08 22:26
24	14M03876	L08020462-01 A 10X 826-TC	NA	17	10		02/28/08 22:57
25	14M03877	SYSTEM BLANK	NA	1	1		02/28/08 23:29
26	14M03878	SYSTEM CHECK	NA	1	1		02/29/08 00:00

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X			
File ID: 14M03855				
24	X		Missed Tune	

Approved: February 29, 2008

KEMRON Environmental Services

Instrument Run Log

Instrument: HPMS14 Dataset: 022808
Analyst1: SMH Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10

Maintenance Log ID: 23104

Internal Standard: STD24496 Surrogate Standard: STD24497
CCV: STD24688 LCS: STD24700 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG264296

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 14M03876				

Approved: February 29, 2008

Page: 2

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
Data Checklist

Date: 25-FEB-2008
Analyst: CMS
Analyst: NA
Method: 8260
Instrument: HPMS14
Curve Workgroup: NA
Runlog ID: 20913
Analytical Workgroups: WG263695

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:
28-FEB-2008

Secondary Reviewer:
28-FEB-2008

Generated: FEB-28-2008 14:41:58

KEMRON Environmental Services
Data Checklist

Date: 26-FEB-2008
Analyst: CMS
Analyst: NA
Method: 8260
Instrument: HPMS14
Curve Workgroup: NA
Runlog ID: 20951
Analytical Workgroups: WG264034

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	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 resonableness of the results	X

Primary Reviewer:
03-MAR-2008

Secondary Reviewer:
03-MAR-2008

Generated: MAR-03-2008 15:03:19

KEMRON Environmental Services
Data Checklist

Date: 28-FEB-2008
Analyst: SMH
Analyst: NA
Method: 8260
Instrument: HPMS14
Curve Workgroup: NA
Runlog ID: 20930
Analytical Workgroups: WG264296

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	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 resonableness of the results	X

Primary Reviewer:
29-FEB-2008

Secondary Reviewer:
29-FEB-2008

Generated: FEB-29-2008 16:06:26

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00089693

Analytical Method: 8260B AAB#: WG264034

Login Number: L08020523

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
17WW17-021908	02/19/08	02/23/08	02/26/08	14	7.10	02/26/08	14	7.10	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 1032015
Report generated 03/03/2008 15:46

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00089694

Analytical Method: 8260B AAB#: WG263965

Login Number: L08020523

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
17WW17-021908	02/19/08	02/23/08	02/25/08	14	6.26	02/25/08	14	6.26	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 1032015
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KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00089695

Analytical Method: 8260B AAB#: WG264296

Login Number: L08020523

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
WASTE CHARACTERATON	02/20/08	02/23/08	02/28/08	14	8.44	02/28/08	14	8.44	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 1032022
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SURROGATE STANDARDS

00089696

Login Number: L08020523
Instrument Id: HPMS14
Workgroup (AAB#): WG263965

Method: 8260
CAL ID: HPMS14-11-FEB-08
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L08020523-01	1.00	01	104	104	102	105
WG263965-01	1.00	01	93.5	99.8	101	107
WG263965-02	1.00	01	94.3	102	102	104
WG263965-03	1.00	01	93.0	102	100	104
WG263965-04	1.00	01	94.5	100	101	107

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
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SURROGATE STANDARDS

Login Number: L08020523
Instrument Id: HPMS14
Workgroup (AAB#): WG264034

Method: 8260
CAL ID: HPMS14-11-FEB-08
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L08020523-01	10.0	DL01	102	103	102	108
WG264034-01	1.00	01	98.6	102	103	107
WG264034-02	1.00	01	98.9	104	101	104
WG264034-03	1.00	01	97.5	104	104	107

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: 1032020
Report generated 03/03/2008 15:46

SURROGATE STANDARDS

00089698

Login Number: L08020523
Instrument Id: HPMS14
Workgroup (AAB#): WG264296

Method: 8260
CAL ID: HPMS14-11-FEB-08
Matrix: Leachate

Sample Number	Dilution	Tag	1	2	3	4
L08020523-02	10.0	DL01	106	100	95.9	106
WG264296-01	1.00	01	95.1	101	102	106
WG264296-02	1.00	01	94.3	102	102	104
WG264296-03	1.00	01	93.4	102	100	103

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: 1032028
Report generated 03/03/2008 15:46

METHOD BLANK SUMMARY

Login Number:	L08020523	Work Group:	WG263965
Blank File ID:	14M03778	Blank Sample ID:	WG263965-01
Prep Date:	02/25/08 14:09	Instrument ID:	HPMS14
Analyzed Date:	02/25/08 14:09	Method:	8260B
Analyst:	CMS		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG263965-02	14M03779	02/25/08 14:39	01
LCS2	WG263965-03	14M03780	02/25/08 15:10	01
17WW17-021908	L08020523-01	14M03788	02/25/08 19:18	01

METHOD BLANK SUMMARY

Login Number:	L08020523	Work Group:	WG264034
Blank File ID:	14M03804	Blank Sample ID:	WG264034-01
Prep Date:	02/26/08 09:50	Instrument ID:	HPMS14
Analyzed Date:	02/26/08 09:50	Method:	8260B
Analyst:	CMS		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG264034-02	14M03805	02/26/08 10:21	01
LCS	WG264034-03	14M03806	02/26/08 10:53	01
17WW17-021908	L08020523-01	14M03815	02/26/08 15:33	DL01

METHOD BLANK SUMMARY

Login Number:	L08020523	Work Group:	WG264296
Blank File ID:	14M03856	Blank Sample ID:	WG264296-01
Prep Date:	02/28/08 12:16	Instrument ID:	HPMS14
Analyzed Date:	02/28/08 12:16	Method:	8260B
Analyst:	SMH		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG264296-02	14M03857	02/28/08 13:09	01
LCS2	WG264296-03	14M03858	02/28/08 13:40	01
WASTE CHARACTERATON	L08020523-02	14M03874	02/28/08 21:55	DL01

METHOD BLANK REPORT

00089702

Login Number: L08020523 Prep Date: 02/25/08 14:09 Sample ID: WG263965-01
Instrument ID: HPMS14 Run Date: 02/25/08 14:09 Prep Method: 5030B
File ID: 14M03778 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG263965 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	0.250	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

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METHOD BLANK REPORT

Login Number: L08020523 Prep Date: 02/25/08 14:09 Sample ID: WG263965-01
Instrument ID: HPMS14 Run Date: 02/25/08 14:09 Prep Method: 5030B
File ID: 14M03778 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG263965 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	99.8	86 - 118	PASS
1,2-Dichloroethane-d4	93.5	80 - 120	PASS
Toluene-d8	107	88 - 110	PASS
4-Bromofluorobenzene	101	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
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Report generated 03/03/2008 15:46

METHOD BLANK REPORT

00089704

Login Number: L08020523 Prep Date: 02/26/08 09:50 Sample ID: WG264034-01
Instrument ID: HPMS14 Run Date: 02/26/08 09:50 Prep Method: 5030B
File ID: 14M03804 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG264034 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	0.250	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

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KEMRON Environmental Services

METHOD BLANK REPORT

00089705

Login Number:L08020523 Prep Date:02/26/08 09:50 Sample ID:WG264034-01
Instrument ID:HPMS14 Run Date:02/26/08 09:50 Prep Method:5030B
File ID:14M03804 Analyst:CMS Method:8260B
Workgroup (AAB#):WG264034 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	102	86 - 118	PASS
1,2-Dichloroethane-d4	98.6	80 - 120	PASS
Toluene-d8	107	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

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Report generated 03/03/2008 15:46

KEMRON Environmental Services

METHOD BLANK REPORT

00089706

Login Number: L08020523 Prep Date: 02/28/08 12:16 Sample ID: WG264296-01
Instrument ID: HPMS14 Run Date: 02/28/08 12:16 Prep Method: 5030B
File ID: 14M03856 Analyst: SMH Method: 8260B
Workgroup (AAB#): WG264296 Matrix: Leachate Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HPMS14-11-FEB-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Benzene	0.125	5.00	0.125	1	U
Carbon tetrachloride	0.250	5.00	0.250	1	U
Chlorobenzene	0.125	5.00	0.125	1	U
Chloroform	0.125	5.00	0.125	1	U
1,2-Dichloroethane	0.250	5.00	0.250	1	U
1,1-Dichloroethene	0.500	5.00	0.500	1	U
Methyl Ethyl Ketone	2.50	10.0	2.50	1	U
Tetrachloroethene	0.250	5.00	0.250	1	U
Trichloroethene	0.250	5.00	0.250	1	U
Vinyl chloride	0.250	10.0	0.250	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	101	86 - 118	PASS
1,2-Dichloroethane-d4	95.1	80 - 120	PASS
Toluene-d8	106	88 - 110	PASS
4-Bromofluorobenzene	102	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* Analyte concentration > RL

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KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00089707

Login Number:L08020523 Run Date:02/26/2008 Sample ID:WG264034-02
Instrument ID:HPMS14 Run Time:10:21 Prep Method:5030B
File ID:14M03805 Analyst:CMS Method:8260B
Workgroup (AAB#):WG264034 Matrix:Water Units:ug/L
QC Key:STD Lot#:STD24791 Cal ID:HPMS14-11-FEB-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Acetone	20.0	19.3	96.6	40 - 142	
Benzene	20.0	20.8	104	80 - 121	
Bromobenzene	20.0	20.4	102	80 - 120	
Bromochloromethane	20.0	20.2	101	65 - 130	
Bromodichloromethane	20.0	22.7	114	80 - 131	
Bromoform	20.0	17.9	89.3	70 - 130	
Bromomethane	20.0	26.1	131	30 - 145	
2-Butanone	20.0	20.7	103	30 - 150	
n-Butylbenzene	20.0	22.4	112	80 - 131	
sec-Butylbenzene	20.0	22.3	112	80 - 127	
tert-Butylbenzene	20.0	21.9	109	80 - 126	
Carbon disulfide	20.0	22.3	112	58 - 138	
Carbon tetrachloride	20.0	23.7	119	65 - 140	
Chlorobenzene	20.0	20.8	104	80 - 120	
Chlorodibromomethane	20.0	19.0	95.2	60 - 135	
Chloroethane	20.0	23.0	115	60 - 135	
2-Chloroethyl vinyl ether	20.0	13.8	69.0	58 - 151	
Chloroform	20.0	21.8	109	80 - 125	
Chloromethane	20.0	24.2	121	40 - 125	
2-Chlorotoluene	20.0	18.1	90.6	80 - 127	
4-Chlorotoluene	20.0	17.6	88.0	80 - 126	
1,2-Dibromo-3-chloropropane	20.0	16.8	84.2	50 - 130	
1,2-Dibromoethane	20.0	20.2	101	80 - 125	
Dibromomethane	20.0	21.5	108	75 - 125	
1,2-Dichlorobenzene	20.0	19.8	98.9	80 - 125	
1,3-Dichlorobenzene	20.0	20.2	101	80 - 120	
1,4-Dichlorobenzene	20.0	19.5	97.4	80 - 120	
Dichlorodifluoromethane	20.0	29.7	149	50 - 133	*
1,1-Dichloroethane	20.0	21.8	109	80 - 125	
1,2-Dichloroethane	20.0	21.4	107	80 - 129	
1,1-Dichloroethene	20.0	23.0	115	80 - 132	
cis-1,2-Dichloroethene	20.0	22.1	110	70 - 125	
trans-1,2-Dichloroethene	20.0	22.0	110	80 - 127	
1,2-Dichloropropane	20.0	21.1	106	80 - 120	
1,3-Dichloropropane	20.0	20.4	102	80 - 120	
2,2-Dichloropropane	20.0	24.9	124	80 - 133	
cis-1,3-Dichloropropene	20.0	21.4	107	70 - 130	
trans-1,3-Dichloropropene	20.0	20.2	101	80 - 130	
1,1-Dichloropropene	20.0	22.3	112	75 - 130	
Ethylbenzene	20.0	22.1	111	80 - 122	
2-Hexanone	20.0	18.8	94.0	55 - 130	

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LABORATORY CONTROL SAMPLE (LCS)

00089708

Login Number: L08020523 Run Date: 02/26/2008 Sample ID: WG264034-02
Instrument ID: HPMS14 Run Time: 10:21 Prep Method: 5030B
File ID: 14M03805 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG264034 Matrix: Water Units: ug/L
QC Key: STD Lot#: STD24791 Cal ID: HPMS14-11-FEB-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Hexachlorobutadiene	20.0	20.1	100	72 - 132	
Isopropylbenzene	20.0	20.0	100	80 - 122	
p-Isopropyltoluene	20.0	21.9	109	80 - 122	
4-Methyl-2-pentanone	20.0	19.3	96.4	64 - 140	
Methylene chloride	20.0	21.1	106	80 - 123	
Naphthalene	20.0	16.1	80.3	59 - 149	
n-Propylbenzene	20.0	22.8	114	80 - 129	
Styrene	20.0	21.8	109	80 - 123	
1,1,1,2-Tetrachloroethane	20.0	22.6	113	80 - 130	
1,1,2,2-Tetrachloroethane	20.0	19.8	99.0	79 - 125	
Tetrachloroethene	20.0	22.0	110	80 - 124	
Toluene	20.0	21.2	106	80 - 124	
1,2,3-Trichlorobenzene	20.0	16.7	83.4	55 - 140	
1,2,4-Trichlorobenzene	20.0	18.0	90.2	65 - 135	
1,1,1-Trichloroethane	20.0	22.9	114	80 - 134	
1,1,2-Trichloroethane	20.0	20.2	101	80 - 125	
Trichloroethene	20.0	21.8	109	80 - 122	
Trichlorofluoromethane	20.0	20.5	103	62 - 151	
1,2,3-Trichloropropane	20.0	20.2	101	75 - 125	
1,2,4-Trimethylbenzene	20.0	21.9	109	80 - 125	
1,3,5-Trimethylbenzene	20.0	22.3	111	80 - 127	
Vinyl acetate	20.0	15.5	77.4	10 - 150	
Vinyl chloride	20.0	25.1	125	65 - 140	
o-Xylene	20.0	21.8	109	80 - 122	
m-,p-Xylene	40.0	44.1	110	80 - 122	

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	104	86 - 118	PASS
1,2-Dichloroethane-d4	98.9	80 - 120	PASS
Toluene-d8	104	88 - 110	PASS
4-Bromofluorobenzene	101	86 - 115	PASS

* FAILS %REC LIMIT

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KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00089709

Login Number: L08020523 Analyst: CMS Prep Method: 5030B
Instrument ID: HPMS14 Matrix: Water Method: 8260B
Workgroup (AAB#): WG263965 Units: ug/L
QC Key: STD Lot #: STD24700

Sample ID: WG263965-02 LCS File ID: 14M03779 Run Date: 02/25/2008 14:39
Sample ID: WG263965-03 LCS2 File ID: 14M03780 Run Date: 02/25/2008 15:10

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	18.4	91.9	20.0	18.6	93.1	1.25	40 - 142	20	
Benzene	20.0	20.8	104	20.0	20.1	101	3.44	80 - 121	20	
Bromobenzene	20.0	20.7	104	20.0	20.1	101	2.94	80 - 120	20	
Bromochloromethane	20.0	20.2	101	20.0	19.7	98.6	2.58	65 - 130	20	
Bromodichloromethane	20.0	22.0	110	20.0	21.4	107	2.77	80 - 131	20	
Bromoform	20.0	17.4	87.0	20.0	17.2	85.9	1.30	70 - 130	20	
Bromomethane	20.0	26.1	131	20.0	25.6	128	2.19	30 - 145	20	
2-Butanone	20.0	19.7	98.6	20.0	19.9	99.3	0.695	30 - 150	20	
n-Butylbenzene	20.0	22.8	114	20.0	21.7	109	4.56	80 - 131	20	
sec-Butylbenzene	20.0	22.8	114	20.0	21.8	109	4.82	80 - 127	20	
tert-Butylbenzene	20.0	22.3	112	20.0	21.4	107	4.06	80 - 126	20	
Carbon disulfide	20.0	22.5	113	20.0	21.4	107	5.19	58 - 138	20	
Carbon tetrachloride	20.0	23.5	118	20.0	22.1	110	6.35	65 - 140	20	
Chlorobenzene	20.0	20.7	103	20.0	20.1	100	2.81	80 - 120	20	
Chlorodibromomethane	20.0	18.5	92.3	20.0	18.1	90.5	1.89	60 - 135	20	
Chloroethane	20.0	22.7	114	20.0	22.1	111	2.71	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	13.8	69.0	20.0	12.9	64.3	6.97	58 - 151	20	
Chloroform	20.0	21.3	106	20.0	20.5	102	3.86	80 - 125	20	
Chloromethane	20.0	22.2	111	20.0	21.6	108	2.96	40 - 125	20	
2-Chlorotoluene	20.0	21.0	105	20.0	20.4	102	2.86	80 - 127	20	
4-Chlorotoluene	20.0	21.2	106	20.0	20.4	102	3.61	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	16.6	82.9	20.0	16.8	83.8	1.11	50 - 130	20	
1,2-Dibromoethane	20.0	20.0	99.9	20.0	19.8	99.1	0.839	80 - 125	20	
Dibromomethane	20.0	20.8	104	20.0	20.5	103	1.24	75 - 125	20	
1,2-Dichlorobenzene	20.0	19.7	98.6	20.0	19.5	97.6	1.04	80 - 125	20	
1,3-Dichlorobenzene	20.0	20.3	102	20.0	19.8	99.0	2.62	80 - 120	20	
1,4-Dichlorobenzene	20.0	19.6	97.8	20.0	19.1	95.6	2.33	80 - 120	20	
Dichlorodifluoromethane	20.0	29.6	148	20.0	27.6	138	6.96	50 - 133	20	*
1,1-Dichloroethane	20.0	21.4	107	20.0	20.6	103	3.93	80 - 125	20	
1,2-Dichloroethane	20.0	20.3	102	20.0	19.8	99.0	2.62	80 - 129	20	
1,1-Dichloroethene	20.0	22.9	114	20.0	21.7	108	5.34	80 - 132	20	
cis-1,2-Dichloroethene	20.0	22.2	111	20.0	21.2	106	4.77	70 - 125	20	
trans-1,2-Dichloroethene	20.0	22.1	111	20.0	21.0	105	5.41	80 - 127	20	
1,2-Dichloropropane	20.0	20.7	103	20.0	20.1	101	2.77	80 - 120	20	
1,3-Dichloropropane	20.0	19.8	99.2	20.0	19.5	97.5	1.71	80 - 120	20	
2,2-Dichloropropane	20.0	24.9	125	20.0	23.3	117	6.51	80 - 133	20	
cis-1,3-Dichloropropene	20.0	21.0	105	20.0	20.6	103	1.68	70 - 130	20	
trans-1,3-Dichloropropene	20.0	19.3	96.5	20.0	19.3	96.4	0.152	80 - 130	20	
1,1-Dichloropropene	20.0	22.5	112	20.0	21.2	106	5.87	75 - 130	20	
Ethylbenzene	20.0	22.3	112	20.0	21.4	107	4.00	80 - 122	20	

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KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00089710

Login Number:L08020523 Analyst:CMS Prep Method:5030B
Instrument ID:HPMS14 Matrix:Water Method:8260B
Workgroup (AAB#):WG263965 Units:ug/L
QC Key:STD Lot #:STD24700

Sample ID:WG263965-02 LCS File ID:14M03779 Run Date:02/25/2008 14:39
Sample ID:WG263965-03 LCS2 File ID:14M03780 Run Date:02/25/2008 15:10

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	17.5	87.6	20.0	18.1	90.3	2.94	55 - 130	20	
Hexachlorobutadiene	20.0	21.5	108	20.0	20.4	102	5.39	72 - 132	20	
Isopropylbenzene	20.0	20.1	101	20.0	19.5	97.3	3.46	80 - 122	20	
p-Isopropyltoluene	20.0	22.4	112	20.0	21.3	107	4.78	80 - 122	20	
4-Methyl-2-pentanone	20.0	18.2	90.8	20.0	18.5	92.7	2.11	64 - 140	20	
Methylene chloride	20.0	20.7	104	20.0	20.4	102	1.68	80 - 123	20	
Naphthalene	20.0	16.7	83.4	20.0	17.1	85.3	2.20	59 - 149	20	
n-Propylbenzene	20.0	23.0	115	20.0	21.9	109	5.01	80 - 129	20	
Styrene	20.0	21.6	108	20.0	21.2	106	2.12	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	21.7	108	20.0	21.2	106	2.21	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	19.2	96.1	20.0	19.3	96.5	0.442	79 - 125	20	
Tetrachloroethene	20.0	22.4	112	20.0	21.3	107	4.97	80 - 124	20	
Toluene	20.0	21.2	106	20.0	20.5	103	3.46	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	17.4	87.2	20.0	17.3	86.5	0.746	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	18.5	92.7	20.0	18.2	90.9	1.98	65 - 135	20	
1,1,1-Trichloroethane	20.0	22.8	114	20.0	21.5	108	5.56	80 - 134	20	
1,1,2-Trichloroethane	20.0	19.7	98.3	20.0	19.3	96.5	1.86	80 - 125	20	
Trichloroethene	20.0	22.1	111	20.0	21.4	107	3.42	80 - 122	20	
Trichlorofluoromethane	20.0	20.4	102	20.0	19.1	95.6	6.66	62 - 151	20	
1,2,3-Trichloropropane	20.0	19.1	95.6	20.0	18.9	94.6	1.02	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	21.8	109	20.0	21.1	106	3.35	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	22.6	113	20.0	21.7	109	3.98	80 - 127	20	
Vinyl acetate	20.0	16.3	81.7	20.0	15.5	77.4	5.49	10 - 150	20	
Vinyl chloride	20.0	24.0	120	20.0	22.5	113	6.31	65 - 140	20	
o-Xylene	20.0	21.7	109	20.0	21.2	106	2.41	80 - 122	20	
m-,p-Xylene	40.0	44.0	110	40.0	42.7	107	2.97	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	102	102	86 - 118	PASS
1,2-Dichloroethane-d4	94.3	93.0	80 - 120	PASS
Toluene-d8	104	104	88 - 110	PASS
4-Bromofluorobenzene	102	100	86 - 115	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

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KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00089711

Login Number: L08020523 Analyst: SMH Prep Method: 5030B
Instrument ID: HPMS14 Matrix: Leachate Method: 8260B
Workgroup (AAB#): WG264296 Units: ug/L
QC Key: STD Lot #: STD24700

Sample ID: WG264296-02 LCS File ID: 14M03857 Run Date: 02/28/2008 13:09
Sample ID: WG264296-03 LCS2 File ID: 14M03858 Run Date: 02/28/2008 13:40

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Benzene	20.0	21.4	107	20.0	21.3	107	0.379	80 - 121	20	
Carbon tetrachloride	20.0	24.7	123	20.0	24.4	122	1.25	65 - 140	20	
Chlorobenzene	20.0	21.1	105	20.0	21.0	105	0.407	80 - 120	20	
Chloroform	20.0	22.2	111	20.0	22.1	110	0.758	80 - 125	20	
1,2-Dichloroethane	20.0	20.7	103	20.0	21.0	105	1.48	80 - 129	20	
1,1-Dichloroethene	20.0	24.0	120	20.0	23.6	118	1.57	80 - 132	20	
Methyl Ethyl Ketone	20.0	17.9	89.6	20.0	19.1	95.7	6.64	30 - 150	20	
Tetrachloroethene	20.0	22.6	113	20.0	22.6	113	0.0230	80 - 124	20	
Trichloroethene	20.0	22.7	114	20.0	22.6	113	0.508	80 - 122	20	
Vinyl chloride	20.0	25.6	128	20.0	25.0	125	2.36	65 - 140	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	102	102	86 - 118	PASS
1,2-Dichloroethane-d4	94.3	93.4	80 - 120	PASS
Toluene-d8	104	103	88 - 110	PASS
4-Bromofluorobenzene	102	100	86 - 115	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

KEMRON FORMS - Modified 02/08/2007
Version 1.5 PDF File ID: 1030812
Report generated 03/03/2008 15:46

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L08020523 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

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 1032018
Report generated 03/03/2008 15:46

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L08020523 Tune ID: WG263964-01
Instrument: HPMS14 Run Date: 02/25/2008
Analyst: CMS Run Time: 12:07
Workgroup: WG263964 File ID: 14M03774
Cal ID: HPMS14-11-FEB-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	21.1	3922	PASS
75.0	95.0	30.0	60.0	49.4	9168	PASS
95.0	95.0	100	100	100	18553	PASS
96.0	95.0	5.00	9.00	6.79	1260	PASS
173	174	0	2.00	0.368	50	PASS
174	95.0	50.0	100	73.3	13601	PASS
175	174	5.00	9.00	7.33	997	PASS
176	174	95.0	101	96.2	13087	PASS
177	176	5.00	9.00	6.35	831	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG263964-02	CCV	01	02/25/2008 13:07	
WG263965-01	BLANK	01	02/25/2008 14:09	
WG263965-02	LCS	01	02/25/2008 14:39	
WG263965-03	LCS2	01	02/25/2008 15:10	
WG263965-04	BLANK2	01	02/25/2008 15:41	
L08020523-01	17WW17-021908	01	02/25/2008 19:18	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 1032018
Report generated 03/03/2008 15:46

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L08020523 Tune ID: WG264032-01
Instrument: HPMS14 Run Date: 02/26/2008
Analyst: CMS Run Time: 07:52
Workgroup: WG264032 File ID: 14M03800
Cal ID: HPMS14-11-FEB-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	23.2	4030	PASS
75.0	95.0	30.0	60.0	50.2	8722	PASS
95.0	95.0	100	100	100	17361	PASS
96.0	95.0	5.00	9.00	7.31	1269	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	70.4	12219	PASS
175	174	5.00	9.00	7.05	861	PASS
176	174	95.0	101	96.0	11729	PASS
177	176	5.00	9.00	6.41	752	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG264032-02	CCV	01	02/26/2008 08:48	
WG264034-01	BLANK	01	02/26/2008 09:50	
WG264034-01	BLANK	01	02/26/2008 09:50	
WG264034-02	LCS	01	02/26/2008 10:21	
WG264034-03	LCS	01	02/26/2008 10:53	
WG264034-04	REF	01	02/26/2008 13:59	
WG264034-05	MS	01	02/26/2008 14:31	
WG264034-06	MSD	01	02/26/2008 15:02	
L08020523-01	17WW17-021908	DL01	02/26/2008 15:33	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 1032018
Report generated 03/03/2008 15:46

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L08020523 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

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 1032026
Report generated 03/03/2008 15:46

KEMRON ENVIRONMENTAL SERVICES
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L08020523 Tune ID: WG264295-01
Instrument: HPMS14 Run Date: 02/28/2008
Analyst: SMH Run Time: 10:48
Workgroup: WG264295 File ID: 14M03853
Cal ID: HPMS14-11-FEB-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	21.4	5402	PASS
75.0	95.0	30.0	60.0	49.4	12506	PASS
95.0	95.0	100	100	100	25301	PASS
96.0	95.0	5.00	9.00	6.77	1714	PASS
173	174	0	2.00	0.537	98	PASS
174	95.0	50.0	100	72.2	18264	PASS
175	174	5.00	9.00	7.05	1288	PASS
176	174	95.0	101	95.8	17497	PASS
177	176	5.00	9.00	6.57	1149	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG264295-02	CCV	01	02/28/2008 11:11	
WG264296-01	BLANK	01	02/28/2008 12:16	
WG264296-02	LCS	01	02/28/2008 13:09	
WG264296-03	LCS2	01	02/28/2008 13:40	
L08020523-02	WASTE CHARACTERATON	DL01	02/28/2008 21:55	

* Sample past 12 hour tune limit

KEMRON FORMS - Modified 03/12/2007
Version 1.3 PDF File ID: 1032026
Report generated 03/03/2008 15:46

INITIAL CALIBRATION SUMMARY

00089717

Login Number: L08020523 **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		

KEMRON FORMS - Modified 01/18/2007
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INITIAL CALIBRATION SUMMARY

Login Number: L08020523 **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

INITIAL CALIBRATION DATA

00089719

Login Number: L08020523 **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

INITIAL CALIBRATION DATA

00089720

Login Number:L08020523
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

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INITIAL CALIBRATION DATA

00089721

Login Number: L08020523 **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

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INITIAL CALIBRATION DATA

00089722

Login Number: L08020523
Instrument ID: HPMS14
Analytical Method: 8260B
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

KEMRON FORMS - Modified 10/13/2006
Version 1.6 PDF File ID: 1032017
Report generated 03/03/2008 15:46

INITIAL CALIBRATION DATA

00089723

Login Number: L08020523 **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

INITIAL CALIBRATION DATA

00089724

Login Number: L08020523 **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

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INITIAL CALIBRATION DATA

Login Number: L08020523
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

INITIAL CALIBRATION DATA

00089726

Login Number: L08020523
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

INITIAL CALIBRATION SUMMARY

Login Number: L08020523 **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		
Chloroform	CCC	0.4822	7.13		
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
1,2-Dichloroethane		0.3534	4.13		
2-Butanone		0.07142	9.33		
Benzene		1.061	4.32		
Carbon Tetrachloride		0.3646	14.6		
Tetrachloroethene		0.3372	11.6		
Trichloroethene		0.2527	11.6		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INITIAL CALIBRATION DATA

00089728

Login Number: L08020523
Analytical Method: 8260B
Instrument ID: HPMS14
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
Chloroform	0.300	2378.00000	0.5245	0.400	2531.00000	0.4271	1.00	6378.00000	0.4376
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
1,2-Dichloroethane	NA	NA	NA	0.400	2017.00000	0.3403	1.00	5047.00000	0.3463
2-Butanone	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
Carbon Tetrachloride	NA	NA	NA	NA	NA	NA	1.00	4182.00000	0.2869
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

INITIAL CALIBRATION DATA

00089729

Login Number: L08020523
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
Chloroform	2.00	13261.0000	0.4590	5.00	36535.0000	0.5097	20.0	148252.000	0.5068
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
1,2-Dichloroethane	2.00	10056.0000	0.3481	5.00	27103.0000	0.3781	20.0	105786.000	0.3616
2-Butanone	NA	NA	NA	5.00	5959.00000	0.08310	20.0	20477.0000	0.07000
Benzene	2.00	29487.0000	1.021	5.00	79481.0000	1.109	20.0	323440.000	1.106
Carbon Tetrachloride	2.00	8380.00000	0.2900	5.00	27273.0000	0.3805	20.0	119617.000	0.4089
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

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Version 1.6 PDF File ID: 1032025
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INITIAL CALIBRATION DATA

00089730

Login Number: L08020523
Analytical Method: 8260B
Instrument ID: HPMS14
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
Chloroform	50.0	367170.000	0.5079	100	712703.000	0.4900	200	1399215.00	0.4774
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
1,2-Dichloroethane	50.0	267459.000	0.3700	100	497921.000	0.3423	200	998374.000	0.3406
2-Butanone	50.0	52786.0000	0.07300	100	97817.0000	0.06730	200	209781.000	0.07160
Benzene	50.0	786167.000	1.088	100	1512234.00	1.040	200	2862744.00	0.9767
Carbon Tetrachloride	50.0	296183.000	0.4097	100	569763.000	0.3917	200	1126507.00	0.3843
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

KEMRON FORMS - Modified 10/13/2006
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INITIAL CALIBRATION DATA

00089731

Login Number: L08020523
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
Chloroform	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
1,2-Dichloroethane	NA	NA	NA
2-Butanone	300	283421.000	0.06350
Benzene	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA

KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00089732

Login Number:L08020523 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	

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KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00089733

Login Number: L08020523 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 FORMS - Modified 09/06/2007 - (ALT)
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KEMRON Environmental Services

ALTERNATE SOURCE CALIBRATION REPORT

00089734

Login Number: L08020523 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	
Vinyl Chloride	CCC	20.0	19.7	ug/L	0.132	1.30	30	
Chlorobenzene	SPCC	20.0	20.7	ug/L	0.985	3.50	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	
Bromoform	SPCC	20.0	17.7	ug/L	0.140	11.4	30	
Chloromethane	SPCC	20.0	18.8	ug/L	0.176	5.90	30	
Benzene		20.0	20.5	ug/L	1.09	2.40	30	
Carbon Tetrachloride		20.0	21.4	ug/L	0.391	7.20	30	
1,2-Dichloroethane		20.0	20.0	ug/L	0.354	0.100	30	
2-Butanone		20.0	21.8	ug/L	0.0777	8.80	30	
Tetrachloroethene		20.0	21.8	ug/L	0.367	8.80	30	
Trichloroethene		20.0	21.8	ug/L	0.276	9.00	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: 1030813
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CONTINUING CALIBRATION VERIFICATION (CCV)

00089735

Login Number: L08020523 Run Date: 02/25/2008 Sample ID: WG263964-02
Instrument ID: HPMS14 Run Time: 13:07 Method: 8260B
File ID: 14M03776 Analyst: CMS QC Key: STD
Workgroup (AAB#): WG263965 Cal ID: HPMS14 - 11-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	53.4	ug/L	0.515	6.78	20	
1,1-Dichloroethene	CCC	50.0	57.5	ug/L	0.454	14.9	20	
1,2-Dichloropropane	CCC	50.0	52.4	ug/L	0.282	4.77	20	
Ethylbenzene	CCC	50.0	55.5	ug/L	0.562	11.0	20	
Toluene	CCC	50.0	53.2	ug/L	1.53	6.39	20	
Vinyl Chloride	CCC	50.0	50.1	ug/L	0.133	0.121	20	
Bromoform	SPCC	50.0	48.1	ug/L	0.159	3.73	40	
Chlorobenzene	SPCC	50.0	51.7	ug/L	0.984	3.38	40	
Chloromethane	SPCC	50.0	49.4	ug/L	0.204	1.19	40	
1,1-Dichloroethane	SPCC	50.0	53.7	ug/L	0.554	7.42	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	49.3	ug/L	0.439	1.34	40	
Acetone		50.0	41.1	ug/L	0.0421	17.8	40	
Benzene		50.0	51.6	ug/L	1.09	3.11	40	
Bromobenzene		50.0	51.3	ug/L	0.719	2.66	40	
Bromochloromethane		50.0	50.6	ug/L	0.139	1.27	40	
Bromodichloromethane		50.0	55.6	ug/L	0.361	11.2	40	
Bromomethane		50.0	62.8	ug/L	0.193	25.7	40	
2-Butanone		50.0	40.4	ug/L	0.0577	19.2	40	
n-Butylbenzene		50.0	56.2	ug/L	3.15	12.5	40	
sec-Butylbenzene		50.0	57.0	ug/L	3.78	14.0	40	
tert-Butylbenzene		50.0	55.8	ug/L	0.600	11.5	40	
Carbon Disulfide		50.0	56.0	ug/L	0.843	12.0	40	
Carbon Tetrachloride		50.0	59.2	ug/L	0.431	18.3	40	
Dibromochloromethane		50.0	49.9	ug/L	0.296	0.285	40	
Chloroethane		50.0	51.4	ug/L	0.182	2.77	40	
2-Chloroethyl Vinyl Ether		50.0	37.7	ug/L	0.0678	24.5	40	
2-Chlorotoluene		50.0	51.1	ug/L	2.43	2.24	40	
4-Chlorotoluene		50.0	53.3	ug/L	2.61	6.69	40	
1,2-Dibromo-3-Chloropropane		50.0	43.7	ug/L	0.0809	12.7	40	
1,2-Dibromoethane		50.0	52.1	ug/L	0.219	4.14	40	
Dibromomethane		50.0	52.4	ug/L	0.124	4.82	40	
1,2-Dichlorobenzene		50.0	50.5	ug/L	1.36	0.902	40	
1,3-Dichlorobenzene		50.0	51.9	ug/L	1.57	3.84	40	
1,4-Dichlorobenzene		50.0	50.4	ug/L	1.57	0.764	40	
Dichlorodifluoromethane		50.0	56.3	ug/L	0.337	12.6	40	
1,2-Dichloroethane		50.0	50.8	ug/L	0.359	1.62	40	
cis-1,2-Dichloroethene		50.0	54.3	ug/L	0.293	8.54	40	
trans-1,2-Dichloroethene		50.0	56.8	ug/L	0.282	13.5	40	
1,3-Dichloropropane		50.0	50.0	ug/L	0.412	0.0368	40	
2,2-Dichloropropane		50.0	63.5	ug/L	0.492	26.9	40	
cis-1,3-Dichloropropene		50.0	57.0	ug/L	0.414	14.0	40	
trans-1,3-Dichloropropene		50.0	56.4	ug/L	0.469	12.8	40	

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CONTINUING CALIBRATION VERIFICATION (CCV)

00089736

Login Number: L08020523 Run Date: 02/25/2008 Sample ID: WG263964-02
Instrument ID: HPMS14 Run Time: 13:07 Method: 8260B
File ID: 14M03776 Analyst: CMS QC Key: STD
Workgroup (AAB#): WG263965 Cal ID: HPMS14 - 11-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	56.4	ug/L	0.409	12.9	40	
2-Hexanone		50.0	43.6	ug/L	0.115	12.9	40	
Hexachlorobutadiene		50.0	54.9	ug/L	0.529	9.79	40	
Isopropylbenzene		50.0	56.9	ug/L	1.77	13.7	40	
p-Isopropyltoluene		50.0	57.8	ug/L	3.23	15.6	40	
4-Methyl-2-Pentanone		50.0	44.2	ug/L	0.0491	11.7	40	
Methylene Chloride		50.0	50.7	ug/L	0.253	1.43	40	
Naphthalene		50.0	43.3	ug/L	1.63	13.3	40	
n-Propylbenzene		50.0	56.8	ug/L	4.14	13.5	40	
Styrene		50.0	56.5	ug/L	1.10	13.1	40	
1,1,1,2-Tetrachloroethane		50.0	55.6	ug/L	0.351	11.2	40	
Tetrachloroethene		50.0	57.3	ug/L	0.387	14.6	40	
1,2,3-Trichlorobenzene		50.0	43.9	ug/L	0.828	12.1	40	
1,2,4-Trichlorobenzene		50.0	46.8	ug/L	1.02	6.31	40	
1,1,1-Trichloroethane		50.0	57.2	ug/L	0.484	14.4	40	
1,1,2-Trichloroethane		50.0	49.3	ug/L	0.218	1.47	40	
Trichloroethene		50.0	56.3	ug/L	0.285	12.6	40	
Trichlorofluoromethane		50.0	58.8	ug/L	0.514	17.5	40	
1,2,3-Trichloropropane		50.0	48.2	ug/L	0.133	3.62	40	
1,2,4-Trimethylbenzene		50.0	54.2	ug/L	3.03	8.45	40	
1,3,5-Trimethylbenzene		50.0	56.9	ug/L	2.95	13.8	40	
Vinyl Acetate		50.0	53.8	ug/L	0.284	7.61	40	
o-Xylene		50.0	56.0	ug/L	0.683	12.1	40	
m-,p-Xylene		100	110	ug/L	0.692	10.3	40	
1,2-Dichloroethene		100	111	ug/L	0.287	11.0	40	
Xylenes		150	166	ug/L	0.688	10.9	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

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KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00089737

Login Number: L08020523 Run Date: 02/26/2008 Sample ID: WG264032-02
Instrument ID: HPMS14 Run Time: 08:48 Method: 8260B
File ID: 14M03802 Analyst: CMS QC Key: STD
Workgroup (AAB#): WG264034 Cal ID: HPMS14 - 11-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	53.1	ug/L	0.512	6.11	20	
1,1-Dichloroethene	CCC	50.0	58.0	ug/L	0.458	16.1	20	
1,2-Dichloropropane	CCC	50.0	51.5	ug/L	0.277	3.04	20	
Ethylbenzene	CCC	50.0	54.5	ug/L	0.553	9.08	20	
Toluene	CCC	50.0	52.2	ug/L	1.50	4.42	20	
Vinyl Chloride	CCC	50.0	52.7	ug/L	0.140	5.30	20	
Bromoform	SPCC	50.0	46.7	ug/L	0.154	6.58	40	
Chlorobenzene	SPCC	50.0	50.7	ug/L	0.966	1.43	40	
Chloromethane	SPCC	50.0	50.3	ug/L	0.208	0.517	40	
1,1-Dichloroethane	SPCC	50.0	53.4	ug/L	0.551	6.76	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	48.2	ug/L	0.429	3.69	40	
Acetone		50.0	43.4	ug/L	0.0444	13.2	40	
Benzene		50.0	50.4	ug/L	1.07	0.785	40	
Bromobenzene		50.0	50.3	ug/L	0.704	0.614	40	
Bromochloromethane		50.0	48.8	ug/L	0.134	2.47	40	
Bromodichloromethane		50.0	55.2	ug/L	0.359	10.5	40	
Bromomethane		50.0	62.1	ug/L	0.191	24.3	40	
2-Butanone		50.0	42.2	ug/L	0.0603	15.5	40	
n-Butylbenzene		50.0	56.0	ug/L	3.14	11.9	40	
sec-Butylbenzene		50.0	56.3	ug/L	3.73	12.6	40	
tert-Butylbenzene		50.0	55.3	ug/L	0.595	10.5	40	
Carbon Disulfide		50.0	58.0	ug/L	0.874	16.1	40	
Carbon Tetrachloride		50.0	58.9	ug/L	0.429	17.7	40	
Dibromochloromethane		50.0	48.3	ug/L	0.286	3.47	40	
Chloroethane		50.0	52.6	ug/L	0.186	5.16	40	
2-Chloroethyl Vinyl Ether		50.0	37.4	ug/L	0.0671	25.3	40	
2-Chlorotoluene		50.0	61.7	ug/L	2.93	23.3	40	
4-Chlorotoluene		50.0	43.8	ug/L	2.14	12.4	40	
1,2-Dibromo-3-Chloropropane		50.0	42.0	ug/L	0.0777	16.0	40	
1,2-Dibromoethane		50.0	50.2	ug/L	0.211	0.424	40	
Dibromomethane		50.0	51.3	ug/L	0.121	2.67	40	
1,2-Dichlorobenzene		50.0	48.9	ug/L	1.32	2.28	40	
1,3-Dichlorobenzene		50.0	50.8	ug/L	1.54	1.66	40	
1,4-Dichlorobenzene		50.0	49.4	ug/L	1.54	1.25	40	
Dichlorodifluoromethane		50.0	55.4	ug/L	0.332	10.9	40	
1,2-Dichloroethane		50.0	50.9	ug/L	0.360	1.72	40	
cis-1,2-Dichloroethene		50.0	52.9	ug/L	0.285	5.74	40	
trans-1,2-Dichloroethene		50.0	55.2	ug/L	0.274	10.5	40	
1,3-Dichloropropane		50.0	48.6	ug/L	0.400	2.88	40	
2,2-Dichloropropane		50.0	62.9	ug/L	0.488	25.8	40	
cis-1,3-Dichloropropene		50.0	55.4	ug/L	0.403	10.7	40	
trans-1,3-Dichloropropene		50.0	55.6	ug/L	0.462	11.2	40	

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CONTINUING CALIBRATION VERIFICATION (CCV)

00089738

Login Number: L08020523 Run Date: 02/26/2008 Sample ID: WG264032-02
Instrument ID: HPMS14 Run Time: 08:48 Method: 8260B
File ID: 14M03802 Analyst: CMS QC Key: STD
Workgroup (AAB#): WG264034 Cal ID: HPMS14 - 11-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	55.7	ug/L	0.404	11.5	40	
2-Hexanone		50.0	47.5	ug/L	0.125	4.91	40	
Hexachlorobutadiene		50.0	52.1	ug/L	0.502	4.17	40	
Isopropylbenzene		50.0	55.8	ug/L	1.74	11.6	40	
p-Isopropyltoluene		50.0	57.2	ug/L	3.20	14.4	40	
4-Methyl-2-Pentanone		50.0	47.1	ug/L	0.0524	5.83	40	
Methylene Chloride		50.0	49.7	ug/L	0.248	0.530	40	
Naphthalene		50.0	40.3	ug/L	1.52	19.5	40	
n-Propylbenzene		50.0	56.3	ug/L	4.11	12.5	40	
Styrene		50.0	55.5	ug/L	1.08	10.9	40	
1,1,1,2-Tetrachloroethane		50.0	55.3	ug/L	0.349	10.6	40	
Tetrachloroethene		50.0	55.5	ug/L	0.374	11.0	40	
1,2,3-Trichlorobenzene		50.0	40.8	ug/L	0.769	18.4	40	
1,2,4-Trichlorobenzene		50.0	44.4	ug/L	0.968	11.2	40	
1,1,1-Trichloroethane		50.0	56.6	ug/L	0.479	13.2	40	
1,1,2-Trichloroethane		50.0	48.0	ug/L	0.213	3.96	40	
Trichloroethene		50.0	55.0	ug/L	0.278	9.91	40	
Trichlorofluoromethane		50.0	59.4	ug/L	0.520	18.9	40	
1,2,3-Trichloropropane		50.0	47.7	ug/L	0.131	4.69	40	
1,2,4-Trimethylbenzene		50.0	53.7	ug/L	3.00	7.40	40	
1,3,5-Trimethylbenzene		50.0	56.1	ug/L	2.91	12.2	40	
Vinyl Acetate		50.0	53.9	ug/L	0.285	7.79	40	
o-Xylene		50.0	54.9	ug/L	0.669	9.76	40	
m-,p-Xylene		100	109	ug/L	0.683	8.91	40	
1,2-Dichloroethene		100	108	ug/L	0.280	8.10	40	
Xylenes		150	164	ug/L	0.676	9.19	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00089739

Login Number: L08020523 Run Date: 02/28/2008 Sample ID: WG264295-02
Instrument ID: HPMS14 Run Time: 11:11 Method: 8260B
File ID: 14M03854 Analyst: SMH QC Key: STD
Workgroup (AAB#): WG264296 Cal ID: HPMS14 - 11-FEB-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	52.1	ug/L	0.503	4.27	20	
1,1-Dichloroethene	CCC	50.0	56.3	ug/L	0.445	12.7	20	
Vinyl Chloride	CCC	50.0	49.4	ug/L	0.132	1.28	20	
1,2-Dichloropropane	CCC	50.0	50.9	ug/L	0.273	1.73	20	
Toluene	CCC	50.0	52.2	ug/L	1.50	4.39	20	
Ethylbenzene	CCC	50.0	54.3	ug/L	0.550	8.55	20	
Chlorobenzene	SPCC	50.0	50.3	ug/L	0.957	0.500	40	
Chloromethane	SPCC	50.0	45.4	ug/L	0.185	9.29	40	
1,1-Dichloroethane	SPCC	50.0	52.7	ug/L	0.544	5.38	40	
Bromoform	SPCC	50.0	44.2	ug/L	0.145	11.7	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	45.3	ug/L	0.404	9.30	40	
Benzene		50.0	50.1	ug/L	1.06	0.190	40	
Carbon Tetrachloride		50.0	58.1	ug/L	0.424	16.2	40	
1,2-Dichloroethane		50.0	48.7	ug/L	0.344	2.54	40	
2-Butanone		50.0	37.0	ug/L	0.0529	25.9	40	
Tetrachloroethene		50.0	55.2	ug/L	0.373	10.5	40	
Trichloroethene		50.0	55.2	ug/L	0.279	10.5	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: 1030814
Report generated 03/03/2008 15:46

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number: L08020523
Instrument ID: HPMS14
Workgroup (AAB#): WG263965

CCV Number: WG263964-02
CAL ID: HPMS14-11-FEB-08
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG263964-02	NA	NA	162517	296787	400038
Upper Limit	NA	NA	325034	593574	800076
Lower Limit	NA	NA	81259	148394	200019
L08020523-01	1.00	01	127839	237409	331052
WG263965-01	1.00	01	141650	266963	376753
WG263965-02	1.00	01	146498	279315	377116
WG263965-03	1.00	01	149101	280320	379583
WG263965-04	1.00	01	138601	264286	370022

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: 1032019
Report generated 03/03/2008 15:46

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number: L08020523
Instrument ID: HPMS14
Workgroup (AAB#): WG264034

CCV Number: WG264032-02
CAL ID: HPMS14-11-FEB-08
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG264032-02	NA	NA	146876	269541	363348
Upper Limit	NA	NA	293752	539082	726696
Lower Limit	NA	NA	73438	134771	181674
L08020523-01	10.0	DL01	117112	224032	318711
WG264034-01	1.00	01	125538	241617	342389
WG264034-02	1.00	01	135816	256039	347105
WG264034-03	1.00	01	127594	245008	344129
WG264034-04	1.00	01	108089	210562	298927
WG264034-05	1.00	01	127152	236549	319297
WG264034-06	1.00	01	130201	244162	331899

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: 1032019
Report generated 03/03/2008 15:46

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number: L08020523
Instrument ID: HPMS14
Workgroup (AAB#): WG264296

CCV Number: WG264295-02
CAL ID: HPMS14-11-FEB-08
Matrix: TCLP

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG264295-02	NA	NA	151064	278854	374131
Upper Limit	NA	NA	302128	557708	748262
Lower Limit	NA	NA	75532	139427	187066
L08020523-02	10.0	DL01	129889	192441	277026
WG264296-01	1.00	01	127005	241787	337390
WG264296-02	1.00	01	138663	264217	351955
WG264296-03	1.00	01	139734	263818	351699

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: 1032027**
Report generated **03/03/2008 15:46**

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number: L08020523
Instrument ID: HPMS14
Workgroup (AAB#): WG263965

CCV Number: WG263964-02
CAL ID: HPMS14-11-FEB-08
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG263964-02	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
L08020523-01	1.00	01	17.242	14.454	10.847
WG263965-01	1.00	01	17.242	14.454	10.847
WG263965-02	1.00	01	17.242	14.454	10.847
WG263965-03	1.00	01	17.242	14.454	10.847
WG263965-04	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

KEMRON FORMS - Modified 02/20/2007
Version 1.3 PDF File ID: 1032021
Report generated 03/03/2008 15:46

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number: L08020523 **CCV Number:** WG264032-02
Instrument ID: HPMS14 **CAL ID:** HPMS14-11-FEB-08
Workgroup (AAB#): WG264034 **Matrix:** WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG264032-02	NA	NA	17.25	14.45	10.85
Upper Limit	NA	NA	17.75	14.95	11.35
Lower Limit	NA	NA	16.75	13.95	10.35
L08020523-01	10.0	DL01	17.252	14.454	10.847
WG264034-01	1.00	01	17.252	14.454	10.847
WG264034-02	1.00	01	17.242	14.454	10.847
WG264034-03	1.00	01	17.252	14.454	10.847
WG264034-04	1.00	01	17.252	14.454	10.847
WG264034-05	1.00	01	17.242	14.454	10.847
WG264034-06	1.00	01	17.252	14.454	10.847

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: 1032021
Report generated 03/03/2008 15:46

KEMRON ENVIRONMENTAL SERVICES
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number:L08020523 CCV Number:WG264295-02
Instrument ID:HPMS14 CAL ID: HPMS14-11-FEB-08
Workgroup (AAB#):WG264296 Matrix:TCLP

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG264295-02	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
L08020523-02	10.0	DL01	17.242	14.454	10.847
WG264296-01	1.00	01	17.242	14.454	10.836
WG264296-02	1.00	01	17.242	14.454	10.847
WG264296-03	1.00	01	17.242	14.454	10.836

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: 1032029
Report generated 03/03/2008 15:46

2.2 Metals Data

2.2.1 Metals I C P Data

2.2.1.1 Summary Data

LABORATORY REPORT

00089749

L08020523

03/04/08 10:58

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
WASTE CHARACTERATON	L08020523-02	6010B	1	23-FEB-08

Report Number: **L08020523**
Report Date : **March 4, 2008**

00089750

Sample Number: **L08020523-02**
Client ID: **WASTE CHARACTERATON**
Matrix: **Leachate**
Workgroup Number: **WG264470**
Collect Date: **02/20/2008 11:25**
Sample Tag: **01**

PrePrep Method: **1311**
Prep Method: **3015**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **02/29/2008 07:45**
Cal Date: **03/01/2008 11:44**
Run Date: **03/01/2008 14:16**
File ID: **P2.030108.141637**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Silver, TCLP	7440-22-4		U	.1	.05	D011	5
Arsenic, TCLP	7440-38-2		U	1	.1	D004	5
Barium, TCLP	7440-39-3	0.728	J	5	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3	0.251		.2	.025	D007	5
Lead, TCLP	7439-92-1		U	1	.1	D008	5
Selenium, TCLP	7782-49-2		U	.8	.5	D010	1

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

2.2.1.2 QC Summary Data

Example 6010 Calculations
Perkin Elmer Optima 4300 DV

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

Example 6010 Calculations
Thermo Scientific IRIS Advantage

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

Microwave-2 Digestion Log

Analyst(s): VC
Date: 2/29/08 07:45
LCS: 5ml STD 24472
MS/MSD: 5ml STD 24472
Witness: //
HNO_3 Lot #: COA12816
HCl Lot #: COA12795
Digest Tube Lot #: COA12761
Earliest Sample Due Date: 3/3

Box: AC

Digestion Work Group: WG 264386

ME407 Revision # 10 Method 3015-Water
ME406 Revision # _____ Method 3051-Soil-Oil

Relinquished By: VC
Digest Received By: CL Date: 02-29-08

	KEMRON #	Initial Wt/Vol	Final Volume	Initial Weight	Final Weight	Comments	Due Date
1	PBW	50 mL	50 mL	20664 g	20662 g	02	
2	LCS	↓		204.00	204.00	03	
3	TBLK 2/27	5		21387	21386	WG 264233 14:00	
4	T02-0494-02			21356	21356		3/7
5	05-23 02			212.58	212.97	01	3/3
6	02MS			209.56	209.56	04	
7	02MD			207.20	207.20	05	
8	05-27 01			212.45	212.14		3/7
9	02			212.39	212.38		
10	05-46 01			213.46	213.46		3/4
11	05-55 01	↓	↓	211.87	211.00	WG 264124 07:00	3/4
12	TBLK 2/28			213.95	213.93	WG 264327 14:00	
13	T02-0555 02			212.21	212.20		3/7
14	03			209.56	209.56		
15	04			209.96	209.56		
16	05			209.74	209.73		
17	06			214.67	214.65		
18	06-20 01 #			210.38	210.89		3/6
19	02			213.56	213.54		
20	03			213.31	213.31		
21							
22							
23							
24				VC 2/29/08			
25							
26							
27							
28							
29							
30							

Comments: # Iwd 4

Primary Review: Vicki Collins 2/29/08 Secondary Review: 2/29/08

KEMRON ENVIRONMENTAL SERVICES

TCLP Non-Volatile

Analyst(s): RWC
Date: 02-27-08

Analyst/Date		Analyst/Date	
RWC 2-27-08		RWC 2-28-08	
Time On	Temp On °C	Time Off	Temp Off °C
1400	23	0600	23

Jug #	Sample #	Tests	Method	Fluid #	Matrix*	%Solid	Size Reduction Yes	Size Reduction No	Int. Wt. (g)	Fluid Vol. (mL)
D	02-49402	ME	1311	FL680	S	100	✓		100.01	2000
	02-52302				S/S			✓	100.02	
	02-527-01							✓	100.04	
	02							✓	100.08	
	02-55401				S			✓	100.00	
N/A	FBLK				N/A	N/A		✓	2000	
	02-50501			Filtered	W	<.5		✓	100	100
G 32	02-585-01	PAH PHL SN(SUD)	1312	SF1-265	S/S	100	✓		100.02	2000
G 30	03							✓	100.05	
G 26	05							✓	100.01	
G 25	07							✓	100.01	
G 19	09							✓	100.04	
G 19	11							✓	100.03	
N/A	FBLK				N/A	N/A		✓	2000	

RWC 2-27-08

*Matrix Code = (S-solid) (SS-sand, soil or sludge) (P-paint) (O-organic) (W-water or waste)
Agitator speed is 30 ± 2 rpm unless otherwise noted.

Comments: Filtered SX processed @0700 - RWC 2-27-08

Peer Review By: _____ Supervisor Review: _____

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 030108H.CSV
Analyst1: KHR Analyst2: JLK
Method: 6010B SOP: ME600E Rev: 8
Maintenance Log ID: 23122

Calibration Std: STD24822 ICV/CCV Std: STD24890 Post Spike: STD24869
ICSA: STD24723 ICSAB: STD24798

Workgroups: 264469, 264470, 264471, 264472, 264473, 264474

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	P2.030108.112026	WG264554-01	Calibration Point		1		03/01/08 11:20
2	P2.030108.112650	WG264554-02	Calibration Point		1		03/01/08 11:26
3	P2.030108.113316	WG264554-03	Calibration Point		1		03/01/08 11:33
4	P2.030108.113939	WG264554-04	Calibration Point		1		03/01/08 11:39
5	P2.030108.114458	WG264554-05	Calibration Point		1		03/01/08 11:44
6	P2.030108.115027	WG264554-06	Initial Calibration Verification		1		03/01/08 11:50
7	P2.030108.115550	WG264554-07	Initial Calib Blank		1		03/01/08 11:55
8	P2.030108.120208	WG264554-08	Interference Check		1		03/01/08 12:02
9	P2.030108.121305	WG264554-09	Interference Check		1		03/01/08 12:13
10	P2.030108.121826	WG264554-10	Interference Check		1		03/01/08 12:18
11	P2.030108.122524	WG264554-11	CCV		1		03/01/08 12:25
12	P2.030108.123044	WG264554-12	CCB		1		03/01/08 12:30
13	P2.030108.123702	WG264424-01	Method/Prep Blank	50/50	1		03/01/08 12:37
14	P2.030108.124319	WG264424-02	Laboratory Control S	50/50	1		03/01/08 12:43
15	P2.030108.124836	WG264424-03	Laboratory Control S	50/50	1		03/01/08 12:48
16	P2.030108.125400	WG264227-01	Fluid Blank		1		03/01/08 12:54
17	P2.030108.130025	L08010461-01	SWMU23IDW-SOIL	5/50	1	WG261296-01	03/01/08 13:00
18	P2.030108.130547	WG264469-01	Post Digestion Spike		1	L08010461-01	03/01/08 13:05
19	P2.030108.131116	WG264469-02	Serial Dilution		5	L08010461-01	03/01/08 13:11
20	P2.030108.131734	WG264554-13	Interference Check		1		03/01/08 13:17
21	P2.030108.132255	WG264554-14	Interference Check		1		03/01/08 13:22
22	P2.030108.132818	WG264554-15	CCV		1		03/01/08 13:28
23	P2.030108.133339	WG264554-16	CCB		1		03/01/08 13:33
24	P2.030108.133954	WG264386-02	Method/Prep Blank	50/50	1		03/01/08 13:39
25	P2.030108.134703	WG264554-17	CCV		1		03/01/08 13:47
26	P2.030108.135221	WG264554-18	CCB		1		03/01/08 13:52
27	P2.030108.135837	WG264386-03	Laboratory Control S	50/50	1		03/01/08 13:58
28	P2.030108.140359	WG264233-01	Fluid Blank		1		03/01/08 14:03
29	P2.030108.141015	L08020494-02	GM080002	5/50	1		03/01/08 14:10
30	P2.030108.141637	WG264386-01	Reference Sample		1		03/01/08 14:16
31	P2.030108.142301	WG264386-04	Matrix Spike	5/50	1	L08020523-02	03/01/08 14:23
32	P2.030108.142819	WG264386-05	Matrix Spike Duplica	5/50	1	L08020523-02	03/01/08 14:28
33	P2.030108.143341	L08020527-01	SP-27	5/50	1	WG264260-01	03/01/08 14:33
34	P2.030108.144005	WG264470-01	Post Digestion Spike		1	L08020527-01	03/01/08 14:40
35	P2.030108.144523	WG264470-02	Serial Dilution		5	L08020527-01	03/01/08 14:45
36	P2.030108.145137	WG264554-19	CCV		1		03/01/08 14:51
37	P2.030108.145701	WG264554-20	CCB		1		03/01/08 14:57

Page: 1

Approved: March 03, 2008

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 030108H.CSV
Analyst1: KHR Analyst2: JLK
Method: 6010B SOP: ME600E Rev: 8
Maintenance Log ID: 23122

Calibration Std: STD24822 ICV/CCV Std: STD24890 Post Spike: STD24869
ICSA: STD24723 ICSAB: STD24798

Workgroups: 264469, 264470, 264471, 264472, 264473, 264474

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	P2.030108.150316	L08020527-02	SP-28	5/50	1		03/01/08 15:03
39	P2.030108.150937	L08020554-01	ACID SUMP SLUDGE	5/50	1		03/01/08 15:09
40	P2.030108.151556	L08020505-01	GT080001	5/50	1		03/01/08 15:15
41	P2.030108.152210	WG264327-01	Fluid Blank		1		03/01/08 15:22
42	P2.030108.152831	L08020555-02	GM080002	5/50	1	WG264379-01	03/01/08 15:28
43	P2.030108.153453	L08020555-03	GM080003	5/50	1	WG264347-01	03/01/08 15:34
44	P2.030108.154108	L08020555-04	GM080004	5/50	1		03/01/08 15:41
45	P2.030108.154730	L08020555-05	GM080005	5/50	1		03/01/08 15:47
46	P2.030108.155354	L08020555-06	GM080006	5/50	1		03/01/08 15:53
47	P2.030108.160011	L08020620-01	AV-OU10-SS-038I-4.5-5.5	5/50	1		03/01/08 16:00
48	P2.030108.160631	WG264554-21	CCV		1		03/01/08 16:06
49	P2.030108.161152	WG264554-22	CCB		1		03/01/08 16:11
50	P2.030108.161808	L08020620-02	AV-OU10-SS-038II-4.5-5.5	5/50	1		03/01/08 16:18
51	P2.030108.162431	L08020620-03	AV-OU10-SS-038III-4.5-5.	5/50	1		03/01/08 16:24
52	P2.030108.163055	WG264398-02	Method/Prep Blank	1/50	1		03/01/08 16:30
53	P2.030108.163707	WG264398-03	Laboratory Control S	1/50	1		03/01/08 16:37
54	P2.030108.164229	L08020574-23	16166-C0003	1.35/50	1		03/01/08 16:42
55	P2.030108.164754	WG264398-01	Reference Sample		1		03/01/08 16:47
56	P2.030108.165311	WG264398-04	Matrix Spike	1.35/50	1	L08020574-24	03/01/08 16:53
57	P2.030108.165839	WG264398-05	Matrix Spike Duplica	1.35/50	1	L08020574-24	03/01/08 16:58
58	P2.030108.170405	L08020574-27	16166-C0005	1.37/50	1		03/01/08 17:04
59	P2.030108.170922	WG264471-01	Post Digestion Spike		1	L08020574-27	03/01/08 17:09
60	P2.030108.171445	WG264554-23	CCV		1		03/01/08 17:14
61	P2.030108.172006	WG264554-24	CCB		1		03/01/08 17:20
62	P2.030108.172621	WG264471-02	Serial Dilution		5	L08020574-27	03/01/08 17:26
63	P2.030108.173145	L08020574-28	16166-C0006	1.35/50	1		03/01/08 17:31
64	P2.030108.173711	L08020574-29	16166-C0007	1.4/50	1		03/01/08 17:37
65	P2.030108.174230	L08020574-30	16166-C0008	1.35/50	1		03/01/08 17:42
66	P2.030108.174800	L08020574-31	16166-G0001	1.37/50	1		03/01/08 17:48
67	P2.030108.175324	L08020574-32	16166-G0002	1.33/50	1		03/01/08 17:53
68	P2.030108.175842	L08020574-33	16166-G0003	1.35/50	1		03/01/08 17:58
69	P2.030108.180359	L08020574-34	16166-G0004	1.36/50	1		03/01/08 18:03
70	P2.030108.180924	L08020574-36	16167-C0001	1.35/50	1		03/01/08 18:09
71	P2.030108.181442	L08020574-37	16167-C0002	1.37/50	1		03/01/08 18:14
72	P2.030108.182008	WG264554-25	CCV		1		03/01/08 18:20
73	P2.030108.182529	WG264554-26	CCB		1		03/01/08 18:25
74	P2.030108.183146	L08020574-41	16167-C0004	1.35/50	1	WG264443-01	03/01/08 18:31

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Approved: March 03, 2008

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KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 030108H.CSV
Analyst1: KHR Analyst2: JLK
Method: 6010B SOP: ME600E Rev: 8
Maintenance Log ID: 23122

Calibration Std: STD24822 ICV/CCV Std: STD24890 Post Spike: STD24869
ICSA: STD24723 ICSAB: STD24798

Workgroups: 264469, 264470, 264471, 264472, 264473, 264474

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
75	P2.030108.183715	L08020574-42	16167-C0005	1.35/50	1		03/01/08 18:37
76	P2.030108.184240	L08020574-43	16167-C0006	1.34/50	1		03/01/08 18:42
77	P2.030108.184759	L08020574-47	16167-C0008	1.35/50	1		03/01/08 18:47
78	P2.030108.185328	L08020574-48	16167-C0009	1.37/50	1		03/01/08 18:53
79	P2.030108.185900	L08020577-01	16183-C0004	1.38/50	1		03/01/08 18:59
80	P2.030108.190419	L08020577-02	16183-C0005	1.33/50	1		03/01/08 19:04
81	P2.030108.190945	L08020577-03	16183-C0006	1.35/50	1		03/01/08 19:09
82	P2.030108.191510	WG264405-02	Method/Prep Blank	1/50	1		03/01/08 19:15
83	P2.030108.192130	WG264405-03	Laboratory Control S	1/50	1		03/01/08 19:21
84	P2.030108.192648	WG264554-27	CCV		1		03/01/08 19:26
85	P2.030108.193209	WG264554-28	CCB		1		03/01/08 19:32
86	P2.030108.193824	WG264405-01	Reference Sample		1		03/01/08 19:38
87	P2.030108.194354	WG264405-04	Matrix Spike	1.36/50	1	L08020574-38	03/01/08 19:43
88	P2.030108.194921	WG264405-05	Matrix Spike Duplica	1.36/50	1	L08020574-38	03/01/08 19:49
89	P2.030108.195445	L08020577-04	16183-C0007	1.32/50	1		03/01/08 19:54
90	P2.030108.200012	WG264472-01	Post Digestion Spike		1	L08020577-04	03/01/08 20:00
91	P2.030108.200538	WG264472-02	Serial Dilution		5	L08020577-04	03/01/08 20:05
92	P2.030108.201055	L08020577-05	16183-C0008	1.49/50	1		03/01/08 20:10
93	P2.030108.201622	L08020577-06	16183-C0009	1.43/50	1		03/01/08 20:16
94	P2.030108.202148	L08020577-07	16183-C0010	1.48/50	1		03/01/08 20:21
95	P2.030108.202715	L08020577-08	16183-C0011	1.35/50	1		03/01/08 20:27
96	P2.030108.203239	WG264554-29	CCV		1		03/01/08 20:32
97	P2.030108.203800	WG264554-30	CCB		1		03/01/08 20:38
98	P2.030108.204416	L08020577-09	16183-C0012	1.31/50	1		03/01/08 20:44
99	P2.030108.204940	L08020577-10	16183-C0013	1.32/50	1		03/01/08 20:49
100	P2.030108.205505	L08020577-11	16183-C0014	1.3/50	1		03/01/08 20:55
101	P2.030108.210024	L08020577-12	16184-C0001	1.32/50	1		03/01/08 21:00
102	P2.030108.210543	L08020577-13	16184-C0002	1.43/50	1		03/01/08 21:05
103	P2.030108.211109	L08020577-14	16184-C0003	1.35/50	1		03/01/08 21:11
104	P2.030108.211636	L08020577-15	16184-C0004	1.43/50	1		03/01/08 21:16
105	P2.030108.212156	L08020577-16	16184-C0005	1.33/50	1		03/01/08 21:21
106	P2.030108.212721	L08020577-17	16184-C0006	1.43/50	1		03/01/08 21:27
107	P2.030108.213246	L08020577-18	16184-C0007	1.36/50	1		03/01/08 21:32
108	P2.030108.213806	WG264554-31	CCV		1		03/01/08 21:38
109	P2.030108.214329	WG264554-32	CCB		1		03/01/08 21:43
110	P2.030108.214944	L08020577-19	16184-C0008	1.32/50	1		03/01/08 21:49
111	P2.030108.215508	L08020577-20	16184-C0009	1.39/50	1	WG264446-01	03/01/08 21:55

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KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 030108H.CSV
Analyst1: KHR Analyst2: JLK
Method: 6010B SOP: ME600E Rev: 8
Maintenance Log ID: 23122

Calibration Std: STD24822 ICV/CCV Std: STD24890 Post Spike: STD24869
ICSA: STD24723 ICSAB: STD24798

Workgroups: 264469, 264470, 264471, 264472, 264473, 264474

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
112	P2.030108.220032	L08020577-21	16184-C0010	1.4/50	1		03/01/08 22:00
113	P2.030108.220558	L08020577-22	16184-C0011	1.34/50	1		03/01/08 22:05
114	P2.030108.221117	WG264411-02	Method/Prep Blank	1/50	1		03/01/08 22:11
115	P2.030108.221737	WG264411-03	Laboratory Control S	1/50	1		03/01/08 22:17
116	P2.030108.222302	WG264411-01	Reference Sample		1		03/01/08 22:23
117	P2.030108.222820	WG264411-04	Matrix Spike	1.35/50	1	L08020574-44	03/01/08 22:28
118	P2.030108.223351	WG264411-05	Matrix Spike Duplica	1.35/50	1	L08020574-44	03/01/08 22:33
119	P2.030108.223924	L08020577-23	16185-C0001		1		03/01/08 22:39
120	P2.030108.224443	WG264554-33	CCV		1		03/01/08 22:44
121	P2.030108.225006	WG264554-34	CCB		1		03/01/08 22:50
122	P2.030108.225626	WG264473-01	Post Digestion Spike		1	L08020577-23	03/01/08 22:56
123	P2.030108.230146	WG264473-02	Serial Dilution		5	L08020577-23	03/01/08 23:01
124	P2.030108.230713	L08020577-24	16185-C0002		1		03/01/08 23:07
125	P2.030108.231240	L08020577-25	16185-C0003		1		03/01/08 23:12
126	P2.030108.231759	L08020577-26	16185-C0004		1		03/01/08 23:17
127	P2.030108.232326	L08020577-27	16185-C0005		1		03/01/08 23:23
128	P2.030108.232852	L08020577-28	16185-C0006		1		03/01/08 23:28
129	P2.030108.233411	L08020577-29	16185-C0007		1		03/01/08 23:34
130	P2.030108.233944	L08020577-30	16185-C0008		1		03/01/08 23:39
131	P2.030108.234515	L08020577-31	16185-C0009		1		03/01/08 23:45
132	P2.030108.235041	WG264554-35	CCV		1		03/01/08 23:50
133	P2.030108.235559	WG264554-36	CCB		1		03/01/08 23:55
134	P2.030208.000219	L08020577-32	16185-C0010		1		03/02/08 00:02
135	P2.030208.000746	L08020577-33	16185-C0011		1		03/02/08 00:07
136	P2.030208.001305	L08020577-35	16187-C0001		1		03/02/08 00:13
137	P2.030208.001825	L08020577-36	16187-C0002		1		03/02/08 00:18
138	P2.030208.002352	L08020577-37	16187-C0003		1		03/02/08 00:23
139	P2.030208.002912	L08020577-38	16187-C0004		1		03/02/08 00:29
140	P2.030208.003437	L08020577-39	16187-C0005		1		03/02/08 00:34
141	P2.030208.004004	L08020577-40	16187-C0006		1		03/02/08 00:40
142	P2.030208.004524	L08020577-41	16187-C0007		1	WG264449-01	03/02/08 00:45
143	P2.030208.005056	L08020577-42	16187-C0008		1		03/02/08 00:50
144	P2.030208.005626	WG264554-37	CCV		1		03/02/08 00:56
145	P2.030208.010143	WG264554-38	CCB		1		03/02/08 01:01
146	P2.030208.010804	WG264458-02	Method/Prep Blank	1/50	1		03/02/08 01:08
147	P2.030208.011424	WG264458-03	Laboratory Control S	1/50	1		03/02/08 01:14
148	P2.030208.011943	L08020576-12	16174-C0005	1.35/50	1		03/02/08 01:19

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Approved: March 03, 2008

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: PE-ICP2 Dataset: 030108H.CSV
Analyst1: KHR Analyst2: JLK
Method: 6010B SOP: ME600E Rev: 8
Maintenance Log ID: 23122

Calibration Std: STD24822 ICV/CCV Std: STD24890 Post Spike: STD24869
ICSA: STD24723 ICSAB: STD24798

Workgroups: 264469, 264470, 264471, 264472, 264473, 264474

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
149	P2.030208.012510	L08020576-13	16174-C0006	1.35/50	1		03/02/08 01:25
150	P2.030208.013040	L08020576-14	16174-C0007	1.31/50	1		03/02/08 01:30
151	P2.030208.013605	L08020576-15	16174-C0008	1.35/50	1		03/02/08 01:36
152	P2.030208.014126	L08020576-16	16174-C0009	1.35/50	1	WG264494-01	03/02/08 01:41
153	P2.030208.014650	L08020576-17	16174-C0010	1.37/50	1		03/02/08 01:46
154	P2.030208.015210	L08020576-18	16174-C0011	1.34/50	1		03/02/08 01:52
155	P2.030208.015730	L08020576-19	16174-C0012	1.33/50	1		03/02/08 01:57
156	P2.030208.020254	WG264554-39	CCV		1		03/02/08 02:02
157	P2.030208.020814	WG264554-40	CCB		1		03/02/08 02:08
158	P2.030208.021427	L08020576-20	16174-C0013	1.3/50	1		03/02/08 02:14
159	P2.030208.021947	L08020576-22	16176-C0001	1.32/50	1		03/02/08 02:19
160	P2.030208.022511	L08020576-23	16176-C0002	1.33/50	1		03/02/08 02:25
161	P2.030208.023031	L08020576-24	16176-C0003	1.3/50	1		03/02/08 02:30
162	P2.030208.023551	L08020576-25	16176-C0004	1.35/50	1		03/02/08 02:35
163	P2.030208.024115	WG264458-01	Reference Sample		1		03/02/08 02:41
164	P2.030208.024636	WG264458-04	Matrix Spike	1.35/50	1	L08020576-26	03/02/08 02:46
165	P2.030208.025157	WG264458-05	Matrix Spike Duplica	1.35/50	1	L08020576-26	03/02/08 02:51
166	P2.030208.025719	L08020576-29	16176-C0006	1.35/50	1		03/02/08 02:57
167	P2.030208.030243	WG264474-01	Post Digestion Spike		1	L08020576-29	03/02/08 03:02
168	P2.030208.030807	WG264554-41	CCV		1		03/02/08 03:08
169	P2.030208.031325	WG264554-42	CCB		1		03/02/08 03:13
170	P2.030208.031938	WG264474-02	Serial Dilution		5	L08020576-29	03/02/08 03:19
171	P2.030208.032458	L08020576-30	16176-C0007	1.37/50	1		03/02/08 03:24
172	P2.030208.033023	L08020576-31	16176-C0008	1.36/50	1		03/02/08 03:30
173	P2.030208.033547	L08020576-32	16176-C0009	1.32/50	1		03/02/08 03:35
174	P2.030208.034109	L08020576-33	16176-G0001	1.32/50	1		03/02/08 03:41
175	P2.030208.034630	L08020576-34	16176-G0002	1.3/50	1		03/02/08 03:46
176	P2.030208.035151	WG264554-43	CCV		1		03/02/08 03:51
177	P2.030208.035708	WG264554-44	CCB		1		03/02/08 03:57

Comments

Seq.	Rerun	Dil.	Reason	Analytes
8			ICSA not loaded; reanalyzed.	

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Approved: March 03, 2008

Maren Berry

KEMRON Environmental Services
Data Checklist

Date: 01-MAR-2008
Analyst: KHR
Analyst: JLK
Method: 6010
Instrument: PE-ICP2
Curve Workgroup: 264554
Runlog ID: 20952
Analytical Workgroups: 264469, 264470, 264471, 264472, 264473, 264474

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	0461, 0494, 0523, 0527, 0505, 0555, 0620,
	0574, 0577, 0576
Client Forms	X
Level X	
Level 3	0461, 0523, 0527, 0574, 0577, 0576
Level 4	0620
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	SLP
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
03-MAR-2008
Esheri L. Babcock

Secondary Reviewer:
03-MAR-2008
Maren Berry

Generated: MAR-03-2008 14:58:29

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00089762

Analytical Method: 6010B AAB#: WG264470

Login Number: L08020523

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
WASTE CHARACTERATON	02/20/08	02/23/08	02/29/08	180	8.85	03/01/08	180	1.27	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 1031758
Report generated 03/03/2008 13:26

METHOD BLANK SUMMARY

Login Number:	L08020523	Work Group:	WG264470
Blank File ID:	P2.030108.133954	Blank Sample ID:	WG264386-02
Prep Date:	02/29/08 07:45	Instrument ID:	PE-ICP2
Analyzed Date:	03/01/08 13:39	Method:	6010B
Analyst:	KHR		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG264386-03	P2.030108.135837	03/01/08 13:58	01
WASTE CHARACTERATON	L08020523-02	P2.030108.141637	03/01/08 14:16	01

KEMRON Environmental Services

METHOD BLANK REPORT

00089764

Login Number: L08020523 Prep Date: 02/29/08 07:45 Sample ID: WG264386-02
Instrument ID: PE-ICP2 Run Date: 03/01/08 13:39 Prep Method: 3015
File ID: P2.030108.133954 Analyst: KHR Method: 6010B
Workgroup (AAB#): WG264470 Matrix: Leachate Units: mg/L
Contract #: DACA56-94-D-0020 Cal ID: PE-ICP-01-MAR-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Silver, TCLP	0.0500	0.100	0.0500	1	U
Arsenic, TCLP	0.100	1.00	0.100	1	U
Barium, TCLP	0.0250	5.00	0.0250	1	U
Cadmium, TCLP	0.0250	0.100	0.0250	1	U
Chromium, TCLP	0.0250	0.200	0.0250	1	U
Lead, TCLP	0.100	1.00	0.100	1	U
Selenium, TCLP	0.500	0.800	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: 1031760
Report generated 03/03/2008 13:26

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00089765

Login Number: L08020523 Run Date: 03/01/2008 Sample ID: WG264386-03
Instrument ID: PE-ICP2 Run Time: 13:58 Prep Method: 3015
File ID: P2.030108.135837 Analyst: KHR Method: 6010B
Workgroup (AAB#): WG264470 Matrix: Leachate Units: mg/L
QC Key: STD Lot#: MI0058-81 Cal ID: PE-ICP-01-MAR-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Silver, TCLP	0.200	0.192	96.1	80 - 120	
Arsenic, TCLP	0.200	0.182	91.2	80 - 120	
Barium, TCLP	0.500	0.503	101	80 - 120	
Cadmium, TCLP	0.0250	0.0236	94.5	80 - 120	
Chromium, TCLP	0.250	0.249	99.4	80 - 120	
Lead, TCLP	0.250	0.258	103	80 - 120	
Selenium, TCLP	0.200	0.183	91.7	80 - 120	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 1031761
Report generated 03/03/2008 13:26

KEMRON Environmental Services

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00089766

Loginnum:L08020523 Cal ID: PE-ICP2- Worknum:WG264470
Instrument ID:PE-ICP2 Contract #:DACA56-94-D-0020 Method:6010B
Parent ID:WG264386-01 File ID:P2.030108.141637 Dil:1 Matrix:TCLP
Sample ID:WG264386-04 MS File ID:P2.030108.142301 Dil:1 Units:mg/L
Sample ID:WG264386-05 MSD File ID:P2.030108.142819 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Arsenic, TCLP	ND	2.00	1.83	91.5	2.00	1.85	92.4	0.981	80 - 120	20	
Barium, TCLP	0.728	5.00	5.83	102	5.00	5.72	99.7	2.03	80 - 120	20	
Cadmium, TCLP	ND	0.250	0.238	95.0	0.250	0.238	95.2	0.165	80 - 120	20	
Chromium, TCLP	0.251	2.50	2.81	102	2.50	2.76	100	1.61	80 - 120	20	
Lead, TCLP	ND	2.50	2.57	103	2.50	2.58	103	0.637	80 - 120	20	
Selenium, TCLP	ND	2.00	1.96	98.0	2.00	1.89	94.3	3.89	80 - 120	20	
Silver, TCLP	ND	2.00	1.94	96.9	2.00	1.92	96.1	0.774	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 09/25/2007 (wg_ms_msd_drywt)

Version 1.5 PDF File ID:1031762
Report generated 03/03/2008 13:26

KEMRON ENVIRONMENTAL SERVICES
SERIAL DILUTION REPORT

Sample Login ID:L08020523 Worknum:WG264470
Instrument ID:PE-ICP2 Method:6010B
Sample ID:L08020527-01 File ID:P2.030108.143341 Dil:1 Units:mg/L
Serial Dilution ID:WG264470-02 File ID:P2.030108.144523 Dil:5

Analyte	Sample	C	Serial Dilution	C	% Difference	Q
Arsenic	ND	U	ND	U		
Barium	0.0766	F	0.0778	F	1.57	
Cadmium	0	U	ND	U		
Chromium	0	U	0	U		
Lead	0	U	0	U		
Selenium	ND	U	ND	U		
Silver	0	U	0	U		

U = Result is below MDL
F = Result is between MDL and RL
X = Result is greater than RL and less than 50 times the MDL
E = %D exceeds control limit of 10% and initial
sample result is greater than or equal to 50 times the MDL

KEMRON FORMS - Modified 02/14/2006
Version 1.3 PDF File ID: 1031756
Report generated 03/03/2008 13:26

KEMRON ENVIRONMENTAL SERVICES
POST SPIKE REPORT

Sample Login ID: L08020523 **Worknum:** WG264470
Instrument ID: PE-ICP2 **Method:** 6010B
Post Spike ID: WG264470-01 **File ID:** P2.030108.144005 **Dil:** 1 **Units:** mg/L
Sample ID: L08020527-01 **File ID:** P2.030108.143341 **Dil:** 1 **Matrix:** Leachate

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ARSENIC	0.186		0	U	.2	93.0	75 - 125	
BARIUM	0.576		0.0766	F	.5	101.4	75 - 125	
CADMIUM	0.0244		0	U	.025	97.5	75 - 125	
CHROMIUM	0.260		0	U	.25	103.9	75 - 125	
LEAD	0.268		0	U	.25	107.4	75 - 125	
SELENIUM	0.192		0	U	.2	96.1	75 - 125	
SILVER	0.198		0	U	.2	98.9	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

KEMRON FORMS - Modified 04/20/2007 - POST_SPIKE
Version 2.0 PDF File ID: 1031757
Report generated 03/03/2008 13:26

KEMRON ENVIRONMENTAL SERVICES
Initial Calibration Summary

Login:	**L08020523**	Workgroup (AAB#):	**WG264470**
Analytical Method:	**6010B**	Instrument ID:	**PE-ICP2**
ICAL Worknum:	**WG264554**	Initial Calibration Date:	**01-MAR-2008 11:44**

	WG264554-01		WG264554-02		WG264554-03		WG264554-04		WG264554-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ARSENIC	0	-1.889653	NA	NA	.008	7.468434	.4	341.2691	.8	680.6559	.999999	
BARIUM	0	47.50627	.01	611.5022	.02	1460.819	1	81261.09	2	164055.4	.999991	
CADMIUM	0	49.15439	.0005	17.25895	.001	38.78629	.05	1937.197	.1	3900.526	.999995	
CHROMIUM	0	88.89973	.005	115.9749	.01	281.5910	.5	16087.26	1	32768.48	.999964	
LEAD	0	33.59257	.005	11.60923	.01	24.44466	.5	1557.118	1	3105.622	.999997	
SELENIUM	0	14.74198	NA	NA	.008	1.565741	.4	181.8688	.8	367.7882	.999979	
SILVER	0	-1096.146	.004	398.0427	.008	824.0913	.4	38093.60	.8	77523.99	.999963	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

KEMRON FORMS - Modified 1/24/2008
Version 2.0 - PDF File ID:1031765
Report generated: 03-MAR-2008 13:26

KEMRON Environmental Services
INITIAL CALIBRATION BLANK (ICB)

Login Number: L08020523 Run Date: 03/01/2008 Sample ID: WG264554-07
Instrument ID: PE-ICP2 Run Time: 11:55 Method: 6010
File ID: P2.030108.115550 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG264470 Cal ID: PE-ICP2 - 01-MAR-08
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
ARSENIC	.01	.1	.0019	1	U
BARIUM	.0025	.5	.00277	1	F
CADMIUM	.0025	.01	.000275	1	U
CHROMIUM	.0025	.02	.00185	1	U
LEAD	.01	.1	.00146	1	U
SELENIUM	.05	.08	.0014	1	U
SILVER	.005	.01	.00271	1	U

KEMRON FORMS - Modified 10/02/2007
Version 2.0 PDF File ID: 1031767
Report generated 03/03/2008 13:26

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00089771

Login Number: L08020523 Run Date: 03/01/2008 Sample ID: WG264554-12
Instrument ID: PE-ICP2 Run Time: 12:30 Method: 6010B
File ID: P2.030108.123044 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG264470 Cal ID: PE-ICP - 01-MAR-08
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Silver	0.00500	0.0100	0.000587	1	U
Arsenic	0.0100	0.100	0.00149	1	U
Barium	0.00250	0.500	0.000165	1	U
Cadmium	0.00250	0.0100	0.0000278	1	U
Chromium	0.00250	0.0200	0.000516	1	U
Lead	0.0100	0.100	-0.000141	1	U
Selenium	0.0500	0.0800	0.000414	1	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: 1031770
Report generated 03/03/2008 13:26

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00089772

Login Number: L08020523 Run Date: 03/01/2008 Sample ID: WG264554-16
Instrument ID: PE-ICP2 Run Time: 13:33 Method: 6010B
File ID: P2.030108.133339 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG264470 Cal ID: PE-ICP - 01-MAR-08
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Silver	0.00500	0.0100	0.000801	1	U
Arsenic	0.0100	0.100	0.0000351	1	U
Barium	0.00250	0.500	0.000146	1	U
Cadmium	0.00250	0.0100	-0.0000571	1	U
Chromium	0.00250	0.0200	0.000267	1	U
Lead	0.0100	0.100	-0.000885	1	U
Selenium	0.0500	0.0800	0.000476	1	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: 1031770
Report generated 03/03/2008 13:26

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00089773

Login Number: L08020523 Run Date: 03/01/2008 Sample ID: WG264554-18
Instrument ID: PE-ICP2 Run Time: 13:52 Method: 6010B
File ID: P2.030108.135221 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG264470 Cal ID: PE-ICP - 01-MAR-08
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Silver	0.00500	0.0100	0.00135	1	U
Arsenic	0.0100	0.100	-0.00354	1	U
Barium	0.00250	0.500	0.0000757	1	U
Cadmium	0.00250	0.0100	-0.00000753	1	U
Chromium	0.00250	0.0200	0.000653	1	U
Lead	0.0100	0.100	-0.0000905	1	U
Selenium	0.0500	0.0800	0.00209	1	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: 1031770
Report generated 03/03/2008 13:26

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00089774

Login Number: L08020523 Run Date: 03/01/2008 Sample ID: WG264554-20
Instrument ID: PE-ICP2 Run Time: 14:57 Method: 6010B
File ID: P2.030108.145701 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG264470 Cal ID: PE-ICP - 01-MAR-08
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Silver	0.00500	0.0100	0.00209	1	U
Arsenic	0.0100	0.100	-0.00232	1	U
Barium	0.00250	0.500	-0.00000720	1	U
Cadmium	0.00250	0.0100	-0.0000900	1	U
Chromium	0.00250	0.0200	0.000550	1	U
Lead	0.0100	0.100	-0.000654	1	U
Selenium	0.0500	0.0800	0.00180	1	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: 1031770
Report generated 03/03/2008 13:26

KEMRON Environmental Services

INITIAL CALIBRATION VERIFICATION (ICV)

00089775

Login Number: L08020523 Run Date: 03/01/2008 Sample ID: WG264554-06
Instrument ID: PE-ICP2 Run Time: 11:50 Method: 6010B
File ID: P2.030108.115027 Analyst: KHR Units: mg/L
Workgroup (AAB#): WG264470 Cal ID: PE-ICP - 01-MAR-08
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Silver		.4	0.413	103	90 - 110	
Arsenic		.4	0.404	101	90 - 110	
Barium		1	1.02	102	90 - 110	
Cadmium		.05	0.0517	103	90 - 110	
Chromium		.5	0.501	100	90 - 110	
Lead		.5	0.515	103	90 - 110	
Selenium		.4	0.399	99.7	90 - 110	

* Exceeds LIMITS Limit

KEMRON FORMS - Modified 09/06/2007 (ICV)
Version 1.5 PDF File ID: 1031766
Report generated 03/03/2008 13:26

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00089776

Login Number: L08020523 Run Date: 03/01/2008 Sample ID: WG264554-11
Instrument ID: PE-ICP2 Run Time: 12:25 Method: 6010B
File ID: P2.030108.122524 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG264470 Cal ID: PE-ICP - 01-MAR-08

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Silver		0.400	0.397	mg/L	99.3	90 - 110		
Arsenic		0.400	0.395	mg/L	98.7	90 - 110		
Barium		1.00	0.983	mg/L	98.3	90 - 110		
Cadmium		0.0500	0.0504	mg/L	101	90 - 110		
Chromium		0.500	0.481	mg/L	96.3	90 - 110		
Lead		0.500	0.508	mg/L	102	90 - 110		
Selenium		0.400	0.390	mg/L	97.5	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 1031769
Report generated 03/03/2008 13:26

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00089777

Login Number: L08020523 Run Date: 03/01/2008 Sample ID: WG264554-15
Instrument ID: PE-ICP2 Run Time: 13:28 Method: 6010B
File ID: P2.030108.132818 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG264470 Cal ID: PE-ICP - 01-MAR-08

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Silver		0.400	0.401	mg/L	100	90 - 110		
Arsenic		0.400	0.395	mg/L	98.9	90 - 110		
Barium		1.00	1.00	mg/L	100	90 - 110		
Cadmium		0.0500	0.0503	mg/L	101	90 - 110		
Chromium		0.500	0.489	mg/L	97.7	90 - 110		
Lead		0.500	0.507	mg/L	101	90 - 110		
Selenium		0.400	0.393	mg/L	98.2	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 1031769
Report generated 03/03/2008 13:26

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00089778

Login Number: L08020523 Run Date: 03/01/2008 Sample ID: WG264554-17
Instrument ID: PE-ICP2 Run Time: 13:47 Method: 6010B
File ID: P2.030108.134703 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG264470 Cal ID: PE-ICP - 01-MAR-08

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Silver		0.400	0.390	mg/L	97.5	90 - 110		
Arsenic		0.400	0.392	mg/L	97.9	90 - 110		
Barium		1.00	1.04	mg/L	104	90 - 110		
Cadmium		0.0500	0.0492	mg/L	98.4	90 - 110		
Chromium		0.500	0.510	mg/L	102	90 - 110		
Lead		0.500	0.535	mg/L	107	90 - 110		
Selenium		0.400	0.383	mg/L	95.9	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 1031769
Report generated 03/03/2008 13:26

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00089779

Login Number: L08020523 Run Date: 03/01/2008 Sample ID: WG264554-19
Instrument ID: PE-ICP2 Run Time: 14:51 Method: 6010B
File ID: P2.030108.145137 Analyst: KHR QC Key: STD
Workgroup (AAB#): WG264470 Cal ID: PE-ICP - 01-MAR-08

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Silver		0.400	0.387	mg/L	96.8	90 - 110		
Arsenic		0.400	0.392	mg/L	97.9	90 - 110		
Barium		1.00	1.03	mg/L	103	90 - 110		
Cadmium		0.0500	0.0494	mg/L	98.9	90 - 110		
Chromium		0.500	0.506	mg/L	101	90 - 110		
Lead		0.500	0.534	mg/L	107	90 - 110		
Selenium		0.400	0.386	mg/L	96.5	90 - 110		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 1031769
Report generated 03/03/2008 13:26

Login number: L08020523 **Workgroup (AAB#):** WG264470
Instrument ID: PE-ICP2 **Method:** 6010B
Sol. A : WG264554-13 **File ID:** P2.030108.131734 **Units:** mg/L
Sol. AB : WG264554-14 **File ID:** P2.030108.132255

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Arsenic	NS	-0.00176	NS	0.250	0.239	95.6	
Barium	NS	-0.00191	NS	0.250	0.241	96.4	
Cadmium	NS	-0.000270	NS	0.500	0.442	88.4	
Chromium	NS	0.000570	NS	0.250	0.242	96.8	
Lead	NS	-0.000690	NS	0.500	0.491	98.2	
Selenium	NS	-0.00760	NS	0.250	0.228	91.2	
Silver	NS	-0.000840	NS	0.500	0.501	100	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

INTERELEMENT CORRECTION FACTORS (ANNUALLY)

00089781

Login Number: L08020523 **Date:** 01/16/2008

Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	AG	AL	AS	B	BA
ALUMINUM	396.15	0	0	0.206	0	0
ANTIMONY	206.84	0	0	-0.740	0	0
ARSENIC	188.98	0	0.0499	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	0	0	0	0
CADMIUM	228.80	0	-0.000200	0.0000100	0	0
CALCIUM	227.55	0	-0.370	0.0414	0	0
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	-0.0647
COPPER	327.39	0	0	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	0	-0.104	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0	0	0	0
MANGANESE	257.61	-0.185	0	-0.231	-0.0949	-0.230
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0.0669	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0	0.200	0	-0.190
ZINC	206.20	0	0	0	0	0

INTERELEMENT CORRECTION FACTORS (ANNUALLY)

00089782

Login Number: L08020523 **Date:** 01/16/2008

Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	BE	CA	CD	CO	CR
ALUMINUM	396.15	0	0.274	0	0	0
ANTIMONY	206.84	0	0	0	0	19.8
ARSENIC	188.98	0	-0.00673	-0.0875	0	-3.78
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	-0.0105
BORON	249.68	0	0.0238	50.1	3.51	1.50
CADMIUM	228.80	0	0	0	-8.00	0
CALCIUM	227.55	0	0	0	174	-21.8
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	0.436
COPPER	327.39	0	-0.0137	0	0.380	-0.0467
IRON	239.56	0	0.0227	0	1.91	0.331
LEAD	220.35	0	-0.0188	0	0.666	-0.0700
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0.638	0	0	0
MANGANESE	257.61	-1.04	-0.00790	-0.755	-0.0418	-0.110
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	1.20	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0.117	0	-0.382	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	-0.0100	0	6.00	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	-0.0233	0	0	0.297
VANADIUM	290.88	0	0.00100	0	0	0
ZINC	206.20	0	0.000000100	0	0	-5.00

KEMRON FORMS - Modified 02/14/2006
Version 1.5 PDF File ID: 1031764
Report generated 03/03/2008 13:26

INTERELEMENT CORRECTION FACTORS (ANNUALLY)

00089783

Login Number: L08020523 **Date:** 01/16/2008

Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	CU	FE	K	LI	MG
ALUMINUM	396.15	0	0.108	0	0	0
ANTIMONY	206.84	0	0	0	0	0
ARSENIC	188.98	0	-0.130	0	0	0
BARIUM	233.53	0	0.0211	0	0	0
BERYLLIUM	234.86	0	0.163	0	0	0
BORON	249.68	0	-4.02	0	0	0
CADMIUM	228.80	0	-0.00172	0	0	0
CALCIUM	227.55	-2.44	-8.15	0	0	0.104
CHROMIUM	267.72	0	-0.0180	0	0	0
COBALT	228.62	0	0	0	0	0
COPPER	327.39	0	-0.0128	0	0	0
IRON	239.56	0	0	0	0	0.0276
LEAD	220.35	0.341	0.0593	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0.174	0	0	0
MANGANESE	257.61	-0.0457	-0.0659	-0.0181	-0.794	0.0147
MOLYBDENUM	202.03	0	-0.0342	0	11.9	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	3.00	0	0	0
SELENIUM	196.03	0	-0.700	0	0	-0.0113
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0.0717	-0.0248	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0.00120	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	-0.100	0	0	-0.0400
ZINC	206.20	-0.200	0.117	0	0	0

KEMRON FORMS - Modified 02/14/2006
Version 1.5 PDF File ID: 1031764
Report generated 03/03/2008 13:26

INTERELEMENT CORRECTION FACTORS (ANNUALLY)

00089784

Login Number: L08020523 **Date:** 01/16/2008

Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	MN	MO	NA	NI	PB
ALUMINUM	396.15	0	51.0	0	0	0
ANTIMONY	206.84	0	-17.4	0	0	0
ARSENIC	188.98	0	3.15	0	0	0
BARIUM	233.53	0	-0.740	0	0	0
BERYLLIUM	234.86	-0.131	-0.545	0	-0.00974	0
BORON	249.68	0	-2.08	0	0	0
CADMIUM	228.80	0	0	0	-0.0990	0
CALCIUM	227.55	0	-25.0	0	-1100	0
CHROMIUM	267.72	0.800	-0.00100	0	0	0
COBALT	228.62	0	-0.668	0	0.129	0
COPPER	327.39	0	-0.519	0	-0.0905	-0.0630
IRON	239.56	-1.38	0	0	0	0
LEAD	220.35	0.260	-2.35	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-5.58	0	0	0.0252
MANGANESE	257.61	0	-0.0482	-0.00916	-0.0340	-0.0413
MOLYBDENUM	202.03	-0.209	0	0	0.134	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0	1.00	0	0
SELENIUM	196.03	1.11	0.199	0	-0.202	0
SILICON	251.61	0	12.9	0	0	0
SILVER	328.07	0.130	0.0781	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	-0.00100	1.20	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0.578	0	0	0
ZINC	206.20	0	3.00	0	-0.200	-0.100

KEMRON FORMS - Modified 02/14/2006
Version 1.5 PDF File ID: 1031764
Report generated 03/03/2008 13:26

INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L08020523 **Date:** 01/16/2008

Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	SB	SE	SI	SN	SR
ALUMINUM	396.15	0	0	0	0	0
ANTIMONY	206.84	0	0	0	-7.64	0
ARSENIC	188.98	0	0	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	227.55	0	0	2.79	0	0
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	0
COPPER	327.39	0	0	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	-0.0100	0	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-0.0924	0	0	0
MANGANESE	257.61	-0.0505	-0.0281	-0.185	-0.0445	-0.625
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	-0.0500	-0.0100	0	0	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0.200
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0	0	0	0
ZINC	206.20	-0.300	0	0	0	0

INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L08020523 **Date:** 01/16/2008
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	TI	TL	V	ZN
ALUMINUM	396.15	0	0	0	0
ANTIMONY	206.84	0	0	-3.59	0
ARSENIC	188.98	0	0	0.0930	0
BARIUM	233.53	0	0	-2.27	0
BERYLLIUM	234.86	0	0	0	0
BORON	249.68	0	0	0	0
CADMIUM	228.80	0	0	0.0940	0
CALCIUM	227.55	0	0	11.3	0
CHROMIUM	267.72	0	0	-0.300	-0.0400
COBALT	228.62	2.07	0	0	0
COPPER	327.39	-1.79	0	-0.842	-0.0613
IRON	239.56	0	0	0	0
LEAD	220.35	-0.750	0	-0.150	0
LITHIUM	670.78	0	0	0	0
MAGNESIUM	279.08	0	0	-0.0280	0
MANGANESE	257.61	-0.227	-0.0414	-0.0601	-0.0553
MOLYBDENUM	202.03	0	0	-0.288	0
NICKEL	231.60	0	0.150	0	0
POTASSIUM	766.49	0	0	0	0
SELENIUM	196.03	0	0	0.593	0
SILICON	251.61	0	0	0	0
SILVER	328.07	0	0	-6.38	0
SODIUM	589.59	0	0	0	0
STRONTIUM	407.77	0	0	0	0
THALLIUM	190.80	-4.00	0	0	0
TIN	189.93	0	0	0	0
TITANIUM	334.94	0	0	0	0
VANADIUM	290.88	0	0	0	0
ZINC	206.20	0	0	-0.100	0

KEMRON FORMS - Modified 02/14/2006
Version 1.5 PDF File ID: 1031764
Report generated 03/03/2008 13:26

Login Number: L08020523 **Date:** 12/27/2007
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Integration Time (Sec.)	Concentration (mg/L)
Aluminum	10.00	450.0
Antimony	10.00	36.0
Arsenic	10.00	9.0
Barium	10.00	9.0
Beryllium	10.00	1.8
Boron	10.00	18.0
Cadmium	10.00	2.7
Calcium	10.00	450.0
Chromium	10.00	45.0
Cobalt	10.00	45.0
Copper	10.00	45.0
Iron	10.00	450.0
Lead	10.00	45.0
Lithium	10.00	1.8
Magnesium	10.00	450.0
Manganese	10.00	27.0
Molybdenum	10.00	45.0
Nickel	10.00	45.0
Potassium	10.00	90.0
Selenium	10.00	45.0
Silicon	10.00	9.0
Silver	10.00	10.8
Sodium	10.00	180.0
Strontium	10.00	2.7
Thallium	10.00	45.0
Tin	10.00	45.0
Titanium	10.00	9.0
Vanadium	10.00	45.0
Zinc	10.00	36.0

Comments:

2.2.2 Metals CVAA Data (Mercury)

2.2.2.1 Summary Data

LABORATORY REPORT

00089790

L08020523

03/04/08 10:58

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
WASTE CHARACTERATON	L08020523-02	7470A	1	23-FEB-08

Report Number: **L08020523**
Report Date : **March 4, 2008**

00089791

Sample Number: **L08020523-02**
Client ID: **WASTE CHARACTERATON**
Matrix: **Leachate**
Workgroup Number: **WG264423**
Collect Date: **02/20/2008 11:25**
Sample Tag: **01**

PrePrep Method: **1311**
Prep Method: **METHOD**
Analytical Method: **7470A**
Analyst: **ED**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **02/28/2008 08:10**
Cal Date: **02/29/2008 14:53**
Run Date: **02/29/2008 15:11**
File ID: **HY.022908.151153**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury, TCLP	7439-97-6		U	.005	.001	D009	0.2

U Not detected at or above adjusted sample detection limit

2.2.2.2 QC Summary Data

Example Cold Vapor Mercury Calculations
Hydra AA Mercury Analyzer

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and five standards.

2.0 Calculating the concentration (C) of an element in water using data from run log and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to Volume (mL)	40
Vi = Aliquot Volume (mL)	40
D = Manual dilution factor, if required (10X = 10)	1
Cx = Concentration of element in ppb (ug/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Ws} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to volume (mL)	40
Ws = Aliquot weight (g)	0.6
D = Manual dilution factor	1
Cx = Concentration of element in ug/kg	6.67

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

1 Cx = Concentration calculated as received (wet basis)	6.67
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (ug/kg)	8.33

8.33 ug/kg = 0.00833 mg/kg

Mercury Digestion Log

Analyst(s): RCK
Date: 2/28/08
LCS: 4ml STD 24851
MS/MSD: 4ml STD 24851
Witness: JC
H_2SO_4 Lot #: 000112284
$K2S_2O_8$ Lot #: 112510
$KMNO_4$ Lot #: 112546
HNO_3 Lot #: 000112816
Digest Tube Lot #: 000 12761
HCL Lot#: NA
Earliest Sample Due Date: 3/3/08
ICV / CCV: STD24853
Stds: 0, 0.2, 1, 2, 5, 10: STD24854 0 24855

Box: 05

Digestion Work Group: WG 26426 0

ME404 Revision # 11 - Method 245.1/7470A-Water
ME405 Revision # ____ - Method 7471A-Soil

Hot Block Temperature at start: 93.2 °C 0810

Hot Block Temperature at end: 93.8 °C 1010

Relinquished By: MP
Digest Received By: JVH Date: 2/28/08

	KEMRON #	Initial Wt/Vol	Final Volume	Comments	Due Date
1	PBW	40ml	40ml	-02	
2	LCSW	1		-03	
3	RBLK 2/27	4ml		WL# 264230 1400	
4	02-0494-02				3/7
5	02-0523-02				3/3
6	02-0527-01			-01	3/7
7	-01MS			-04	
8	-01MSD			-05	
9	-02				
10	02-0534-01				3/4
11	02-0503-01			REFILT 2/27 WL# 264124	3/4
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

JVH 2/28/08

Comments: ____

Primary Review: 2/28/08 Secondary Review: 2/28/08

KEMRON ENVIRONMENTAL SERVICES

TCLP Non-Volatile

Analyst(s): RWC
Date: 02-27-08

Analyst/Date		Analyst/Date	
RWC 2-27-08		RWC 2-28-08	
Time On	Temp On °C	Time Off	Temp Off °C
1400	23	0600	23

Jug #	Sample #	Tests	Method	Fluid #	Matrix*	%Solid	Size Reduction Yes	Size Reduction No	Int. Wt. (g)	Fluid Vol. (mL)
D	02-49402	ME	1311	FL680	S	100	✓		100.01	2000
	02-52302				S/S			✓	100.02	
	02-527-01							✓	100.04	
	02							✓	100.08	
	02-55401				S			✓	100.00	
N/A	FBLK				N/A	N/A		✓	2000	
	02-50501			Filtered	W	<.5		✓	100	100
G 32	02-585-01	PAH PHL SN(SUD)	1312	SF1-265	S/S	100	✓		100.02	2000
G 30	03							✓	100.05	
G 26	05							✓	100.01	
G 25	07							✓	100.01	
G 19	09							✓	100.04	
G 19	11							✓	100.03	
N/A	FBLK				N/A	N/A		✓	2000	

RWC 2-27-08

*Matrix Code = (S-solid) (SS-sand, soil or sludge) (P-paint) (O-organic) (W-water or waste)
Agitator speed is 30 ± 2 rpm unless otherwise noted.

Comments: Filtered SX processed @0700 - RWC 2-27-08

Peer Review By: _____ Supervisor Review: _____

KEMRON Environmental Services

Instrument Run Log

Instrument: HYDRA Dataset: 022908D.PRN
Analyst1: ED Analyst2: NA
Method: 7470A SOP: 404 Rev: 11
Maintenance Log ID: 23099

Calibration Std: STD24859 ICV/CCV Std: STD24853 Post Spike: STD24859
ICSA: N/A ICSAB: N/A

Workgroups: WG264423

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	HY.022908.144224	WG264451-01	Calibration Point		1		02/29/08 14:42
2	HY.022908.144545	WG264451-02	Calibration Point		1		02/29/08 14:45
3	HY.022908.144728	WG264451-03	Calibration Point		1		02/29/08 14:47
4	HY.022908.144922	WG264451-04	Calibration Point		1		02/29/08 14:49
5	HY.022908.145106	WG264451-05	Calibration Point		1		02/29/08 14:51
6	HY.022908.145301	WG264451-06	Calibration Point		1		02/29/08 14:53
7	HY.022908.145512	WG264451-07	Initial Calibration Verification		1		02/29/08 14:55
8	HY.022908.145723	WG264451-08	Initial Calib Blank		1		02/29/08 14:57
9	HY.022908.145926	WG264451-09	CCV		1		02/29/08 14:59
10	HY.022908.150108	WG264451-10	CCB		1		02/29/08 15:01
11	HY.022908.150248	WG264260-02	Method/Prep Blank	40/40	1		02/29/08 15:02
12	HY.022908.150431	WG264260-03	Laboratory Control S	40/40	1		02/29/08 15:04
13	HY.022908.150623	WG264233-01	Fluid Blank		1		02/29/08 15:06
14	HY.022908.150816	L08020494-02	GM080002	4/40	1		02/29/08 15:08
15	HY.022908.151011	WG264423-01	Post Digestion Spike		1	L08020494-02	02/29/08 15:10
16	HY.022908.151153	L08020523-02	WASTE CHARACTERATON	4/40	1		02/29/08 15:11
17	HY.022908.151334	WG264260-01	Reference Sample		1		02/29/08 15:13
18	HY.022908.151516	WG264260-04	Matrix Spike	4/40	1	L08020527-01	02/29/08 15:15
19	HY.022908.151714	WG264260-05	Matrix Spike Duplica	4/40	1	L08020527-01	02/29/08 15:17
20	HY.022908.151906	L08020527-02	SP-28		1		02/29/08 15:19
21	HY.022908.152107	WG264451-11	CCV		1		02/29/08 15:21
22	HY.022908.152304	WG264451-12	CCB		1		02/29/08 15:23
23	HY.022908.152446	L08020554-01	ACID SUMP SLUDGE		1		02/29/08 15:24
24	HY.022908.152738	L08020505-01	GT080001		1		02/29/08 15:27
25	HY.022908.152919	WG264423-02	Post Digestion Spike		1	L08020523-02	02/29/08 15:29
26	HY.022908.153123	WG264423-03	Post Digestion Spike		1	L08020527-01	02/29/08 15:31
27	HY.022908.153316	WG264423-04	Post Digestion Spike		1	L08020554-01	02/29/08 15:33
28	HY.022908.153519	WG264423-05	Post Digestion Spike		1	L08020505-01	02/29/08 15:35
29	HY.022908.153735	WG264451-13	CCV		1		02/29/08 15:37
30	HY.022908.154815	WG264451-14	CCV		1		02/29/08 15:48
31	HY.022908.155017	WG264451-15	CCB		1		02/29/08 15:50
32	HY.022908.155512	WG264423-02	Post Digestion Spike		1	L08020523-02	02/29/08 15:55
33	HY.022908.155714	WG264423-03	Post Digestion Spike		1	L08020527-01	02/29/08 15:57
34	HY.022908.155857	L08020554-01	ACID SUMP SLUDGE	4/40	1		02/29/08 15:58
35	HY.022908.160040	WG264423-04	Post Digestion Spike		1	L08020554-01	02/29/08 16:00
36	HY.022908.160247	WG264451-16	CCV		1		02/29/08 16:02
37	HY.022908.160429	WG264451-17	CCB		1		02/29/08 16:04

Approved: February 29, 2008

Maren Berry

KEMRON Environmental Services

Instrument Run Log

Instrument: HYDRA Dataset: 022908D.PRN
Analyst1: ED Analyst2: NA
Method: 7470A SOP: 404 Rev: 11
Maintenance Log ID: 23099

Calibration Std: STD24859 ICV/CCV Std: STD24853 Post Spike: STD24859
ICSA: N/A ICSAB: N/A

Workgroups: WG264423

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	HY.022908.160632	L08020505-01	GT080001		1		02/29/08 16:06
39	HY.022908.160816	WG264423-05	Post Digestion Spike		1	L08020505-01	02/29/08 16:08
40	HY.022908.161003	WG264451-18	CCV		1		02/29/08 16:10
41	HY.022908.163357	WG264451-19	CCV		1		02/29/08 16:33
42	HY.022908.163539	WG264451-20	CCB		1		02/29/08 16:35

Page: 2

Approved: February 29, 2008

Maren Beery

KEMRON Environmental Services

Instrument Run Log

Instrument: HYDRA Dataset: 022908E.PRN
Analyst1: ED Analyst2: NA
Method: 7470A SOP: 404 Rev: 11
Maintenance Log ID: 23099

Calibration Std: STD24859 ICV/CCV Std: STD24853 Post Spike: STD24859
ICSA: N/A ICSAB: N/A

Workgroups: WG264423

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	HY.022908.164017	WG264454-01	Calibration Point		1		02/29/08 16:40
2	HY.022908.164202	WG264454-02	Calibration Point		1		02/29/08 16:42
3	HY.022908.164346	WG264454-03	Calibration Point		1		02/29/08 16:43
4	HY.022908.164538	WG264454-04	Calibration Point		1		02/29/08 16:45
5	HY.022908.164742	WG264454-05	Calibration Point		1		02/29/08 16:47
6	HY.022908.164945	WG264454-06	Calibration Point		1		02/29/08 16:49
7	HY.022908.165233	WG264454-07	Initial Calibration Verification		1		02/29/08 16:52
8	HY.022908.165415	WG264454-08	Initial Calib Blank		1		02/29/08 16:54
9	HY.022908.165557	WG264454-09	CCV		1		02/29/08 16:55
10	HY.022908.165759	WG264454-10	CCB		1		02/29/08 16:57
11	HY.022908.165948	L08020505-01	GT080001		10		02/29/08 16:59
12	HY.022908.170154	WG264423-05	Post Digestion Spike		10	L08020505-01	02/29/08 17:01
13	HY.022908.170829	L08020505-01	GT080001	4/40	20		02/29/08 17:08
14	HY.022908.171012	WG264423-05	Post Digestion Spike		20	L08020505-01	02/29/08 17:10
15	HY.022908.171226	WG264454-11	CCV		1		02/29/08 17:12
16	HY.022908.171418	WG264454-12	CCB		1		02/29/08 17:14
17	HY.022908.172320	L08020527-02	SP-28	4/40	1		02/29/08 17:23
18	HY.022908.172512	WG264423-06	Post Digestion Spike		1	L08020527-02	02/29/08 17:25
19	HY.022908.172705	WG264454-13	CCV		1		02/29/08 17:27
20	HY.022908.172856	WG264454-14	CCB		1		02/29/08 17:28

Page: 1

Approved: February 29, 2008

Maren Beery

KEMRON Environmental Services
Data Checklist

Date: 29-FEB-2008
Analyst: ED
Analyst: NA
Method: 7470A
Instrument: HYDRA
Curve Workgroup: WG264451
Runlog ID: 20937
Analytical Workgroups: WG264423

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	X
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	494,523,527,554
Client Forms	
Level X	
Level 3	523,527
Level 4	
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	ED
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
29-FEB-2008

Secondary Reviewer:
29-FEB-2008

Generated: FEB-29-2008 20:19:46

KEMRON Environmental Services
Data Checklist

Date: 29-FEB-2008
Analyst: ED
Analyst: NA
Method: 7470A
Instrument: HYDRA
Curve Workgroup: WG264454
Runlog ID: 20940
Analytical Workgroups: WG2634423

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	
CRI	
Blank/LCS	
MS/MSD	
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	X
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	527,505
Client Forms	
Level X	
Level 3	527
Level 4	
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	ED
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
29-FEB-2008

Secondary Reviewer:
29-FEB-2008

Generated: FEB-29-2008 20:26:29

KEMRON Environmental Services
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00089801

Analytical Method: 7470A AAB#: WG264423

Login Number: L08020523

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
WASTE CHARACTERATON	02/20/08	02/23/08	02/28/08	28	7.86	02/29/08	28	1.29	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 11/20/2006
Version 1.5 PDF File ID: 1031094
Report generated 02/29/2008 17:07

METHOD BLANK SUMMARY

Login Number: L08020523
Work Group: WG264423
Blank File ID: HY.022908.150248
Blank Sample ID: WG264260-02
Prep Date: 02/28/08 08:10
Instrument ID: HYDRA
Analyzed Date: 02/29/08 15:02
Method: 7470A
Analyst: ED

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG264260-03	HY.022908.150431	02/29/08 15:04	01
WASTE CHARACTERATON	L08020523-02	HY.022908.151153	02/29/08 15:11	01

KEMRON FORMS - Modified 01/31/2007
Version 1.5 PDF File ID: 1031095
Report generated 02/29/2008 17:07

KEMRON Environmental Services

METHOD BLANK REPORT

00089803

Login Number: L08020523 Prep Date: 02/28/08 08:10 Sample ID: WG264260-02
Instrument ID: HYDRA Run Date: 02/29/08 15:02 Prep Method: METHOD
File ID: HY.022908.150248 Analyst: ED Method: 7470A
Workgroup (AAB#): WG264423 Matrix: Leachate Units: mg/L
Contract #: DACA56-94-D-0020 Cal ID: HYDRA-29-FEB-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Mercury, TCLP	0.000100	0.000500	0.000100	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: 1031096
Report generated 02/29/2008 17:07

KEMRON Environmental Services

LABORATORY CONTROL SAMPLE (LCS)

00089804

Login Number: L08020523 Run Date: 02/29/2008 Sample ID: WG264260-03
Instrument ID: HYDRA Run Time: 15:04 Prep Method: METHOD
File ID: HY.022908.150431 Analyst: ED Method: 7470A
Workgroup (AAB#): WG264423 Matrix: Leachate Units: mg/L
QC Key: STD Lot#: MI-7470-01 Cal ID: HYDRA-29-FEB-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Mercury, TCLP	0.00400	0.00401	100	80 - 120	

KEMRON FORMS - Modified 09/06/2007
Version 1.5 PDF File ID: 1031097
Report generated 02/29/2008 17:07

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00089805

Loginnum:L08020523 Cal ID: HYDRA- Worknum:WG264423
Instrument ID:HYDRA Contract #:DACA56-94-D-0020 Method:7470A
Parent ID:WG264260-01 File ID:HY.022908.151334 Dil:1 Matrix:TCLP
Sample ID:WG264260-04 MS File ID:HY.022908.151516 Dil:1 Units:mg/L
Sample ID:WG264260-05 MSD File ID:HY.022908.151714 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Mercury, TCLP	ND	0.0400	0.0375	93.8	0.0400	0.0386	96.5	2.89	75 - 125	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

KEMRON FORMS - Modified 09/25/2007 (wg_ms_msd_drywt)

Version 1.5 PDF File ID: 1031098
Report generated 02/29/2008 17:07

KEMRON ENVIRONMENTAL SERVICES
POST SPIKE REPORT

Sample Login ID: L08020523 **Worknum:** WG264423
Instrument ID: HYDRA **Method:** 7470A
Post Spike ID: WG264423-02 **File ID:** HY.022908.155512 **Dil:** 1 **Units:** ug/L
Sample ID: L08020523-02 **File ID:** HY.022908.151153 **Dil:** 1 **Matrix:** Leachate

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
MERCURY	0.865		0	U	1	86.5	85 - 115	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

KEMRON FORMS - Modified 04/20/2007 - POST_SPIKE
Version 2.0 PDF File ID: 1031093
Report generated 02/29/2008 17:07

INITIAL CALIBRATION SUMMARY

Login Number: L08020523
Analytical Method: 7470A
ICAL Worknum: WG264451

Workgroup (AAB#): WG264423
Instrument ID: HYDRA
Initial Calibration Date: 02/29/2008 14:53

Analyte	WG264451-01		WG264451-02		WG264451-03		WG264451-04		WG264451-05		WG264451-06	
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT
Mercury	0	893	0.200	11770	1.00	56513	2.00	103544	5.00	267721	10.0	517735

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

KEMRON FORMS - Modified 02/02/2007
Version 1.5 PDF File ID: 1031099
Report generated 02/29/2008 17:07

KEMRON Environmental Services

INITIAL CALIBRATION SUMMARY

00089808

Login Number:L08020523
Analytical Method:7470A
ICAL Worknum:WG264451

Workgroup (AAB#):WG264423
Instrument ID:HYDRA
Initial Calibration Date:02/29/2008 14:53

Analyte	R	Q
Mercury	1.000	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

KEMRON FORMS - Modified 02/02/2007
Version 1.5 PDF File ID: 1031099
Report generated 02/29/2008 17:07

KEMRON Environmental Services
INITIAL CALIBRATION BLANK (ICB)

Login Number: L08020523 Run Date: 02/29/2008 Sample ID: WG264451-08
Instrument ID: HYDRA Run Time: 14:57 Method: 7471
File ID: HY.022908.145723 Analyst: ED Units: mg/L
Workgroup (AAB#): WG264423 Cal ID: HYDRA - 29-FEB-08
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
MERCURY	.0001	.0005	-.00006	1	U

KEMRON FORMS - Modified 10/02/2007
Version 2.0 PDF File ID: 1031101
Report generated 02/29/2008 17:07

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00089810

Login Number: L08020523 Run Date: 02/29/2008 Sample ID: WG264451-10
Instrument ID: HYDRA Run Time: 15:01 Method: 7470A
File ID: HY.022908.150108 Analyst: ED Units: ug/L
Workgroup (AAB#): WG264423 Cal ID: HYDRA - 29-FEB-08
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Mercury	0.100	0.500	-0.109	1	F

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: 1031103
Report generated 02/29/2008 17:07

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00089811

Login Number: L08020523 Run Date: 02/29/2008 Sample ID: WG264451-12
Instrument ID: HYDRA Run Time: 15:23 Method: 7470A
File ID: HY.022908.152304 Analyst: ED Units: ug/L
Workgroup (AAB#): WG264423 Cal ID: HYDRA - 29-FEB-08
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Mercury	0.100	0.500	-0.0300	1	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: 1031103
Report generated 02/29/2008 17:07

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00089812

Login Number: L08020523 Run Date: 02/29/2008 Sample ID: WG264451-15
Instrument ID: HYDRA Run Time: 15:50 Method: 7470A
File ID: HY.022908.155017 Analyst: ED Units: ug/L
Workgroup (AAB#): WG264423 Cal ID: HYDRA - 29-FEB-08
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Mercury	0.100	0.500	-0.0160	1	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: 1031103
Report generated 02/29/2008 17:07

KEMRON Environmental Services

CONTINUING CALIBRATION BLANK (CCB)

00089813

Login Number: L08020523 Run Date: 02/29/2008 Sample ID: WG264451-17
Instrument ID: HYDRA Run Time: 16:04 Method: 7470A
File ID: HY.022908.160429 Analyst: ED Units: ug/L
Workgroup (AAB#): WG264423 Cal ID: HYDRA - 29-FEB-08
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Mercury	0.100	0.500	-0.106	1	F

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: 1031103
Report generated 02/29/2008 17:07

KEMRON Environmental Services

INITIAL CALIBRATION VERIFICATION (ICV)

00089814

Login Number: L08020523 Run Date: 02/29/2008 Sample ID: WG264451-07
Instrument ID: HYDRA Run Time: 14:55 Method: 7470A
File ID: HY.022908.145512 Analyst: ED Units: ug/L
Workgroup (AAB#): WG264423 Cal ID: HYDRA - 29-FEB-08
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Mercury		2	2.03	102	90 - 110	

* Exceeds LIMITS Limit

KEMRON FORMS - Modified 09/06/2007 (ICV)
Version 1.5 PDF File ID: 1031100
Report generated 02/29/2008 17:07

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00089815

Login Number: L08020523 Run Date: 02/29/2008 Sample ID: WG264451-09
Instrument ID: HYDRA Run Time: 14:59 Method: 7470A
File ID: HY.022908.145926 Analyst: ED QC Key: STD
Workgroup (AAB#): WG264423 Cal ID: HYDRA - 29-FEB-08

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00207	mg/L	104	80 - 120		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 1031102
Report generated 02/29/2008 17:07

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00089816

Login Number: L08020523 Run Date: 02/29/2008 Sample ID: WG264451-11
Instrument ID: HYDRA Run Time: 15:21 Method: 7470A
File ID: HY.022908.152107 Analyst: ED QC Key: STD
Workgroup (AAB#): WG264423 Cal ID: HYDRA - 29-FEB-08

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00198	mg/L	99.0	80 - 120		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 1031102
Report generated 02/29/2008 17:07

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00089817

Login Number: L08020523 Run Date: 02/29/2008 Sample ID: WG264451-14
Instrument ID: HYDRA Run Time: 15:48 Method: 7470A
File ID: HY.022908.154815 Analyst: ED QC Key: STD
Workgroup (AAB#): WG264423 Cal ID: HYDRA - 29-FEB-08

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00176	mg/L	88.0	80 - 120		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 1031102
Report generated 02/29/2008 17:07

KEMRON Environmental Services

CONTINUING CALIBRATION VERIFICATION (CCV)

00089818

Login Number: L08020523 Run Date: 02/29/2008 Sample ID: WG264451-16
Instrument ID: HYDRA Run Time: 16:02 Method: 7470A
File ID: HY.022908.160247 Analyst: ED QC Key: STD
Workgroup (AAB#): WG264423 Cal ID: HYDRA - 29-FEB-08

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00183	mg/L	91.5	80 - 120		

* Exceeds LIMITS Criteria

KEMRON FORMS - Modified 09/06/2007 - (CCV)
Version 1.5 PDF File ID: 1031102
Report generated 02/29/2008 17:07

2.3 General Chemistry Data

2.3.1 Reactivity Data

2.3.1.1 Summary Data

LABORATORY REPORT

00089822

L08020523

03/04/08 10:58

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
WASTE CHARACTERATON	L08020523-02	SW7.34	1	23-FEB-08

Report Number: **L08020523**
Report Date : **March 4, 2008**

00089823

Sample Number: **L08020523-02**
Client ID: **WASTE CHARACTERATON**
Matrix: **Soil**
Workgroup Number: **WG264187**
Collect Date: **02/20/2008 11:25**

PrePrep Method: **NONE**
Prep Method: **SW7.34**
Analytical Method: **SW7.34**
Analyst: **JBK**
Dilution: **1**
Units: **mg/kg**

Instrument: **BURET**
Prep Date: **02/27/2008 14:20**
Cal Date:
Run Date: **02/27/2008 14:20**
File ID: **ET.0802271420-04**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

2.3.1.2 QC Summary Data

Example Calculations - Reactive Sulfide

$$A = \frac{((B * C) - (D * E) * 16000}{F * G} = sulfide\,(mg / L)$$

$$\frac{A * I}{J} = reactive\ sulfide\ (mg / Kg)$$

Example Calculation:

B (mL of Iodine):	15
C (N of Iodine):	0.02514
D (mL of titrant):	9.4
E (N of titrant):	0.02489
16000 factor (1mL of 0.025N iodine reacts with 0.4mg sulfide):	16000
F (mL of scrubber solution used for titrating for sulfide):	100
G (dilution of sample (include 50/250 scrubber dilution)):	0.20
I (volume of NaOH placed in scrubber):	50
J (grams of sample used):	10
A=	114.5072
mg/Kg reactive sulfide=	572.536

KEMRON Environmental Services
Data Checklist

Date: 27-FEB-2008
Analyst: JBK
Analyst: NA
Method: REACT-S
Instrument: BURET
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG264187

Calibration/Linearity	02/27/2008
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	
QC Violation Sheet	
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:
28-FEB-2008

Secondary Reviewer:
03-MAR-2008

Generated: MAR-03-2008 14:45:26

2.3.1.3 Raw Data

WORKGROUP: WG264187

KEMRON ENVIRONMENTAL SERVICES

REACTIVE SULFIDE

☑ EPA ch. 7 SOP K7332 Revision #: _____
☐ Other

Instrument: buret

LCS: Std 24846 Daily Dilution: 4(1002)/200
non-reacted LCS Daily Dilution = 20.04

Iodine standardization (0.025 N and 0.1N)

mL _____ N titrant: 2/25/08
Volume I: _____ mL
Normality I: 0.1008N

mL _____ N titrant: 2/25/08
Volume I: _____ mL
Normality I: 0.0252N

Stock standardization (in duplicate)

mL I 1) 10 2) 10
N I 1) 0.1008 2) 0.1008
mL 0.025 titrant 1) 15.10 2) 15.20

1002 = stock conc (mg/L)

SAMPLE	Grams Reacted	Volume Titrated	mL Iodine	N Iodine	mL _____ N Sodium Thiosulfate 0.0252N 2/31/08
BLANK	X	200	15	0.0252	14.9
Non-reacted LCS (mg/L)	X	200	↓	↓	3.8
Reacted (mg/L)	10.0000	100	↓	↓	8.9
02-523-02	10.2787	100	5	↓	4.5
DUP: 10-523-02	10.1411		5	0.0252	4.5

Analyst: _____ Date / Time: 2/27/08 @ 1420

DCN#73618

Approved: March 03, 2008

KEMRON ENVIRONMENTAL SERVICES
TITRAMETRIC REPORT

Workgroup (AAB#):WG264187
Product:SW7.34
Analyte:Reactivity, Sulfide

Analyst:JBK
Run Date:02/27/2008 14:20

SAMPLE NUMBER	Sample	Volume	Vol I	Nor I	Vol T	Nor T	Dil	NaOH	Scrub.	Anal.	Reported	Units
WG264187-01	250	200.0	15	.0252	14.9	.0252	1	50	250	0.2016	0.2016	mg/kg
WG264187-02	250	200.0	15	.0252	3.8	.0252	1	50	250	22.58	22.58	mg/kg
WG264187-03	10	100.0	15	.0252	8.9	.0252	1	50	250	614.9	614.9	mg/kg
L08020523-02	10.2787	100.0	5	.0252	4.5	.0252	1	50	250	ND	ND	mg/kg
WG264187-04	10.2787	100.0	5	.0252	4.5	.0252	1	50	250	49.03	49.03	mg/kg
WG264187-05	10.1411	100.0	5	.0252	4.5	.0252	1	50	250	49.70	49.70	mg/kg

KEMRON FORMS - Modified 03/21/2007 - (REACTS_REPORT)
Version 1.0
Report generated 02/28/2008 16:08

Approved: March 03, 2008

2.3.2 PH Data

2.3.2.1 Summary Data

LABORATORY REPORT

00089832

L08020523

03/04/08 10:58

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
WASTE CHARACTERATON	L08020523-02	9045C	1	23-FEB-08

Report Number: **L08020523**
Report Date : **March 4, 2008**

00089833

Sample Number: **L08020523-02**
Client ID: **WASTE CHARACTERATON**
Matrix: **Soil**
Workgroup Number: **WG263971**
Collect Date: **02/20/2008 11:25**

PrePrep Method: **NONE**
Prep Method: **9045C**
Analytical Method: **9045C**
Analyst: **HJR**
Dilution: **1**
Units: **UNITS**

Instrument: **ORION-710A**
Prep Date: **02/25/2008 13:05**
Cal Date:
Run Date: **02/25/2008 13:05**
File ID:

Analyte	CAS. Number	Result	Qual	PQL	SDL
pH	10-29-7	12.2			

2.3.2.2 QC Summary Data

KEMRON Environmental Services
Data Checklist

Date: 25-FEB-2008
Analyst: HJR
Analyst: NA
Method: PH
Instrument: ORION 710A #1
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG263971

Calibration/Linearity	02/25/08
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	
LCS/LCS Dup	
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	
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	HJR
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
25-FEB-2008

Secondary Reviewer:
27-FEB-2008

Generated: FEB-27-2008 13:35:27

2.3.2.3 Raw Data

WORKGROUP: WG263971

pH

Sample	Calibration Buffers	Water Misc. Liquid	50% Slurry Of Solid	50% Water Org. Liq. Mix
LCS 6 Std 23145	7,4,10	6.069		
02-0518-01	"	6.309		
-02	"	7.121		
-03	"	7.367		
02-0523 02	"		12.187	
buffer 12.45 std 19023		12.456		
DUP 02-0518-01	"	6.311		
LCS 9 Std 23823	"	9.010		

SW846 9040B/9045C

SM 4500-H(+)-B

SOP K1501 Rev 10

Circle Instrument

~~Orion 710A #1~~

Orion 710A #2

Sargent - Welch

Analyst: [signature] Date: 2/25/08 1305

DCN#73577

Approved: February 27, 2008

2.3.3 Method Flashpoint

2.3.3.1 Summary Data

LABORATORY REPORT

00089840

L08020523

03/04/08 10:58

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
WASTE CHARACTERATON	L08020523-02	1010	1	23-FEB-08

Report Number: **L08020523**
Report Date : **March 4, 2008**

00089841

Sample Number: **L08020523-02**
Client ID: **WASTE CHARACTERATON**
Matrix: **Soil**
Workgroup Number: **WG264517**
Collect Date: **02/20/2008 11:25**

PrePrep Method: **NONE**
Prep Method: **1010**
Analytical Method: **1010**
Analyst: **DIH**
Dilution: **1**
Units: **Degrees C**

Instrument: **PRECISION**
Prep Date: **03/03/2008 08:45**
Cal Date:
Run Date: **03/03/2008 08:45**
File ID: **PR08030313414701**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		**85.0**	**>**		

> Result is greater than the associated numerical value.

2.3.3.2 QC Summary Data

Example Flashpoint Calculations

1.0 Calculating the flashpoint of a sample.

$$Flashpoint = C + 0.033(760 - P)$$

Where:
C = Observed flashpoint (Celcius)
P = Ambient barometric pressure(mmHg) corrected for temperature and gravity.

Flashpoint = Flashpoint of the sample.

KEMRON Environmental Services
Data Checklist

Date: 03-MAR-2008
Analyst: DIH
Analyst: NA
Method: FLASH
Instrument: PRECISION
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG264517

Calibration/Linearity	
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	
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:
03-MAR-2008

Secondary Reviewer:

Generated: MAR-03-2008 16:12:33

2.3.3.3 Raw Data

KEMRON ENVIRONMENTAL SERVICES

WORKGROUP: WG264517

FLASHPOINT

LCS: STD 12550
TEMPERATURE: 26°C
PRESSURE: 750.3

SOP K1010 Revision #: 12

Method SW846 1010
Instrument: Pensky Marten Closed Cup Tester

SAMPLE	DESCRIPTION	INITIAL TEMP(C)	COMMENTS or FLASHPOINT	FINAL RESULT (C)
LCS	p-xylene	12	flashed 29	29
LCS DUP	↓	16	flashed 29	29
Blank	TAP H2O	30	no flash 60	>60
02-490-02	pt thinner	14	flashed immed	<14
05	paint sludge	20	" "	<20
09	pt thinner	16	" "	<16
08	yellow liq. "NH3"	15	flashed 55	55
06	gap	15	flashed 65	65
11	pt thinner	18	flashed imm	<18
01	oil-like	20	flashed @ 40	40
03	oil-like	20	flashed @ 74	74
04	oil/grease	21	flashed @ 30	30
07	viscous liq.	21	flashed 62	62
10	oil	18	flashed 52	52
12	oil-like	21	flashed 33	33
02-494-01	red oil	18	no flash @ 75	>75
02-505-01	green liq/sludge	24	flame ext @ 68	>68
02-523-01	mud	24	no flash 85	>85
02-671-01	dirt	30	no flash 87	>87
DUP: 490-09	dirt	18	flashed imm	<18

ANALYST: Deanna Hess

DATE: 3/3/08 0845

DCN#73706

KEMRON ENVIRONMENTAL SERVICES
FLASH CALCULATIONS

Workgroup: WG264517
Date: 03-MAR-08
Analyst: DIH

Observed Barometric Pressure: 750.3

Lowest Pressure in Bracket: 740
Temperature Correction #1: 3.21
Temperature Correction #2: 3.13

Lowest Pressure in Bracket: 700
Grav Correction #1: .48
Grav Correction #2: .42

Temperature Correction: 3.1712
Grav Correction: .45018
Corrected Barometric Pressure: 763.11862

Correction for Flash: -.10291446

2.3.4 Reactive Cyanide Data

2.3.4.1 Summary Data

LABORATORY REPORT

00089850

L08020523

03/04/08 10:59

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
WASTE CHARACTERATON	L08020523-02	SW7.33	1	23-FEB-08

Report Number: **L08020523**
Report Date : **March 4, 2008**

00089851

Sample Number: **L08020523-02**
Client ID: **WASTE CHARACTERATON**
Matrix: **Soil**
Workgroup Number: **WG264186**
Collect Date: **02/20/2008 11:25**

PrePrep Method: **NONE**
Prep Method: **SW7.33**
Analytical Method: **SW7.33**
Analyst: **JBK**
Dilution: **1**
Units: **mg/kg**

Instrument: **UV-120-1V**
Prep Date: **02/27/2008 15:20**
Cal Date:
Run Date: **02/27/2008 15:20**
File ID: **1V.0802271520-03**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		U	9.73	4.86

U Not detected at or above adjusted sample detection limit

2.3.4.2 QC Summary Data

KEMRON Environmental Services
Data Checklist

Date: 27-FEB-2008
Analyst: JBK
Analyst: NA
Method: REACT-CN
Instrument: UV-120-1V
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG264186

Calibration/Linearity	12/04/07
Second Source Check	
ICV/CCV (std)	X
ICB/CCB	
Blank	
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
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:
28-FEB-2008

Secondary Reviewer:
03-MAR-2008

Generated: MAR-03-2008 14:42:59

2.3.4.3 Raw Data

WG257512

KEMRON ENVIRONMENTAL SERVICES

Parameter: REACTIVITY - CN Curves

Spectrophotometer: UV-120-1V

Calibration (Curve) standard stock: Std 22932

Concentration: 1010 mg/L

Recipe for preparation of curve standards found in:
SOP: K7332 Revision: 8 Page: 8

Second Source Stock: Std 22931 (concentration: 1040 mg/L)

Daily Preparation: 5(1040)/250 = 20.8
10(20.8)/100 = 2.08
concentration = 5(2.08)/50 = .208

Calibration Standards (mg/L)	Volume	Cell Size	Wavelength	Absorbance
0.404	50	1	578	0.891
0.303				0.695
0.202				0.456
0.101				~~0.228~~ 0.228
0.0404				0.091
0.0202				0.045
0.208 (2nd Source)				0.487
Blank	50	1	578	0.000

Analyst: Deanna Peyton

Date/Time: 12/04/07 @ 0900

DCN#72186

Deanna Hesson

Approved: December 05, 2007

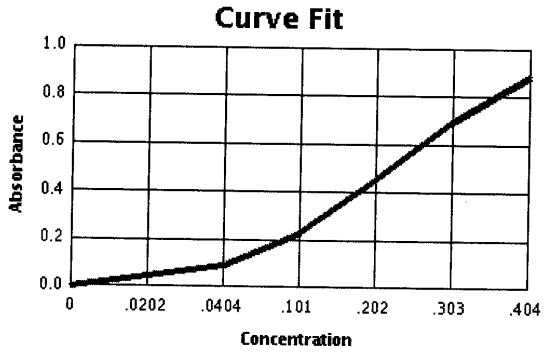
KEMRON ENVIRONMENTAL SERVICES
INITIAL CALIBRATION

Workgroup: WG257512
Analytical Method: 846
Instrument ID: UV-120-1V

Analyst: JBK
Initial Calibration Date: 12/04/2007

Analyte: CYANIDE
Number of Points: 7
Slope: 2.23304
Y-Intercept: 0.00218659
Coef. Of Correlation (R^2): 0.999361
Coef. Of Correlation (R): 0.999681

Concentration X	Absorbance Y	X^2	X * Y	Y-Fitted (mX^2+B)
0.00	0.00	0.00	0.00	0.00218659
0.0202	0.0450	0.000408	0.000909	0.0472940
0.0404	0.0910	0.00163	0.00368	0.0924015
0.101	0.228	0.0102	0.0230	0.227724
0.202	0.456	0.0408	0.0921	0.453261
0.303	0.695	0.0918	0.211	0.678798
0.404	0.891	0.163	0.360	0.904335



KEMRON FORMS - Modified 05/01/2003
Version 1.1
Report generated 12/04/2007 10:12

Approved: December 05, 2007

KEMRON ENVIRONMENTAL SERVICES
ALTERNATE SOURCE REPORT

Workgroup #: WG257512
File ID: 1V.0712040900-08
CCV ID: WG257512-08
Units: mg/kg
Analyte: CYANIDE

Instrument ID: UV-120-1V
Run Date: 12/04/2007
Run Time: 09:00
Analyst: JBK
Cal ID: UV-120 -

Analyte	Expected	Found	RF	%D	Q
Reactivity, Cyanide	.208	0.217	2.34	4.3	

* Exceeds %D Limit

CCC Calibrtion Check Compounds
SPCC System Performance Check Compounds

KEMRON FORMS - Modified 12/23/2002
Version 1.2
12/04/2007 10:12

Approved: December 05, 2007

KEMRON ENVIRONMENTAL SERVICES

WORKGROUP: WG264186

REACTIVE CYANIDE

LCS: Std 24655

CCV: Std 24654

SOP: K7332 Revision: 8

Daily Dilution: 5(978)/250 = 19.56
10(19.56)/100 = 1.956
5(1.956)/50 = 0.1956

Curve ID: 357512 12/4/07
Spec: UV-120-1V

Sample	Grams Reacted	Dilution	Cell Size	Absorbance @ 578 nm
CCV: 0.2	NA	1	1	0.433
LCS: 1088	10.0000	1/5	↓	0.445
02-523-02	10.2787	1	1	0.003
DUP: 02-523-02	10.1411	1	1	0.003

Analyst: [signature]

Date/Time: 2/27/08 @ 1520

DCN#73617

Approved: March 03, 2008

KEMRON ENVIRONMENTAL SERVICES
SAMPLE REPORT

Workgroup: WG264186 **Analyst:** JBK
Analyte: CYANIDE **Date:** 02/27/2008

Sample ID	I Vol	F Vol	Response	Scrubber		Slope	Y Intercept	Dil	Anal. Conc.	Rep. Conc.	Units
WG264186-01	10	10	0.445	50	250	2.233	0.002187	5	0.99150	4.9575	mg/kg
L08020523-02	10.2787	10	0.00300	50	250	2.233	0.002187	1	0.0088596	ND	mg/kg
WG264186-02	10.2787	10	0.00300	50	250	2.233	0.002187	1	0.0088596	0.0086194	mg/kg
WG264186-03	10.1411	10	0.00300	50	250	2.233	0.002187	1	0.0089798	0.0088549	mg/kg

KEMRON FORMS - Modified 07/17/2006
Version 1.1
Report generated 02/29/2008 15:08

Approved: March 03, 2008

KEMRON ENVIRONMENTAL SERVICES
CONTINUING CALIBRATION REPORT

Workgroup #: WG264334
File ID: 1V.0802271520-01
CCV ID: WG264334-01
Units: mg/kg
Analyte: CYANIDE

Instrument ID: UV-120-1V
Run Date: 02/27/2008
Run Time: 15:20
Analyst: JBK
Cal ID: UV-120 -

Analyte	Expected	Found	RF	%D	Q
Reactivity, Cyanide	.196	0.193	2.21	1.5	

* Exceeds %D Limit

CCC Calibrtion Check Compounds
SPCC System Performance Check Compounds

KEMRON FORMS - Modified 09/16/2004
Version 1.2
02/28/2008 16:01

Approved: March 03, 2008

3.0 Attachments

Kemron Environmental Services
Analyst Listing
March 4, 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

List of Valid Qualifiers

March 04, 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.

00089864

B 2199

Chain of Custody

NO. 5420

Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Kemron | Address: 156 Starlite Drive Marrietta, Ohio | Contact: Stephanie Massburg (740) 373-4071

Project Name: Longhorn AAP | Project Location: Karnack, Tx

Project No.: * See Remarks | Project Contact: Allen Wilmore | Project Telephone No.: (713) 247-9292

Point of Contact: Jennifer Heang | Telephone No.: (713) 996-4409

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	VOCs by 8260	TCLP VOC	TCLP Metals	Reactivity	Ignitability	Corrossivity		Remarks
1	17WW17-021908	2/19/08	13:10		✓	W	Site 17	3	X							117591.00048800
2	47WW33-022008	2/20/08	9:20		✓	W	Site 47	3	X							117591.00098810
3	47WW34-021908	2/19/08	17:10		✓	W	Site 47	3	X							117591.00098810
4	50WW07-021908	2/19/08	11:15		✓	W	Site 50	3	X							117591.00098820
5	Waste Characterization 02/08	2/20/08	11:25	✓		S	All Sites	3		X	X	X	X	X		117591.00048800
6	47WW33-022008-QC	2/20/08	9:20		✓	W	Site 47	3	X							117591.00098810
7																
8																
9																
10																

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time
M. Hellman	9/21/08 15:30	Lindsay Medeff 22308	10:25
		Laboratory	

Special Instructions: * See remarks for project #s
* 7-day TAT

FedEx Airbill No.:

Sampler's Signature: M. Hellman

TAT: 7-day 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

KEMRON Environmental Services

SAMPLE RECEIPT FORM

00089865

150 Stanley Drive
Marietta, OH 45750
(740) 373-4071

Client:	Shaw - Longhorn
Workorder Number:	B —
Date Received:	2/23/08
Delivered by:	( ) Fedx (X) UPS ( ) Client ( ) Courier **Time:** 10:25
Opened by:	ORM
IR Temp Gun:	(X) D ( ) G
Logged by:	RLK L0802052 3

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
0798	0	1Z208643 2917		7 day

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?		✓		(1)
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

(1) Sample: Waste Characteration - 2 jars lost labels in cooler
(A) TCLP, Metals; TCLP VOA
(B) Reactivity, ignitability, Corrosivity } 11:25 on 2/20/08

Distribution

Name of KEMRON representative
Client/Company:
Person Contacted:
Date contacted:

Resolution/other comments:

KEMRON Environmental Services
Internal Chain of Custody Report
Login: L08020523
Account: 2773
Project: 2773.025
Samples: 2
Due Date: 03-MAR-2008

Samplenum	Container ID	Products
L08020523-01	428598	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	25-FEB-2008 13:07	RLK	
2	ANALYZ	V1	ORG4	25-FEB-2008 15:05	KJW	ERE

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	25-FEB-2008 13:07	RLK	
2	ANALYZ	V1	ORG4	25-FEB-2008 15:05	KJW	ERE

Samplenum	Container ID	Products
L08020523-02	428600	TC-ZHE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	25-FEB-2008 13:07	RLK	
2	PREP	W1	TCL	26-FEB-2008 07:18	RWC	ERE
3	STORE	TCL	A1	27-FEB-2008 09:14	ERE	RWC

Samplenum	Container ID	Products
L08020523-02	428601	REACTC REACTS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	25-FEB-2008 13:07	RLK	
2	ANALYZ	W1	WET	25-FEB-2008 13:14	HJR	ERE
3	STORE	WET	A1	03-MAR-2008 15:36	JKT	DIH

Samplenum	Container ID	Products
L08020523-02	430098	826-TC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN			27-FEB-2008 15:46	RWC	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN			27-FEB-2008 15:46	RWC	

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: L08020523
Account: 2773
Project: 2773.025
Samples: 2
Due Date: 03-MAR-2008

Samplenum	Container ID	Products
L08020523-02	428599	TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	25-FEB-2008 13:07	RLK	
2	PREP	W1	TCL	26-FEB-2008 07:18	RWC	ERE
3	STORE	TCL	A1	27-FEB-2008 09:14	ERE	RWC

Samplenum	Container ID	Products
L08020523-02	430100	TC-BA TC-CD TC-CR TC-HG TC-SE TC-PB DIG-TC TC-

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN			27-FEB-2008 15:49	RWC	

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: L08030315

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 25, 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 25, 2008.

David E. Vandenberg

David Vandenberg - Vice President

FL DOH NELAP ID: E8755
This report contains a total of 79 pages.

Protecting Our Environmental Future

KEMRON REPORT L08030315
PREPARED FOR Shaw E I, Inc.
WORK ID: LONGHORN AAP KARNACK TX

1.0 Introduction

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

KEMRON Login No.: L08030315

CHAIN OF CUSTODY: The chain of custody number was 10249.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 1 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: 20-MAR-08
Stephanie Mossburg

Laboratory Data Package Cover Page

00089872

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.

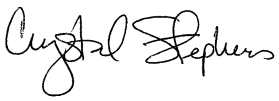
✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓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.

CRYSTAL M. STEPHENS		Chemist I	March 24, 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:	L08030315
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	266112, 266199
Reviewer Name:	CRYSTAL M. STEPHENS
LRC Date:	March 24, 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)	RPD(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?		✓			1
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#
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: 1,4-Dichlorobenzene-d4 and chlorobenzene-d5 were below the lower control limits in the analysis of sample 01.
1,4-Dichlorobenzene-d4, chlorobenzene-d5, and fluorobenzene were below the lower control limits in the analysis of sample 02.

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

00089879

L08030315

03/25/08 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

Project Number: 2773.025
Project: Longhorn AAP
Site: QUARTERLY EFFLUENT SAMPLES

P.O. Number: 322255 OP

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
47WW33-031408	L08030315-01	8260B	1	15-MAR-08
47WW34-031408	L08030315-02	8260B	25	15-MAR-08
17WW17-031408	L08030315-03	8260B	1	15-MAR-08
TRIP BLANK	L08030315-04	8260B	1	15-MAR-08

Report Number: **L08030315**
Report Date : **March 25, 2008**

00089880

Sample Number: **L08030315-01**
Client ID: **47WW33-031408**
Matrix: **Water**
Workgroup Number: **WG266112**
Collect Date: **03/14/2008 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: **03/21/2008 18:50**
Cal Date: **03/17/2008 16:10**
Run Date: **03/21/2008 18:50**
File ID: **6M73640**

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	1.27	J	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: **L08030315**
Report Date : **March 25, 2008**

00089881

Sample Number: **L08030315-01**
Client ID: **47WW33-031408**
Matrix: **Water**
Workgroup Number: **WG266112**
Collect Date: **03/14/2008 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: **03/21/2008 18:50**
Cal Date: **03/17/2008 16:10**
Run Date: **03/21/2008 18:50**
File ID: **6M73640**

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	1.44		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	98.2	86	118	
1,2-Dichloroethane-d4	98.7	80	120	
Toluene-d8	102	88	110	
4-Bromofluorobenzene	96.8	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

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030315**
Report Date : **March 25, 2008**

00089882

Sample Number: **L08030315-02**
Client ID: **47WW34-031408**
Matrix: **Water**
Workgroup Number: **WG266112**
Collect Date: **03/14/2008 12:00**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **25**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/21/2008 19:22**
Cal Date: **03/17/2008 16:10**
Run Date: **03/21/2008 19:22**
File ID: **6M73641**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	250	62.5
Benzene	71-43-2		U	25.0	3.13
Bromobenzene	108-86-1		U	25.0	3.13
Bromochloromethane	74-97-5		U	25.0	5.00
Bromodichloromethane	75-27-4		U	25.0	6.25
Bromoform	75-25-2		U	25.0	12.5
Bromomethane	74-83-9		U	25.0	12.5
2-Butanone	78-93-3		U	250	62.5
n-Butylbenzene	104-51-8		U	25.0	6.25
sec-Butylbenzene	135-98-8		U	25.0	6.25
tert-Butylbenzene	98-06-6		U	25.0	6.25
Carbon disulfide	75-15-0		U	25.0	12.5
Carbon tetrachloride	56-23-5		U	25.0	6.25
Chlorobenzene	108-90-7		U	25.0	3.13
Chlorodibromomethane	124-48-1		U	25.0	6.25
Chloroethane	75-00-3		U	25.0	12.5
2-Chloroethyl vinyl ether	110-75-8		U	250	50.0
Chloroform	67-66-3		U	25.0	3.13
Chloromethane	74-87-3		U	25.0	6.25
2-Chlorotoluene	95-49-8		U	25.0	3.13
4-Chlorotoluene	106-43-4		U	25.0	6.25
1,2-Dibromo-3-chloropropane	96-12-8		U	125	25.0
1,2-Dibromoethane	106-93-4		U	25.0	6.25
Dibromomethane	74-95-3		U	25.0	6.25
1,2-Dichlorobenzene	95-50-1		U	25.0	3.13
1,3-Dichlorobenzene	541-73-1		U	25.0	6.25
1,4-Dichlorobenzene	106-46-7		U	25.0	3.13
Dichlorodifluoromethane	75-71-8		U	25.0	6.25
1,1-Dichloroethane	75-34-3		U	25.0	3.13
1,2-Dichloroethane	107-06-2		U	25.0	6.25
1,1-Dichloroethene	75-35-4		U	25.0	12.5
cis-1,2-Dichloroethene	156-59-2	183		25.0	6.25
trans-1,2-Dichloroethene	156-60-5		U	25.0	6.25
1,2-Dichloropropane	78-87-5		U	25.0	5.00
1,3-Dichloropropane	142-28-9		U	25.0	5.00
2,2-Dichloropropane	594-20-7		U	25.0	6.25
cis-1,3-Dichloropropene	10061-01-5		U	25.0	6.25
trans-1,3-Dichloropropene	10061-02-6		U	25.0	12.5
1,1-Dichloropropene	563-58-6		U	25.0	6.25
Ethylbenzene	100-41-4		U	25.0	6.25
2-Hexanone	591-78-6		U	250	62.5
Hexachlorobutadiene	87-68-3		U	25.0	6.25
Isopropylbenzene	98-82-8		U	25.0	6.25
p-Isopropyltoluene	99-87-6		U	25.0	6.25
4-Methyl-2-pentanone	108-10-1		U	250	62.5
Methylene chloride	75-09-2		U	125	6.25
Naphthalene	91-20-3		U	25.0	5.00
n-Propylbenzene	103-65-1		U	25.0	3.13

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030315**
Report Date : **March 25, 2008**

00089883

Sample Number: **L08030315-02**
Client ID: **47WW34-031408**
Matrix: **Water**
Workgroup Number: **WG266112**
Collect Date: **03/14/2008 12:00**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **25**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/21/2008 19:22**
Cal Date: **03/17/2008 16:10**
Run Date: **03/21/2008 19:22**
File ID: **6M73641**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Styrene	100-42-5		U	25.0	3.13
1,1,1,2-Tetrachloroethane	630-20-6		U	25.0	6.25
1,1,2,2-Tetrachloroethane	79-34-5		U	25.0	3.13
Tetrachloroethene	127-18-4		U	25.0	6.25
Toluene	108-88-3		U	25.0	6.25
1,2,3-Trichlorobenzene	87-61-6		U	25.0	3.13
1,2,4-Trichlorobenzene	120-82-1		U	25.0	5.00
1,1,1-Trichloroethane	71-55-6		U	25.0	6.25
1,1,2-Trichloroethane	79-00-5		U	25.0	6.25
Trichloroethene	79-01-6	2150		25.0	6.25
Trichlorofluoromethane	75-69-4		U	25.0	6.25
1,2,3-Trichloropropane	96-18-4		U	25.0	12.5
1,2,4-Trimethylbenzene	95-63-6		U	25.0	6.25
1,3,5-Trimethylbenzene	108-67-8		U	25.0	6.25
Vinyl acetate	108-05-4		U	250	62.5
Vinyl chloride	75-01-4	11.1	J	25.0	6.25
o-Xylene	95-47-6		U	25.0	6.25
m-,p-Xylene	136777-61-2		U	25.0	12.5

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	98.9	86	118	
1,2-Dichloroethane-d4	98.4	80	120	
Toluene-d8	103	88	110	
4-Bromofluorobenzene	95.7	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

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030315**
Report Date : **March 25, 2008**

00089884

Sample Number: **L08030315-03**
Client ID: **17WW17-031408**
Matrix: **Water**
Workgroup Number: **WG266199**
Collect Date: **03/14/2008 15:10**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/22/2008 17:05**
Cal Date: **03/17/2008 16:10**
Run Date: **03/22/2008 17:05**
File ID: **6M73668**

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	2.52		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	4.96		1.00	0.125
1,2-Dichloroethane	107-06-2	2.52		1.00	0.250
1,1-Dichloroethene	75-35-4	5.87		1.00	0.500
cis-1,2-Dichloroethene	156-59-2	26.4		1.00	0.250
trans-1,2-Dichloroethene	156-60-5	0.698	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	0.409	J	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	30.2		5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1	0.383	J	1.00	0.125

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030315**
Report Date : **March 25, 2008**

00089885

Sample Number: **L08030315-03**
Client ID: **17WW17-031408**
Matrix: **Water**
Workgroup Number: **WG266199**
Collect Date: **03/14/2008 15:10**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/22/2008 17:05**
Cal Date: **03/17/2008 16:10**
Run Date: **03/22/2008 17:05**
File ID: **6M73668**

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	0.489	J	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	2.95		1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	112		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	3.61		1.00	0.250
1,3,5-Trimethylbenzene	108-67-8	1.05		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	1.19		1.00	0.250
m-,p-Xylene	136777-61-2	2.00		1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	99.6	86	118	
1,2-Dichloroethane-d4	102	80	120	
Toluene-d8	95.0	88	110	
4-Bromofluorobenzene	91.3	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

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030315**
Report Date : **March 25, 2008**

00089886

Sample Number: **L08030315-04**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG266112**
Collect Date: **03/14/2008 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/21/2008 14:33**
Cal Date: **03/17/2008 16:10**
Run Date: **03/21/2008 14:33**
File ID: **6M73632**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	8.84	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

KEMRON ENVIRONMENTAL SERVICES

Report Number: **L08030315**
Report Date : **March 25, 2008**

00089887

Sample Number: **L08030315-04**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG266112**
Collect Date: **03/14/2008 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS/ASP**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **03/21/2008 14:33**
Cal Date: **03/17/2008 16:10**
Run Date: **03/21/2008 14:33**
File ID: **6M73632**

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	96.2	86	118	
1,2-Dichloroethane-d4	97.0	80	120	
Toluene-d8	97.5	88	110	
4-Bromofluorobenzene	96.3	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

KEMRON ENVIRONMENTAL SERVICES

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, Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 031708
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: 23349

Internal Standard: STD24971 Surrogate Standard: STD25166
CCV: STD25172 LCS: STD25182 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG265645

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M73512	SYSTEM BLANK	NA	1	1		03/17/08 08:09
2	6M73513	SYSTEM BLANK	NA	1	1		03/17/08 08:40
3	6M73514	WG265645-01 BFB 50ng STD 8260	NA	1	1	STD25005	03/17/08 09:12
4	6M73515	WG265645-02 0.30ug/L STD 8260	NA	1	1	STD25172	03/17/08 09:45
5	6M73516	WG265645-03 0.40ug/L STD 8260	NA	1	1	STD25172	03/17/08 10:17
6	6M73517	WG265645-04 1ug/L STD 8260	NA	1	1	STD25172	03/17/08 10:49
7	6M73518	WG265645-05 2ug/L STD 8260	NA	1	1	STD25172	03/17/08 11:21
8	6M73519	WG265645-06 5ug/L STD 8260	NA	1	1	STD25172	03/17/08 11:52
9	6M73520	WG265645-07 20ug/L STD 8260	NA	1	1	STD25172	03/17/08 12:24
10	6M73521	WG265645-08 50ug/L STD 8260	NA	1	1	STD25172	03/17/08 12:57
11	6M73522	WG265645-09 100ug/L STD 8260	NA	1	1	STD25172	03/17/08 13:29
12	6M73523	WG265645-10 200ug/L STD 8260	NA	1	1	STD25172	03/17/08 14:01
13	6M73524	WG265645-11 300ug/L STD 8260	NA	1	1	STD25172	03/17/08 14:33
14	6M73525	SYSTEM BLANK	NA	1	1		03/17/08 15:05
15	6M73526	SYSTEM BLANK	NA	1	1		03/17/08 15:37
16	6M73527	WG265645-06 5ug/L STD 8260	NA	1	1	STD25172	03/17/08 16:10
17	6M73528	WG265645-12 20ug/L ALT SRC STD 8260	NA	1	1	STD25182	03/17/08 16:49
18	6M73529	SYSTEM BLANK	NA	1	1		03/17/08 17:21
19	6M73530	SYSTEM BLANK	NA	1	1		03/17/08 17:52

Comments

Seq.	Rerun	Dil.	Reason	Analytes
8	X			
File ID: 6M73519				
	DNR			

Approved: March 20, 2008

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 032108
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 23385

Internal Standard: STD24971 Surrogate Standard: STD25166
CCV: STD25172 LCS: STD25182 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG266112

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M73620	SYSTEM BLANK	NA	1	1		03/21/08 08:44
2	6M73621	WG266110-01 BFB 50ng STD 8260	NA	1	1	STD25005	03/21/08 09:17
3	6M73622	WG266110-02 50ug/L STD 8260	NA	1	1	STD25172	03/21/08 09:43
4	6M73624	WG266112-01 VBLK0321 BLANK 8260	NA	1	1		03/21/08 10:17
5	6M73625	WG266112-01 VBLK0321 BLANK 8260	NA	1	1		03/21/08 10:49
6	6M73626	WG266112-02 20ug/L LCS STD 8260	NA	1	1	STD25182	03/21/08 11:21
7	6M73627	WG266112-03 20ug/L LCSDUP STD 8260	NA	1	1	STD25182	03/21/08 11:53
8	6M73628	L08030381-03 A 250X 826-SPE	=5	1	250		03/21/08 12:25
9	6M73629	L08030268-01 K 10X 826-TC	NA	17	10		03/21/08 12:58
10	6M73630	L08030268-02 M 10X 826-TC	NA	17	10		03/21/08 13:29
11	6M73631	L08030345-03 A 826-LOW	<2	1	1		03/21/08 14:01
12	6M73632	L08030315-04 A 826-LOW	<2	1	1		03/21/08 14:33
13	6M73633	L08030313-01 A 826-SPE	<2	1	1		03/21/08 15:05
14	6M73634	L08030307-01 A 826-SPE1	<2	1	1		03/21/08 15:37
15	6M73635	L08030307-02 A 826-SPE1	<2	1	1		03/21/08 16:09
16	6M73636	L08030317-01 A 10X 826-TC	NA	17	10		03/21/08 16:40
17	6M73637	L08030306-01 A 826-SPE	<2	1	1		03/21/08 17:13
18	6M73638	L08030306-03 A 826-SPE	=7	1	1		03/21/08 17:45
19	6M73639	L08030306-05 A 826-SPE	<2	1	1		03/21/08 18:17
20	6M73640	L08030315-01 A 826-LOW	<2	1	1		03/21/08 18:50
21	6M73641	L08030315-02 A 25X 826-LOW	<2	1	25		03/21/08 19:22
22	6M73642	L08030315-03 A 10X 826-LOW	<2	1	10		03/21/08 19:54
23	6M73643	L08030345-01 A 826-LOW	<2	1	1		03/21/08 20:27
24	6M73644	L08030345-02 A 826-LOW	<2	1	1		03/21/08 20:59
25	6M73645	SYSTEM BLANK	NA	1	1		03/21/08 21:31
26	6M73646	L08030331-01 100X SCREEN	NA	7	1		03/21/08 22:03
27	6M73647	L08030331-03 100X SCREEN	NA	7	1		03/21/08 22:35
28	6M73648	L08030331-04 100X SCREEN	NA	1	1		03/21/08 23:07
29	6M73649	L08030331-05 100X SCREEN	NA	1	1		03/21/08 23:40
30	6M73650	L08030331-02 100X SCREEN	NA	1	1		03/22/08 00:12
31	6M73651	L08030313-02 100X SCREEN	NA	1	1		03/22/08 00:45
32	6M73652	SYSTEM BLANK	NA	1	1		03/22/08 01:17
33	6M73653	SYSTEM BLANK	NA	1	1		03/22/08 01:49

Approved: March 24, 2008

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KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 032108
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 23385

Internal Standard: STD24971 Surrogate Standard: STD25166
CCV: STD25172 LCS: STD25182 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG266112

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
4	X		Carry-over contamination	
File ID: 6M73624				
	DNR			
22	X	1	Analyzed too dilute	
File ID: 6M73642				
	DNR			
24	X		Internal standard failure	
File ID: 6M73644				
	DNR			

Approved: March 24, 2008

KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 032208
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 23387

Internal Standard: STD24971 Surrogate Standard: STD25166
CCV: STD25172 LCS: STD25182 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG266199

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M73655	SYSTEM BLANK	NA	1	1		03/22/08 10:26
2	6M73656	WG266197-01 BFB 50ng STD 8260	NA	1	1	STD25005	03/22/08 10:57
3	6M73657	WG266197-01 BFB 50ng STD 8260	NA	1	1	STD25005	03/22/08 11:16
4	6M73658	WG266197-02 50ug/L STD 8260	NA	1	1	STD25172	03/22/08 11:38
5	6M73659	WG266197-02 50ug/L STD 8260	NA	1	1	STD25172	03/22/08 12:15
6	6M73660	WG266199-01 VBLK0322 BLANK 8260	NA	1	1		03/22/08 12:48
7	6M73661	WG266199-01 VBLK0322 BLANK 8260	NA	1	1		03/22/08 13:20
8	6M73662	WG266199-02 20ug/L LCS STD 8260	NA	1	1	STD25182	03/22/08 13:52
9	6M73663	WG266199-03 20ug/L LCSDUP STD 8260	NA	1	1	STD25182	03/22/08 14:24
10	6M73664	L08030409-01 A 25X 826-SPE	<2	1	25		03/22/08 14:56
11	6M73665	L08030338-01 A 826-SPE	<2	1	1		03/22/08 15:29
12	6M73666	L08030338-02 A 826-SPE	<2	1	1		03/22/08 16:01
13	6M73667	L08030288-03 A 826-SPE	<2	1	1		03/22/08 16:33
14	6M73668	L08030315-03 B 826-SPE	<2	1	1		03/22/08 17:05
15	6M73669	L08030288-01 A 826-SPE	<2	1	1		03/22/08 17:37
16	6M73670	L08030288-02 A 826-SPE	<2	1	1		03/22/08 18:10
17	6M73671	L08030330-01 A 826-SPE	=5	1	1		03/22/08 18:42
18	6M73672	L08030330-02 A 826-SPE	=7	1	1		03/22/08 19:14
19	6M73673	L08030330-03 A 826-SPE	=7	1	1		03/22/08 19:46
20	6M73674	L08030330-04 A 826-SPE	<2	1	1		03/22/08 20:18
21	6M73675	L08030330-05 A 826-SPE	=7	1	1		03/22/08 20:51
22	6M73676	L08030330-06 A 826-SPE	=7	1	1		03/22/08 21:23
23	6M73677	L08030330-07 A 826-SPE	<2	1	1		03/22/08 21:55
24	6M73678	L08030330-08 A 826-SPE	<2	1	1		03/22/08 22:28
25	6M73679	L08030330-09 A 826-SPE	=7	1	1		03/22/08 23:00
26	6M73680	SYSTEM BLANK	NA	1	1		03/22/08 23:32

Comments

Seq.	Rerun	Dil.	Reason	Analytes
2	X			
File ID: 6M73656				
	Tune failed/DNR			
4	X		Check Standard Failure	

Approved: March 24, 2008

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KEMRON Environmental Services, Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 032208
Analyst1: CMS Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030B SOP: PAT01 Rev: 10

Maintenance Log ID: 23387

Internal Standard: STD24971 Surrogate Standard: STD25166
CCV: STD25172 LCS: STD25182 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG266199

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 6M73658				
	DNR			
6	X		Carry-over contamination	
File ID: 6M73660				
	DNR			
17	X	100	Over Calibration Range	BTEX, n-propylben., 135-TMB, 124-TMB, Naph., SS conf
File ID: 6M73671				
18	X	50	Over Calibration Range	EB, m+p-Xyl., o-Xyl., n-propylben., 135-TMB, 124-TMB, Naph
File ID: 6M73672				
19	X	100	Over Calibration Range	Ben., EB, m+p-Xyl., o-Xyl., n-propylben., 135-TMB, 124-TMB, Naph
File ID: 6M73673				
20	X		Carry-over contamination	
File ID: 6M73674				
	DNR			
21	X		Carry-over contamination	
File ID: 6M73675				
	DNR			
22	X		Carry-over contamination	
File ID: 6M73676				
	DNR			
23	X		Carry-over contamination	
File ID: 6M73677				
	DNR			
24	X		Carry-over contamination	
File ID: 6M73678				
	DNR			
25	X		Carry-over contamination	
File ID: 6M73679				
	DNR			

Approved: March 24, 2008

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KEMRON Environmental Services, Inc.

Data Checklist

Date: 17-MAR-2008
Analyst: CMS
Analyst: NA
Method: 8260B/624
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 21215
Analytical Workgroups: WG265645

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	X
Manual Integrations	X
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:
20-MAR-2008

Secondary Reviewer:
20-MAR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-20-2008 13:28:30

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

Data Checklist

Date: 21-MAR-2008
Analyst: CMS
Analyst: NA
Method: 8260B
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 21253
Analytical Workgroups: WG266112

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	SMH
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:
24-MAR-2008

Secondary Reviewer:
24-MAR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-24-2008 14:14:40

KEMRON ENVIRONMENTAL SERVICES

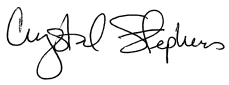
KEMRON Environmental Services, Inc.

Data Checklist

Date: 22-MAR-2008
Analyst: CMS
Analyst: NA
Method: 8260B
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 21256
Analytical Workgroups: WG266199

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	SMH
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:
24-MAR-2008



Secondary Reviewer:
24-MAR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAR-24-2008 15:47:36

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

HOLDING TIMES

EQUIVALENT TO AFCEE FORM 9

00089899

Analytical Method: 8260B AAB#: WG266112

Login Number: L08030315

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
47WW34-031408	03/14/08	03/15/08	03/21/08	14	7.31	03/21/08	14	7.31	
TRIP BLANK	03/14/08	03/15/08	03/21/08	14	7.61	03/21/08	14	7.61	
47WW33-031408	03/14/08	03/15/08	03/21/08	14	7.38	03/21/08	14	7.38	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008

PDF File ID: 1046992

Report generated 03/24/2008 16:32

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

HOLDING TIMES

EQUIVALENT TO AFCEE FORM 9

00089900

Analytical Method: 8260B AAB#: WG266199

Login Number: L08030315

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
17WW17-031408	03/14/08	03/15/08	03/22/08	14	8.08	03/22/08	14	8.08	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008

PDF File ID: 1046992

Report generated 03/24/2008 16:32

Login Number: L08030315
Instrument Id: HPMS6
Workgroup (AAB#): WG266199

Method: 8260
CAL ID: HPMS6-17-MAR-08
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L08030315-03	1.00	01	102	99.6	91.3	95.0
WG266199-01	1.00	01	94.6	95.1	91.7	95.2
WG266199-02	1.00	01	96.2	97.5	89.0	94.7
WG266199-03	1.00	01	95.6	100	93.9	98.1

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: 1047002
Report generated: 03/24/2008 16:33

Login Number: L08030315
Instrument Id: HPMS6
Workgroup (AAB#): WG266112

Method: 8260
CAL ID: HPMS6-17-MAR-08
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L08030315-01	1.00	01	98.7	98.2	96.8	102
L08030315-02	25.0	DL01	98.4	98.9	95.7	103
L08030315-04	1.00	01	97.0	96.2	96.3	97.5
WG266112-01	1.00	01	97.2	99.9	99.2	103
WG266112-02	1.00	01	95.8	97.4	89.6	95.6
WG266112-03	1.00	01	96.0	98.9	94.2	97.1

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: 1047002
Report generated: 03/24/2008 16:33

METHOD BLANK SUMMARY

Login Number: L08030315
Work Group: WG266112
Blank File ID: 6M73625
Blank Sample ID: WG266112-01
Prep Date: 03/21/08 10:49
Instrument ID: HPMS6
Analyzed Date: 03/21/08 10:49
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	WG266112-02	6M73626	03/21/08 11:21	01
LCS2	WG266112-03	6M73627	03/21/08 11:53	01
TRIP BLANK	L08030315-04	6M73632	03/21/08 14:33	01
47WW33-031408	L08030315-01	6M73640	03/21/08 18:50	01
47WW34-031408	L08030315-02	6M73641	03/21/08 19:22	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1046994
Report generated 03/24/2008 16:32

METHOD BLANK SUMMARY

Login Number: L08030315
Work Group: WG266199
Blank File ID: 6M73661
Blank Sample ID: WG266199-01
Prep Date: 03/22/08 13:20
Instrument ID: HPMS6
Analyzed Date: 03/22/08 13:20
Method: 8260B
Analyst: CMS

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG266199-02	6M73662	03/22/08 13:52	01
LCS2	WG266199-03	6M73663	03/22/08 14:24	01
17WW17-031408	L08030315-03	6M73668	03/22/08 17:05	01

Report Name: BLANK_SUMMARY
PDF File ID: 1046994
Report generated 03/24/2008 16:32

METHOD BLANK REPORT

00089905

Login Number:L08030315 Prep Date:03/21/08 10:49 Sample ID:WG266112-01
Instrument ID:HPMS6 Run Date:03/21/08 10:49 Prep Method:5030B
File ID:6M73625 Analyst:CMS/ASP Method:8260B
Workgroup (AAB#):WG266112 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-17-MAR-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: 1046995
24-MAR-2008 16:32

KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030315 Prep Date:03/21/08 10:49 Sample ID:WG266112-01
Instrument ID:HPMS6 Run Date:03/21/08 10:49 Prep Method:5030B
File ID:6M73625 Analyst:CMS/ASP Method:8260B
Workgroup (AAB#):WG266112 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-17-MAR-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	0.217	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	99.9	86 - 118	PASS
1,2-Dichloroethane-d4	97.2	80 - 120	PASS
Toluene-d8	103	88 - 110	PASS
4-Bromofluorobenzene	99.2	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: 1046995
24-MAR-2008 16:32

KEMRON ENVIRONMENTAL SERVICES

METHOD BLANK REPORT

Login Number:L08030315 Prep Date:03/22/08 13:20 Sample ID:WG266199-01
Instrument ID:HPMS6 Run Date:03/22/08 13:20 Prep Method:5030B
File ID:6M73661 Analyst:CMS Method:8260B
Workgroup (AAB#):WG266199 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-17-MAR-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

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KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.

METHOD BLANK REPORT

00089908

Login Number:L08030315 Prep Date:03/22/08 13:20 Sample ID:WG266199-01
Instrument ID:HPMS6 Run Date:03/22/08 13:20 Prep Method:5030B
File ID:6M73661 Analyst:CMS Method:8260B
Workgroup (AAB#):WG266199 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-17-MAR-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	0.248	1	J
1,2,4-Trichlorobenzene	0.200	1.00	0.204	1	J
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	95.1	86	-	118	PASS
1,2-Dichloroethane-d4	94.6	80	-	120	PASS
Toluene-d8	95.2	88	-	110	PASS
4-Bromofluorobenzene	91.7	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
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KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030315 Analyst:CMS Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG266199 Units:ug/L
QC Key:STD Lot #:STD25182

Sample ID:WG266199-02 LCS File ID:6M73662 Run Date:03/22/2008 13:52
Sample ID:WG266199-03 LCS2 File ID:6M73663 Run Date:03/22/2008 14:24

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	19.8	98.8	20.0	17.5	87.3	12.4	40 - 142	20	
Benzene	20.0	17.9	89.3	20.0	19.1	95.3	6.54	80 - 121	20	
Bromobenzene	20.0	18.1	90.5	20.0	19.4	97.1	7.11	80 - 120	20	
Bromochloromethane	20.0	19.6	98.1	20.0	19.7	98.3	0.137	65 - 130	20	
Bromodichloromethane	20.0	20.3	101	20.0	21.2	106	4.55	80 - 131	20	
Bromoform	20.0	19.1	95.5	20.0	18.1	90.5	5.45	70 - 130	20	
Bromomethane	20.0	21.3	107	20.0	23.5	118	9.85	30 - 145	20	
2-Butanone	20.0	15.9	79.3	20.0	14.3	71.5	10.3	30 - 150	20	
n-Butylbenzene	20.0	19.4	97.2	20.0	21.1	105	8.10	80 - 131	20	
sec-Butylbenzene	20.0	19.2	96.2	20.0	21.1	106	9.49	80 - 127	20	
tert-Butylbenzene	20.0	19.2	95.8	20.0	20.9	104	8.54	80 - 126	20	
Carbon disulfide	20.0	16.7	83.4	20.0	18.2	91.2	8.88	58 - 138	20	
Carbon tetrachloride	20.0	20.9	105	20.0	22.9	114	8.83	65 - 140	20	
Chlorobenzene	20.0	17.6	87.8	20.0	18.6	92.8	5.57	80 - 120	20	
Chlorodibromomethane	20.0	19.6	98.2	20.0	19.8	99.1	0.947	60 - 135	20	
Chloroethane	20.0	16.7	83.5	20.0	17.8	88.9	6.30	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	19.2	96.1	20.0	17.9	89.5	7.05	58 - 151	20	
Chloroform	20.0	19.6	97.8	20.0	20.5	103	4.81	80 - 125	20	
Chloromethane	20.0	15.4	77.2	20.0	16.4	81.9	5.91	40 - 125	20	
2-Chlorotoluene	20.0	17.0	85.2	20.0	19.8	99.0	15.0	80 - 127	20	
4-Chlorotoluene	20.0	18.5	92.3	20.0	19.0	94.9	2.80	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	19.7	98.3	20.0	19.1	95.5	2.89	50 - 130	20	
1,2-Dibromoethane	20.0	18.9	94.5	20.0	18.7	93.7	0.782	80 - 125	20	
Dibromomethane	20.0	20.6	103	20.0	20.3	101	1.55	75 - 125	20	
1,2-Dichlorobenzene	20.0	18.5	92.4	20.0	19.4	97.2	5.07	80 - 125	20	
1,3-Dichlorobenzene	20.0	17.6	88.1	20.0	18.9	94.3	6.75	80 - 120	20	
1,4-Dichlorobenzene	20.0	19.2	96.1	20.0	20.1	101	4.69	80 - 120	20	
Dichlorodifluoromethane	20.0	14.9	74.3	20.0	15.9	79.7	7.07	50 - 133	20	
1,1-Dichloroethane	20.0	18.5	92.5	20.0	19.6	98.0	5.78	80 - 125	20	
1,2-Dichloroethane	20.0	19.1	95.3	20.0	19.5	97.4	2.22	80 - 129	20	
1,1-Dichloroethene	20.0	18.9	94.7	20.0	20.3	101	6.79	80 - 132	20	
cis-1,2-Dichloroethene	20.0	19.3	96.4	20.0	20.8	104	7.41	70 - 125	20	
trans-1,2-Dichloroethene	20.0	17.8	88.9	20.0	19.8	99.0	10.8	80 - 127	20	
1,2-Dichloropropane	20.0	17.6	88.1	20.0	19.0	94.8	7.35	80 - 120	20	
1,3-Dichloropropane	20.0	18.5	92.4	20.0	18.0	90.1	2.53	80 - 120	20	
2,2-Dichloropropane	20.0	19.5	97.6	20.0	21.3	107	8.82	80 - 133	20	
cis-1,3-Dichloropropene	20.0	19.1	95.7	20.0	19.3	96.7	1.06	70 - 130	20	
trans-1,3-Dichloropropene	20.0	17.9	89.4	20.0	17.6	88.0	1.51	80 - 130	20	
1,1-Dichloropropene	20.0	19.0	94.9	20.0	20.8	104	9.04	75 - 130	20	
Ethylbenzene	20.0	18.5	92.7	20.0	20.0	99.8	7.34	80 - 122	20	

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KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030315 Analyst:CMS Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG266199 Units:ug/L
QC Key:STD Lot #:STD25182

Sample ID:WG266199-02 LCS File ID:6M73662 Run Date:03/22/2008 13:52
Sample ID:WG266199-03 LCS2 File ID:6M73663 Run Date:03/22/2008 14:24

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	17.1	85.7	20.0	15.3	76.3	11.6	55 - 130	20	
Hexachlorobutadiene	20.0	19.6	97.9	20.0	21.1	105	7.47	72 - 132	20	
Isopropylbenzene	20.0	18.0	90.1	20.0	19.2	96.2	6.57	80 - 122	20	
p-Isopropyltoluene	20.0	18.9	94.5	20.0	20.4	102	7.65	80 - 122	20	
4-Methyl-2-pentanone	20.0	18.8	94.2	20.0	17.7	88.7	6.05	64 - 140	20	
Methylene chloride	20.0	18.3	91.6	20.0	19.3	96.7	5.35	80 - 123	20	
Naphthalene	20.0	19.2	96.1	20.0	18.4	92.1	4.28	59 - 149	20	
n-Propylbenzene	20.0	18.7	93.5	20.0	20.6	103	9.71	80 - 129	20	
Styrene	20.0	19.4	97.0	20.0	20.3	102	4.65	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	18.6	92.8	20.0	19.6	97.9	5.37	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	17.1	85.4	20.0	17.2	86.0	0.752	79 - 125	20	
Tetrachloroethene	20.0	18.4	91.9	20.0	20.3	101	9.73	80 - 124	20	
Toluene	20.0	18.0	89.9	20.0	19.3	96.4	6.96	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	18.8	93.9	20.0	18.5	92.7	1.26	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	18.9	94.5	20.0	18.9	94.4	0.144	65 - 135	20	
1,1,1-Trichloroethane	20.0	20.2	101	20.0	21.9	109	7.79	80 - 134	20	
1,1,2-Trichloroethane	20.0	18.2	91.0	20.0	17.7	88.7	2.65	80 - 125	20	
Trichloroethene	20.0	19.0	94.9	20.0	20.9	104	9.52	80 - 122	20	
Trichlorofluoromethane	20.0	16.2	81.0	20.0	17.3	86.5	6.57	62 - 151	20	
1,2,3-Trichloropropane	20.0	19.2	96.0	20.0	19.4	96.8	0.899	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	18.6	92.9	20.0	20.1	100	7.77	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	18.8	94.1	20.0	20.5	103	8.64	80 - 127	20	
Vinyl acetate	20.0	14.9	74.4	20.0	14.5	72.5	2.56	10 - 150	20	
Vinyl chloride	20.0	17.5	87.5	20.0	18.4	92.1	5.04	65 - 140	20	
o-Xylene	20.0	19.0	94.9	20.0	20.0	99.9	5.19	80 - 122	20	
m-,p-Xylene	40.0	36.7	91.7	40.0	38.9	97.2	5.91	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	97.5	100	86 - 118	PASS
1,2-Dichloroethane-d4	96.2	95.6	80 - 120	PASS
Toluene-d8	94.7	98.1	88 - 110	PASS
4-Bromofluorobenzene	89.0	93.9	86 - 115	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
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KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030315 Analyst:CMS/ASP Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG266112 Units:ug/L
QC Key:STD Lot #:STD25182

Sample ID:WG266112-02 LCS File ID:6M73626 Run Date:03/21/2008 11:21
Sample ID:WG266112-03 LCS2 File ID:6M73627 Run Date:03/21/2008 11:53

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	20.0	100	20.0	19.1	95.6	4.70	40 - 142	20	
Benzene	20.0	18.1	90.4	20.0	17.8	89.2	1.28	80 - 121	20	
Bromobenzene	20.0	17.8	89.0	20.0	17.6	87.9	1.19	80 - 120	20	
Bromochloromethane	20.0	18.4	92.1	20.0	18.4	92.1	0.0889	65 - 130	20	
Bromodichloromethane	20.0	19.2	96.2	20.0	18.8	93.9	2.38	80 - 131	20	
Bromoform	20.0	18.7	93.3	20.0	17.8	88.9	4.73	70 - 130	20	
Bromomethane	20.0	18.2	91.2	20.0	18.6	92.8	1.81	30 - 145	20	
2-Butanone	20.0	21.3	107	20.0	19.4	97.1	9.46	30 - 150	20	
n-Butylbenzene	20.0	18.9	94.7	20.0	19.2	96.1	1.49	80 - 131	20	
sec-Butylbenzene	20.0	19.0	94.8	20.0	19.2	96.1	1.35	80 - 127	20	
tert-Butylbenzene	20.0	18.4	91.9	20.0	19.2	95.8	4.12	80 - 126	20	
Carbon disulfide	20.0	15.1	75.7	20.0	15.1	75.7	0.0825	58 - 138	20	
Carbon tetrachloride	20.0	20.2	101	20.0	20.2	101	0.0633	65 - 140	20	
Chlorobenzene	20.0	17.3	86.7	20.0	17.2	86.1	0.602	80 - 120	20	
Chlorodibromomethane	20.0	19.4	96.9	20.0	18.7	93.5	3.50	60 - 135	20	
Chloroethane	20.0	17.6	88.2	20.0	17.7	88.6	0.529	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	18.5	92.4	20.0	17.9	89.3	3.36	58 - 151	20	
Chloroform	20.0	18.7	93.7	20.0	18.5	92.6	1.14	80 - 125	20	
Chloromethane	20.0	14.5	72.7	20.0	14.5	72.6	0.220	40 - 125	20	
2-Chlorotoluene	20.0	17.6	88.0	20.0	17.0	84.9	3.59	80 - 127	20	
4-Chlorotoluene	20.0	17.0	84.8	20.0	18.0	90.2	6.19	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	18.9	94.6	20.0	19.0	94.9	0.347	50 - 130	20	
1,2-Dibromoethane	20.0	18.8	94.1	20.0	18.0	89.9	4.57	80 - 125	20	
Dibromomethane	20.0	19.7	98.7	20.0	19.1	95.4	3.37	75 - 125	20	
1,2-Dichlorobenzene	20.0	18.0	90.1	20.0	18.2	90.9	0.943	80 - 125	20	
1,3-Dichlorobenzene	20.0	17.2	86.0	20.0	17.2	86.2	0.189	80 - 120	20	
1,4-Dichlorobenzene	20.0	18.5	92.6	20.0	18.7	93.5	0.911	80 - 120	20	
Dichlorodifluoromethane	20.0	14.0	70.2	20.0	14.5	72.3	2.94	50 - 133	20	
1,1-Dichloroethane	20.0	17.8	89.0	20.0	18.3	91.5	2.77	80 - 125	20	
1,2-Dichloroethane	20.0	18.8	93.8	20.0	17.9	89.3	4.87	80 - 129	20	
1,1-Dichloroethene	20.0	18.0	90.2	20.0	18.2	91.0	0.970	80 - 132	20	
cis-1,2-Dichloroethene	20.0	19.0	94.8	20.0	19.3	96.3	1.54	70 - 125	20	
trans-1,2-Dichloroethene	20.0	17.5	87.4	20.0	17.6	88.0	0.688	80 - 127	20	
1,2-Dichloropropane	20.0	17.6	87.8	20.0	17.7	88.3	0.594	80 - 120	20	
1,3-Dichloropropane	20.0	17.9	89.7	20.0	17.0	85.0	5.43	80 - 120	20	
2,2-Dichloropropane	20.0	18.7	93.4	20.0	18.9	94.7	1.39	80 - 133	20	
cis-1,3-Dichloropropene	20.0	18.1	90.7	20.0	18.0	89.9	0.831	70 - 130	20	
trans-1,3-Dichloropropene	20.0	17.7	88.3	20.0	16.5	82.4	6.95	80 - 130	20	
1,1-Dichloropropene	20.0	18.1	90.5	20.0	18.5	92.7	2.44	75 - 130	20	
Ethylbenzene	20.0	18.5	92.5	20.0	18.6	92.9	0.424	80 - 122	20	

LCS_LCS2 - Modified 03/06/2008
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KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030315 Analyst:CMS/ASP Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG266112 Units:ug/L
QC Key:STD Lot #:STD25182

Sample ID:WG266112-02 LCS File ID:6M73626 Run Date:03/21/2008 11:21
Sample ID:WG266112-03 LCS2 File ID:6M73627 Run Date:03/21/2008 11:53

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	18.0	89.9	20.0	16.8	84.1	6.59	55 - 130	20	
Hexachlorobutadiene	20.0	18.8	94.2	20.0	19.5	97.6	3.55	72 - 132	20	
Isopropylbenzene	20.0	17.8	88.8	20.0	17.7	88.4	0.468	80 - 122	20	
p-Isopropyltoluene	20.0	18.2	91.2	20.0	18.5	92.6	1.57	80 - 122	20	
4-Methyl-2-pentanone	20.0	19.6	97.8	20.0	18.6	93.2	4.82	64 - 140	20	
Methylene chloride	20.0	18.4	91.8	20.0	18.7	93.4	1.71	80 - 123	20	
Naphthalene	20.0	18.6	92.9	20.0	18.5	92.5	0.430	59 - 149	20	
n-Propylbenzene	20.0	18.2	91.0	20.0	18.5	92.6	1.67	80 - 129	20	
Styrene	20.0	19.2	96.1	20.0	18.9	94.6	1.55	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	17.9	89.7	20.0	17.5	87.6	2.32	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	17.8	88.8	20.0	17.1	85.3	4.04	79 - 125	20	
Tetrachloroethene	20.0	18.2	91.1	20.0	18.0	89.9	1.29	80 - 124	20	
Toluene	20.0	18.1	90.5	20.0	18.1	90.3	0.226	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	18.2	91.1	20.0	18.3	91.6	0.594	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	17.9	89.5	20.0	18.2	91.2	1.93	65 - 135	20	
1,1,1-Trichloroethane	20.0	19.1	95.3	20.0	19.2	96.1	0.884	80 - 134	20	
1,1,2-Trichloroethane	20.0	17.8	89.2	20.0	17.6	87.8	1.57	80 - 125	20	
Trichloroethene	20.0	18.5	92.6	20.0	18.6	93.0	0.462	80 - 122	20	
Trichlorofluoromethane	20.0	14.6	73.1	20.0	15.0	74.8	2.25	62 - 151	20	
1,2,3-Trichloropropane	20.0	19.6	98.0	20.0	17.9	89.7	8.91	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	17.9	89.4	20.0	18.2	91.1	1.82	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	18.3	91.4	20.0	18.3	91.3	0.123	80 - 127	20	
Vinyl acetate	20.0	17.2	86.0	20.0	16.7	83.6	2.91	10 - 150	20	
Vinyl chloride	20.0	18.3	91.4	20.0	17.6	88.2	3.64	65 - 140	20	
o-Xylene	20.0	18.7	93.3	20.0	18.7	93.6	0.375	80 - 122	20	
m-,p-Xylene	40.0	36.4	91.1	40.0	36.0	90.0	1.12	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	97.4	98.9	86 - 118	PASS
1,2-Dichloroethane-d4	95.8	96.0	80 - 120	PASS
Toluene-d8	95.6	97.1	88 - 110	PASS
4-Bromofluorobenzene	89.6	94.2	86 - 115	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1046511
Report generated: 03/24/2008 16:32

KEMRON ENVIRONMENTAL SERVICES

BFB

Login Number: L08030315 Tune ID: WG265645-01
Instrument: HPMS6 Run Date: 03/17/2008
Analyst: CMS Run Time: 09:12
Workgroup: WG265645 File ID: 6M73514
Cal ID: HPMS6-17-MAR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	21.1	6677	PASS
75.0	95.0	30.0	60.0	52.8	16743	PASS
95.0	95.0	100	100	100	31712	PASS
96.0	95.0	5.00	9.00	6.45	2046	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	83.7	26528	PASS
175	174	5.00	9.00	7.44	1974	PASS
176	174	95.0	101	95.3	25272	PASS
177	176	5.00	9.00	6.70	1692	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG265645-02	STD	01	03/17/2008 09:45	
WG265645-03	STD	01	03/17/2008 10:17	
WG265645-04	STD	01	03/17/2008 10:49	
WG265645-05	STD	01	03/17/2008 11:21	
WG265645-07	STD	01	03/17/2008 12:24	
WG265645-08	STD-CCV	01	03/17/2008 12:57	
WG265645-09	STD	01	03/17/2008 13:29	
WG265645-10	STD	01	03/17/2008 14:01	
WG265645-11	STD	01	03/17/2008 14:33	
WG265645-06	STD	01	03/17/2008 16:10	
WG265645-12	SSCV	01	03/17/2008 16:49	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1046999
Report generated 03/24/2008 16:32

BFB

Login Number: L08030315
Instrument: HPMS6
Analyst: CMS/ASP
Workgroup: WG266110

Tune ID: WG266110-01
Run Date: 03/21/2008
Run Time: 09:17
File ID: 6M73621
Cal ID: HPMS6-17-MAR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	22.6	8112	PASS
75.0	95.0	30.0	60.0	54.1	19442	PASS
95.0	95.0	100	100	100	35904	PASS
96.0	95.0	5.00	9.00	6.94	2492	PASS
173	174	0	2.00	0.367	100	PASS
174	95.0	50.0	100	76.0	27274	PASS
175	174	5.00	9.00	8.05	2195	PASS
176	174	95.0	101	99.3	27080	PASS
177	176	5.00	9.00	6.81	1844	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG266110-02	CCV	01	03/21/2008 09:43	
WG266112-01	BLANK	01	03/21/2008 10:49	
WG266112-02	LCS	01	03/21/2008 11:21	
WG266112-03	LCS2	01	03/21/2008 11:53	
L08030315-04	TRIP BLANK	01	03/21/2008 14:33	
L08030315-01	47WW33-031408	01	03/21/2008 18:50	
L08030315-02	47WW34-031408	DL01	03/21/2008 19:22	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1046999
Report generated 03/24/2008 16:32

KEMRON ENVIRONMENTAL SERVICES

BFB

Login Number: L08030315
Instrument: HPMS6
Analyst: CMS
Workgroup: WG266197

Tune ID: WG266197-01
Run Date: 03/22/2008
Run Time: 11:16
File ID: 6M73657
Cal ID: HPMS6-17-MAR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	21.2	6776	PASS
75.0	95.0	30.0	60.0	48.7	15539	PASS
95.0	95.0	100	100	100	31898	PASS
96.0	95.0	5.00	9.00	6.08	1940	PASS
173	174	0	2.00	0.545	129	PASS
174	95.0	50.0	100	74.2	23666	PASS
175	174	5.00	9.00	7.04	1667	PASS
176	174	95.0	101	98.3	23272	PASS
177	176	5.00	9.00	7.49	1743	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG266197-02	CCV	01	03/22/2008 12:15	
WG266199-01	BLANK	01	03/22/2008 13:20	
WG266199-02	LCS	01	03/22/2008 13:52	
WG266199-03	LCS2	01	03/22/2008 14:24	
L08030315-03	17WW17-031408	01	03/22/2008 17:05	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1046999
Report generated 03/24/2008 16:32

INITIAL CALIBRATION SUMMARY

Login Number: L08030315 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 17-MAR-08 16:10
ICAL Workgroup: WG265645 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.4470	10.7		
1,2-Dichloropropane	CCC	0.2244	5.94		
Chloroform	CCC	0.5321	6.21		
Ethylbenzene	CCC	0.4929	5.79		
Toluene	CCC	1.276	5.36		
Vinyl Chloride	CCC	0.3600	15.8		1.00
1,1,2,2-Tetrachloroethane	SPCC	0.3487	10.8		
1,1-Dichloroethane	SPCC	0.5127	3.80		
Bromoform	SPCC	0.1658	16.7		1.00
Chlorobenzene	SPCC	0.9552	13.2		
Chloromethane	SPCC	0.3987	10.0		
1,1,1,2-Tetrachloroethane		0.3589	14.4		
1,1,1-Trichloroethane		0.4921	6.74		
1,1,2-Trichloroethane		0.2072	9.88		
1,1-Dichloropropene		0.3539	6.21		
1,2,3-Trichlorobenzene		0.7075	10.2		
1,2,3-Trichloropropane		0.1157	6.20		
1,2,4-Trichlorobenzene		0.8789	6.58		
1,2,4-Trimethylbenzene		2.461	5.99		
1,2-Dibromo-3-Chloropropane		0.06048	20.5		1.00
1,2-Dibromoethane		0.2054	7.49		
1,2-Dichlorobenzene		1.217	13.2		
1,2-Dichloroethane		0.3554	8.02		
1,3,5-Trimethylbenzene		2.286	4.33		
1,3-Dichlorobenzene		1.436	12.7		
1,3-Dichloropropane		0.3695	11.4		
1,4-Dichlorobenzene		1.495	15.2		1.00
2,2-Dichloropropane		0.4692	6.32		
2-Butanone		0.05233	11.3		
2-Chloroethyl Vinyl Ether		0.08830	14.1		
2-Chlorotoluene		2.109	11.9		
2-Hexanone		0.09682	12.7		
4-Chlorotoluene		2.020	10.4		
4-Methyl-2-Pentanone		0.04170	15.3		0.999
Acetone		0.03833	7.60		
Benzene		0.9259	4.61		
Bromobenzene		0.6658	11.4		
Bromochloromethane		0.1527	4.07		
Bromodichloromethane		0.3611	6.93		
Bromomethane		0.1753	27.8		1.00
Carbon Disulfide		0.7865	5.44		
Carbon Tetrachloride		0.4400	9.80		
Chloroethane		0.2139	9.90		
Dibromochloromethane		0.2966	8.55		
Dibromomethane		0.1209	7.83		

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INITIAL CALIBRATION SUMMARY

Login Number: L08030315 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 17-MAR-08 16:10
ICAL Workgroup: WG265645 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
Dichlorodifluoromethane		0.5110	12.7		
Hexachlorobutadiene		0.4834	6.12		
Isopropylbenzene		1.523	2.36		
Methylene Chloride		0.3048	36.2		1.00
Naphthalene		1.278	8.44		
Styrene		0.9688	4.30		
Tetrachloroethene		0.3635	2.18		
Trichloroethene		0.2699	5.00		
Trichlorofluoromethane		0.6467	12.2		
Vinyl Acetate		0.2539	7.63		
cis-1,2-Dichloroethene		0.2694	4.53		
cis-1,3-Dichloropropene		0.3590	8.88		
m-,p-Xylene		0.6352	5.55		
n-Butylbenzene		2.345	3.84		
n-Propylbenzene		3.122	2.86		
o-Xylene		0.5945	3.73		
p-Isopropyltoluene		2.508	4.61		
sec-Butylbenzene		2.820	3.59		
tert-Butylbenzene		0.4712	8.55		
trans-1,2-Dichloroethene		0.2686	4.57		
trans-1,3-Dichloropropene		0.4125	4.53		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

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KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

00089918

Login Number: L08030315
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-02			WG265645-03			WG265645-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	2396.00000	0.3290	1.00	8929.00000	0.4642
1,2-Dichloropropane	NA	NA	NA	0.400	1748.00000	0.2400	1.00	4740.00000	0.2464
Chloroform	0.300	3700.00000	0.5133	0.400	4472.00000	0.6140	1.00	10364.0000	0.5388
Ethylbenzene	NA	NA	NA	0.400	3090.00000	0.5488	1.00	7152.00000	0.4792
Toluene	NA	NA	NA	0.400	7795.00000	1.385	1.00	20140.0000	1.350
Vinyl Chloride	NA	NA	NA	0.400	3332.00000	0.4575	1.00	6085.00000	0.3164
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	1174.00000	0.3469	1.00	3984.00000	0.4353
1,1-Dichloroethane	NA	NA	NA	0.400	3990.00000	0.5478	1.00	10235.0000	0.5321
Bromoform	NA	NA	NA	NA	NA	NA	1.00	2423.00000	0.1624
Chlorobenzene	NA	NA	NA	0.400	6934.00000	1.232	1.00	15771.0000	1.057
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	8301.00000	0.4316
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	2672.00000	0.4746	1.00	5162.00000	0.3459
1,1,1-Trichloroethane	NA	NA	NA	0.400	3067.00000	0.4211	1.00	9747.00000	0.5067
1,1,2-Trichloroethane	NA	NA	NA	0.400	1387.00000	0.2464	1.00	3482.00000	0.2333
1,1-Dichloropropene	NA	NA	NA	0.400	2210.00000	0.3034	1.00	6901.00000	0.3588
1,2,3-Trichlorobenzene	0.300	1681.00000	0.5701	0.400	2770.00000	0.8186	1.00	7257.00000	0.7929
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	1120.00000	0.1224
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	3271.00000	0.9666	1.00	8705.00000	0.9511
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	9362.00000	2.767	1.00	23483.0000	2.566
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	1338.00000	0.2377	1.00	2898.00000	0.1942
1,2-Dichlorobenzene	0.300	2939.00000	0.9968	0.400	5308.00000	1.569	1.00	12441.0000	1.359
1,2-Dichloroethane	NA	NA	NA	0.400	2891.00000	0.3969	1.00	7775.00000	0.4042
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	8110.00000	2.397	1.00	20772.0000	2.270
1,3-Dichlorobenzene	NA	NA	NA	0.400	6295.00000	1.860	1.00	13941.0000	1.523
1,3-Dichloropropane	NA	NA	NA	0.400	2638.00000	0.4686	1.00	5731.00000	0.3840
1,4-Dichlorobenzene	0.300	4724.00000	1.602	0.400	6844.00000	2.022	1.00	14971.0000	1.636
2,2-Dichloropropane	NA	NA	NA	0.400	3078.00000	0.4226	1.00	9018.00000	0.4688
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	8773.00000	2.593	1.00	21182.0000	2.314
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	8461.00000	2.500	1.00	19559.0000	2.137
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	7360.00000	1.011	1.00	18591.0000	0.9665
Bromobenzene	0.300	1691.00000	0.5735	0.400	2767.00000	0.8177	1.00	6961.00000	0.7606
Bromochloromethane	NA	NA	NA	0.400	1070.00000	0.1469	1.00	3087.00000	0.1605
Bromodichloromethane	NA	NA	NA	0.400	2943.00000	0.4041	1.00	6916.00000	0.3596
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	1905.00000	0.09900
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	13310.0000	0.6920
Carbon Tetrachloride	NA	NA	NA	0.400	2541.00000	0.3489	1.00	7835.00000	0.4073

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KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

00089919

Login Number: L08030315
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-05			WG265645-06			WG265645-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	17821.0000	0.4635	5.00	49216.0000	0.4636	20.0	185634.000	0.4675
1,2-Dichloropropane	2.00	8544.00000	0.2222	5.00	21695.0000	0.2044	20.0	87105.0000	0.2194
Chloroform	2.00	20215.0000	0.5257	5.00	54415.0000	0.5126	20.0	201843.000	0.5084
Ethylbenzene	2.00	13539.0000	0.4600	5.00	39686.0000	0.4932	20.0	148146.000	0.4711
Toluene	2.00	37048.0000	1.259	5.00	105421.000	1.310	20.0	394709.000	1.255
Vinyl Chloride	2.00	15532.0000	0.4039	5.00	35611.0000	0.3354	20.0	150308.000	0.3786
1,1,2,2-Tetrachloroethane	2.00	5799.00000	0.3254	5.00	15132.0000	0.3140	20.0	63512.0000	0.3294
1,1-Dichloroethane	2.00	19602.0000	0.5098	5.00	51796.0000	0.4879	20.0	199489.000	0.5024
Bromoform	2.00	3529.00000	0.1199	5.00	11238.0000	0.1397	20.0	53475.0000	0.1701
Chlorobenzene	2.00	26280.0000	0.8929	5.00	73549.0000	0.9140	20.0	274593.000	0.8733
Chloromethane	2.00	17536.0000	0.4560	5.00	42845.0000	0.4036	20.0	165846.000	0.4177
1,1,1,2-Tetrachloroethane	2.00	9248.00000	0.3142	5.00	25394.0000	0.3156	20.0	104462.000	0.3322
1,1,1-Trichloroethane	2.00	18603.0000	0.4838	5.00	51869.0000	0.4886	20.0	197807.000	0.4982
1,1,2-Trichloroethane	2.00	5770.00000	0.1960	5.00	15899.0000	0.1976	20.0	61076.0000	0.1942
1,1-Dichloropropene	2.00	13398.0000	0.3484	5.00	37809.0000	0.3561	20.0	143530.000	0.3615
1,2,3-Trichlorobenzene	2.00	12151.0000	0.6819	5.00	35552.0000	0.7377	20.0	133586.000	0.6929
1,2,3-Trichloropropane	2.00	1869.00000	0.1049	5.00	5191.00000	0.1077	20.0	22655.0000	0.1175
1,2,4-Trichlorobenzene	2.00	14265.0000	0.8005	5.00	42299.0000	0.8777	20.0	160353.000	0.8318
1,2,4-Trimethylbenzene	2.00	42134.0000	2.365	5.00	119946.000	2.489	20.0	459013.000	2.381
1,2-Dibromo-3-Chloropropane	2.00	691.000000	0.03880	5.00	2536.00000	0.05260	20.0	12800.0000	0.06640
1,2-Dibromoethane	2.00	5565.00000	0.1891	5.00	15496.0000	0.1926	20.0	64288.0000	0.2044
1,2-Dichlorobenzene	2.00	20386.0000	1.144	5.00	57371.0000	1.190	20.0	226230.000	1.174
1,2-Dichloroethane	2.00	13273.0000	0.3452	5.00	35453.0000	0.3340	20.0	139524.000	0.3514
1,3,5-Trimethylbenzene	2.00	37382.0000	2.098	5.00	114141.000	2.368	20.0	432627.000	2.244
1,3-Dichlorobenzene	2.00	23688.0000	1.329	5.00	66695.0000	1.384	20.0	258779.000	1.342
1,3-Dichloropropane	2.00	10036.0000	0.3410	5.00	27347.0000	0.3398	20.0	111656.000	0.3551
1,4-Dichlorobenzene	2.00	24078.0000	1.351	5.00	68505.0000	1.421	20.0	262146.000	1.360
2,2-Dichloropropane	2.00	16979.0000	0.4416	5.00	47901.0000	0.4512	20.0	189401.000	0.4770
2-Butanone	NA	NA	NA	5.00	4475.00000	0.04220	20.0	20462.0000	0.05150
2-Chloroethyl Vinyl Ether	2.00	2725.00000	0.07090	5.00	8099.00000	0.07630	20.0	35465.0000	0.08930
2-Chlorotoluene	2.00	36429.0000	2.044	5.00	104190.000	2.162	20.0	383958.000	1.992
2-Hexanone	NA	NA	NA	5.00	5873.00000	0.07300	20.0	30233.0000	0.09610
4-Chlorotoluene	2.00	33580.0000	1.885	5.00	93562.0000	1.941	20.0	359613.000	1.865
4-Methyl-2-Pentanone	NA	NA	NA	5.00	3213.00000	0.03030	20.0	15695.0000	0.03950
Acetone	NA	NA	NA	5.00	3646.00000	0.03430	20.0	15422.0000	0.03880
Benzene	2.00	35854.0000	0.9324	5.00	95924.0000	0.9036	20.0	363286.000	0.9150
Bromobenzene	2.00	11127.0000	0.6244	5.00	30722.0000	0.6375	20.0	121381.000	0.6296
Bromochloromethane	2.00	5557.00000	0.1445	5.00	15424.0000	0.1453	20.0	62683.0000	0.1579
Bromodichloromethane	2.00	13213.0000	0.3436	5.00	34625.0000	0.3262	20.0	138473.000	0.3488
Bromomethane	2.00	5362.00000	0.1394	5.00	17955.0000	0.1691	20.0	63512.0000	0.1600
Carbon Disulfide	2.00	30735.0000	0.7993	5.00	83134.0000	0.7831	20.0	319368.000	0.8044
Carbon Tetrachloride	2.00	17069.0000	0.4439	5.00	46853.0000	0.4413	20.0	184780.000	0.4654

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KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

00089920

Login Number: L08030315
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-08			WG265645-09			WG265645-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	497125.000	0.4648	100	1071083.00	0.4566	200	2287579.00	0.4671
1,2-Dichloropropane	50.0	231517.000	0.2165	100	516656.000	0.2202	200	1107660.00	0.2262
Chloroform	50.0	548682.000	0.5130	100	1219441.00	0.5198	200	2659639.00	0.5430
Ethylbenzene	50.0	410293.000	0.4899	100	914918.000	0.4819	200	2138737.00	0.5192
Toluene	50.0	1058274.00	1.264	100	2290968.00	1.207	200	4871242.00	1.183
Vinyl Chloride	50.0	358771.000	0.3355	100	687346.000	0.2930	NA	NA	NA
1,1,2,2-Tetrachloroethane	50.0	176013.000	0.3356	100	405777.000	0.3466	200	855263.000	0.3561
1,1-Dichloroethane	50.0	535778.000	0.5010	100	1174876.00	0.5008	200	2544366.00	0.5195
Bromoform	50.0	152544.000	0.1821	100	364480.000	0.1920	200	800190.000	0.1943
Chlorobenzene	50.0	741321.000	0.8852	100	1666776.00	0.8779	200	3749166.00	0.9102
Chloromethane	50.0	392589.000	0.3671	100	802920.000	0.3423	200	1826071.00	0.3728
1,1,1,2-Tetrachloroethane	50.0	292061.000	0.3487	100	679578.000	0.3580	200	1574815.00	0.3823
1,1,1-Trichloroethane	50.0	531947.000	0.4974	100	1176715.00	0.5016	200	2639702.00	0.5390
1,1,2-Trichloroethane	50.0	162723.000	0.1943	100	373912.000	0.1970	200	820241.000	0.1991
1,1-Dichloropropene	50.0	387429.000	0.3623	100	851640.000	0.3631	200	1850001.00	0.3777
1,2,3-Trichlorobenzene	50.0	351898.000	0.6710	100	812474.000	0.6940	200	1702338.00	0.7087
1,2,3-Trichloropropane	50.0	60770.0000	0.1159	100	136711.000	0.1168	200	299290.000	0.1246
1,2,4-Trichlorobenzene	50.0	440626.000	0.8402	100	1011834.00	0.8643	200	2159161.00	0.8989
1,2,4-Trimethylbenzene	50.0	1242523.00	2.369	100	2707380.00	2.313	200	5850452.00	2.436
1,2-Dibromo-3-Chloropropane	50.0	34452.0000	0.06570	100	80909.0000	0.06910	200	168964.000	0.07030
1,2-Dibromoethane	50.0	171046.000	0.2042	100	395820.000	0.2085	200	874069.000	0.2122
1,2-Dichlorobenzene	50.0	612066.000	1.167	100	1357705.00	1.160	200	2864478.00	1.193
1,2-Dichloroethane	50.0	358188.000	0.3349	100	790654.000	0.3371	200	1664453.00	0.3398
1,3,5-Trimethylbenzene	50.0	1193900.00	2.277	100	2629745.00	2.246	200	5736993.00	2.388
1,3-Dichlorobenzene	50.0	708815.000	1.352	100	1545233.00	1.320	200	3318406.00	1.382
1,3-Dichloropropane	50.0	295842.000	0.3533	100	673899.000	0.3550	200	1478587.00	0.3590
1,4-Dichlorobenzene	50.0	707755.000	1.350	100	1559503.00	1.332	200	3317538.00	1.381
2,2-Dichloropropane	50.0	523567.000	0.4896	100	1143863.00	0.4876	200	2521831.00	0.5149
2-Butanone	50.0	53918.0000	0.05040	100	135064.000	0.05760	200	286860.000	0.05860
2-Chloroethyl Vinyl Ether	50.0	98131.0000	0.09180	100	232842.000	0.09930	200	500470.000	0.1022
2-Chlorotoluene	50.0	985774.000	1.880	100	2122388.00	1.813	200	4976640.00	2.072
2-Hexanone	50.0	82105.0000	0.09800	100	199432.000	0.1050	200	422100.000	0.1025
4-Chlorotoluene	50.0	1026331.00	1.957	100	2255698.00	1.927	200	4679809.00	1.948
4-Methyl-2-Pentanone	50.0	45185.0000	0.04230	100	109653.000	0.04670	200	234673.000	0.04790
Acetone	50.0	41367.0000	0.03870	100	97380.0000	0.04150	200	201840.000	0.04120
Benzene	50.0	960493.000	0.8981	100	2084163.00	0.8885	200	4371346.00	0.8925
Bromobenzene	50.0	331804.000	0.6327	100	747769.000	0.6387	200	1628235.00	0.6778
Bromochloromethane	50.0	164660.000	0.1540	100	365362.000	0.1558	200	767885.000	0.1568
Bromodichloromethane	50.0	375918.000	0.3515	100	860389.000	0.3668	200	1901141.00	0.3882
Bromomethane	50.0	211665.000	0.1979	100	515947.000	0.2199	200	1183663.00	0.2417
Carbon Disulfide	50.0	867958.000	0.8116	100	1884335.00	0.8033	200	3976950.00	0.8120
Carbon Tetrachloride	50.0	500167.000	0.4677	100	1093700.00	0.4662	200	2346675.00	0.4791

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KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

00089921

Login Number:L08030315
Analytical Method:8260B

Instrument ID:HPMS6
Initial Calibration Date:17-MAR-08 16:10
Column ID:F

Analyte	WG265645-11		
	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	432050.000	0.05370
2-Chloroethyl Vinyl Ether	NA	NA	NA
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	659321.000	0.1063
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	350109.000	0.04350
Acetone	300	286077.000	0.03550
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

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KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

00089922

Login Number: L08030315
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-02			WG265645-03			WG265645-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	3299.00000	0.1715
Dibromochloromethane	NA	NA	NA	0.400	1810.00000	0.3215	1.00	4328.00000	0.2900
Dibromomethane	NA	NA	NA	0.400	724.000000	0.09940	1.00	2445.00000	0.1271
Dichlorodifluoromethane	NA	NA	NA	0.400	4325.00000	0.5938	1.00	7202.00000	0.3744
Hexachlorobutadiene	NA	NA	NA	0.400	1529.00000	0.4518	1.00	4367.00000	0.4772
Isopropylbenzene	NA	NA	NA	0.400	8487.00000	1.507	1.00	22171.0000	1.486
Methylene Chloride	NA	NA	NA	0.400	4103.00000	0.5633	1.00	6741.00000	0.3505
Naphthalene	NA	NA	NA	0.400	4997.00000	1.477	1.00	12111.0000	1.323
Styrene	NA	NA	NA	0.400	5610.00000	0.9964	1.00	14296.0000	0.9579
Tetrachloroethene	NA	NA	NA	0.400	2100.00000	0.3730	1.00	5342.00000	0.3580
Trichloroethene	NA	NA	NA	0.400	1815.00000	0.2492	1.00	5400.00000	0.2807
Trichlorofluoromethane	NA	NA	NA	0.400	4745.00000	0.6515	1.00	8814.00000	0.4582
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	1813.00000	0.2489	1.00	5153.00000	0.2679
cis-1,3-Dichloropropene	NA	NA	NA	0.400	2714.00000	0.3726	1.00	6059.00000	0.3150
m-,p-Xylene	NA	NA	NA	0.800	8066.00000	0.7163	2.00	18662.0000	0.6253
n-Butylbenzene	NA	NA	NA	0.400	7803.00000	2.306	1.00	20471.0000	2.237
n-Propylbenzene	NA	NA	NA	0.400	10435.0000	3.084	1.00	27752.0000	3.032
o-Xylene	NA	NA	NA	0.400	3555.00000	0.6314	1.00	8924.00000	0.5980
p-Isopropyltoluene	NA	NA	NA	0.400	7943.00000	2.347	1.00	22028.0000	2.407
sec-Butylbenzene	NA	NA	NA	0.400	9016.00000	2.664	1.00	25195.0000	2.753
tert-Butylbenzene	NA	NA	NA	0.400	1284.00000	0.3794	1.00	4340.00000	0.4742
trans-1,2-Dichloroethene	NA	NA	NA	0.400	1777.00000	0.2440	1.00	5097.00000	0.2650
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	5941.00000	0.3981

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KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

00089923

Login Number: L08030315
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-05			WG265645-06			WG265645-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	7789.00000	0.2026	5.00	22642.0000	0.2133	20.0	91610.0000	0.2307
Dibromochloromethane	2.00	7445.00000	0.2530	5.00	21763.0000	0.2704	20.0	92006.0000	0.2926
Dibromomethane	2.00	4694.00000	0.1221	5.00	12425.0000	0.1170	20.0	49657.0000	0.1251
Dichlorodifluoromethane	2.00	21004.0000	0.5462	5.00	56212.0000	0.5295	20.0	219381.000	0.5525
Hexachlorobutadiene	2.00	8075.00000	0.4532	5.00	24415.0000	0.5066	20.0	89412.0000	0.4638
Isopropylbenzene	2.00	43233.0000	1.469	5.00	122545.000	1.523	20.0	479768.000	1.526
Methylene Chloride	2.00	10542.0000	0.2742	5.00	26678.0000	0.2513	20.0	98113.0000	0.2471
Naphthalene	2.00	19332.0000	1.085	5.00	60058.0000	1.246	20.0	247413.000	1.283
Styrene	2.00	26081.0000	0.8862	5.00	75679.0000	0.9404	20.0	304623.000	0.9688
Tetrachloroethene	2.00	10974.0000	0.3729	5.00	29853.0000	0.3710	20.0	112274.000	0.3571
Trichloroethene	2.00	10215.0000	0.2656	5.00	27749.0000	0.2614	20.0	104837.000	0.2640
Trichlorofluoromethane	2.00	27247.0000	0.7086	5.00	69781.0000	0.6573	20.0	277361.000	0.6986
Vinyl Acetate	NA	NA	NA	5.00	23364.0000	0.2201	20.0	102097.000	0.2571
cis-1,2-Dichloroethene	2.00	9892.00000	0.2572	5.00	28186.0000	0.2655	20.0	109828.000	0.2766
cis-1,3-Dichloropropene	2.00	12286.0000	0.3195	5.00	35558.0000	0.3349	20.0	147407.000	0.3713
m-,p-Xylene	4.00	36334.0000	0.6173	10.0	100239.000	0.6228	40.0	384460.000	0.6113
n-Butylbenzene	2.00	39489.0000	2.216	5.00	119333.000	2.476	20.0	458107.000	2.376
n-Propylbenzene	2.00	54063.0000	3.034	5.00	157968.000	3.278	20.0	608623.000	3.157
o-Xylene	2.00	16557.0000	0.5626	5.00	46128.0000	0.5732	20.0	183219.000	0.5827
p-Isopropyltoluene	2.00	42408.0000	2.380	5.00	124627.000	2.586	20.0	491048.000	2.547
sec-Butylbenzene	2.00	48661.0000	2.731	5.00	141188.000	2.930	20.0	546766.000	2.836
tert-Butylbenzene	2.00	8385.00000	0.4706	5.00	24405.0000	0.5064	20.0	91382.0000	0.4740
trans-1,2-Dichloroethene	2.00	10372.0000	0.2697	5.00	27990.0000	0.2637	20.0	107510.000	0.2708
trans-1,3-Dichloropropene	2.00	11823.0000	0.4017	5.00	30727.0000	0.3818	20.0	132422.000	0.4211

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KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

00089924

Login Number: L08030315
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-08			WG265645-09			WG265645-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	240579.000	0.2250	100	527865.000	0.2250	200	1122394.00	0.2292
Dibromochloromethane	50.0	254860.000	0.3043	100	601517.000	0.3168	200	1336042.00	0.3244
Dibromomethane	50.0	129741.000	0.1213	100	295601.000	0.1260	200	632045.000	0.1291
Dichlorodifluoromethane	50.0	542701.000	0.5075	100	1133606.00	0.4833	200	2453204.00	0.5009
Hexachlorobutadiene	50.0	251673.000	0.4799	100	580603.000	0.4960	200	1294533.00	0.5389
Isopropylbenzene	50.0	1319267.00	1.575	100	2918625.00	1.537	200	6433552.00	1.562
Methylene Chloride	50.0	259872.000	0.2430	100	582192.000	0.2482	200	1275977.00	0.2605
Naphthalene	50.0	650008.000	1.239	100	1508691.00	1.289	200	3084342.00	1.284
Styrene	50.0	836376.000	0.9987	100	1865365.00	0.9825	200	4198676.00	1.019
Tetrachloroethene	50.0	305565.000	0.3649	100	676196.000	0.3562	200	1460492.00	0.3546
Trichloroethene	50.0	287224.000	0.2686	100	647236.000	0.2759	200	1438622.00	0.2937
Trichlorofluoromethane	50.0	713375.000	0.6670	100	1531225.00	0.6528	200	3327067.00	0.6793
Vinyl Acetate	50.0	282599.000	0.2642	100	629224.000	0.2682	200	1272480.00	0.2598
cis-1,2-Dichloroethene	50.0	293965.000	0.2749	100	650595.000	0.2773	200	1406107.00	0.2871
cis-1,3-Dichloropropene	50.0	396320.000	0.3706	100	904621.000	0.3856	200	1969577.00	0.4022
m-,p-Xylene	100	1039051.00	0.6203	200	2334548.00	0.6148	400	5381520.00	0.6532
n-Butylbenzene	50.0	1253900.00	2.391	100	2731310.00	2.333	200	5828322.00	2.426
n-Propylbenzene	50.0	1654899.00	3.156	100	3558820.00	3.040	200	7673598.00	3.195
o-Xylene	50.0	504335.000	0.6022	100	1123368.00	0.5917	200	2529529.00	0.6141
p-Isopropyltoluene	50.0	1355096.00	2.584	100	2981446.00	2.547	200	6414192.00	2.670
sec-Butylbenzene	50.0	1520147.00	2.899	100	3281669.00	2.803	200	7080671.00	2.948
tert-Butylbenzene	50.0	251006.000	0.4786	100	556240.000	0.4751	200	1228553.00	0.5115
trans-1,2-Dichloroethene	50.0	293145.000	0.2741	100	644502.000	0.2747	200	1405585.00	0.2870
trans-1,3-Dichloropropene	50.0	355994.000	0.4251	100	814024.000	0.4288	200	1774773.00	0.4309

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KEMRON ENVIRONMENTAL SERVICES

INITIAL CALIBRATION DATA

00089925

Login Number: L08030315
Analytical Method: 8260B

Instrument ID: HPMS6
Initial Calibration Date: 17-MAR-08 16:10
Column ID: F

Analyte	WG265645-11		
	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: 1046996
Report generated 03/24/2008 16:32

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00089926

Login Number: L08030315 Run Date: 03/17/2008 Sample ID: WG265645-12
Instrument ID: HPMS6 Run Time: 16:49 Method: 8260B
File ID: 6M73528 Analyst: CMS QC Key: STD
ICal Workgroup: WG265645 Cal ID: HPMS6 - 17-MAR-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	19.0	ug/L	0.505	5.00	30	
1,1-Dichloroethene	CCC	20.0	19.8	ug/L	0.443	1.00	30	
1,2-Dichloropropane	CCC	20.0	18.7	ug/L	0.210	6.30	30	
Ethylbenzene	CCC	20.0	19.8	ug/L	0.489	0.800	30	
Toluene	CCC	20.0	20.0	ug/L	1.28	0	30	
Vinyl Chloride	CCC	20.0	17.1	ug/L	0.314	14.5	30	
Bromoform	SPCC	20.0	17.7	ug/L	0.158	11.3	30	
Chlorobenzene	SPCC	20.0	18.8	ug/L	0.897	6.10	30	
Chloromethane	SPCC	20.0	18.0	ug/L	0.358	10.2	30	
1,1-Dichloroethane	SPCC	20.0	19.0	ug/L	0.487	5.00	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	19.2	ug/L	0.335	4.00	30	
Acetone		20.0	22.1	ug/L	0.0424	10.5	30	
Benzene		20.0	19.4	ug/L	0.900	2.80	30	
Bromobenzene		20.0	19.5	ug/L	0.649	2.50	30	
Bromochloromethane		20.0	19.1	ug/L	0.146	4.30	30	
Bromodichloromethane		20.0	19.3	ug/L	0.348	3.70	30	
Bromomethane		20.0	20.7	ug/L	0.194	3.60	30	
2-Butanone		20.0	20.6	ug/L	0.0539	3.10	30	
n-Butylbenzene		20.0	21.2	ug/L	2.49	6.00	30	
sec-Butylbenzene		20.0	21.2	ug/L	2.98	5.80	30	
tert-Butylbenzene		20.0	20.7	ug/L	0.489	3.70	30	
Carbon Disulfide		20.0	19.5	ug/L	0.767	2.40	30	
Carbon Tetrachloride		20.0	20.1	ug/L	0.443	0.600	30	
Dibromochloromethane		20.0	19.5	ug/L	0.289	2.60	30	
Chloroethane		20.0	21.1	ug/L	0.226	5.40	30	
2-Chloroethyl Vinyl Ether		20.0	19.2	ug/L	0.0849	3.80	30	
2-Chlorotoluene		20.0	18.7	ug/L	1.97	6.40	30	
4-Chlorotoluene		20.0	19.8	ug/L	2.00	1.00	30	
1,2-Dibromo-3-Chloropropane		20.0	19.1	ug/L	0.0616	4.50	30	
1,2-Dibromoethane		20.0	19.1	ug/L	0.196	4.40	30	
Dibromomethane		20.0	19.4	ug/L	0.117	3.10	30	
1,2-Dichlorobenzene		20.0	19.3	ug/L	1.18	3.40	30	
1,3-Dichlorobenzene		20.0	18.8	ug/L	1.35	5.80	30	
1,4-Dichlorobenzene		20.0	20.3	ug/L	1.35	1.50	30	
Dichlorodifluoromethane		20.0	19.8	ug/L	0.507	0.800	30	
1,2-Dichloroethane		20.0	17.7	ug/L	0.315	11.5	30	
cis-1,2-Dichloroethene		20.0	20.6	ug/L	0.278	3.00	30	
trans-1,2-Dichloroethene		20.0	19.4	ug/L	0.260	3.10	30	
1,3-Dichloropropane		20.0	19.1	ug/L	0.352	4.70	30	
2,2-Dichloropropane		20.0	19.5	ug/L	0.458	2.30	30	
cis-1,3-Dichloropropene		20.0	18.9	ug/L	0.339	5.70	30	
trans-1,3-Dichloropropene		20.0	18.0	ug/L	0.372	9.80	30	

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1046998
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KEMRON ENVIRONMENTAL SERVICES

Login Number: L08030315 Run Date: 03/17/2008 Sample ID: WG265645-12
Instrument ID: HPMS6 Run Time: 16:49 Method: 8260B
File ID: 6M73528 Analyst: CMS QC Key: STD
ICal Workgroup: WG265645 Cal ID: HPMS6 - 17-MAR-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	19.8	ug/L	0.350	1.00	30	
2-Hexanone		20.0	18.6	ug/L	0.0900	7.00	30	
Hexachlorobutadiene		20.0	20.4	ug/L	0.492	1.80	30	
Isopropylbenzene		20.0	18.9	ug/L	1.44	5.40	30	
p-Isopropyltoluene		20.0	20.4	ug/L	2.56	2.00	30	
4-Methyl-2-Pentanone		20.0	19.7	ug/L	0.0378	1.40	30	
Methylene Chloride		20.0	20.3	ug/L	0.246	1.50	30	
Naphthalene		20.0	19.5	ug/L	1.24	2.70	30	
n-Propylbenzene		20.0	20.7	ug/L	3.24	3.70	30	
Styrene		20.0	20.7	ug/L	1.00	3.40	30	
1,1,1,2-Tetrachloroethane		20.0	18.6	ug/L	0.334	7.00	30	
Tetrachloroethene		20.0	20.3	ug/L	0.368	1.30	30	
1,2,3-Trichlorobenzene		20.0	19.2	ug/L	0.681	3.80	30	
1,2,4-Trichlorobenzene		20.0	19.4	ug/L	0.854	2.90	30	
1,1,1-Trichloroethane		20.0	19.4	ug/L	0.478	2.80	30	
1,1,2-Trichloroethane		20.0	19.2	ug/L	0.199	3.80	30	
Trichloroethene		20.0	19.7	ug/L	0.265	1.70	30	
Trichlorofluoromethane		20.0	16.6	ug/L	0.536	17.1	30	
1,2,3-Trichloropropane		20.0	19.8	ug/L	0.115	0.800	30	
1,2,4-Trimethylbenzene		20.0	20.0	ug/L	2.47	0.200	30	
1,3,5-Trimethylbenzene		20.0	20.6	ug/L	2.35	2.90	30	
Vinyl Acetate		20.0	23.3	ug/L	0.296	16.5	40	
o-Xylene		20.0	20.4	ug/L	0.606	2.00	30	
m-,p-Xylene		40.0	39.8	ug/L	0.632	0.500	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

KEMRON Environmental Services, Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00089928

Login Number: L08030315 Run Date: 03/21/2008 Sample ID: WG266110-02
Instrument ID: HPMS6 Run Time: 09:43 Method: 8260B
File ID: 6M73622 Analyst: CMS/ASP QC Key: STD
Workgroup (AAB#): WG266112 Cal ID: HPMS6 - 17-MAR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	51.1	ug/L	0.543	2.13	20	
1,1-Dichloroethene	CCC	50.0	58.3	ug/L	0.521	16.6	20	
1,2-Dichloropropane	CCC	50.0	48.4	ug/L	0.217	3.24	20	
Ethylbenzene	CCC	50.0	49.9	ug/L	0.492	0.247	20	
Toluene	CCC	50.0	49.0	ug/L	1.25	2.01	20	
Vinyl Chloride	CCC	50.0	51.2	ug/L	0.346	2.49	20	
Bromoform	SPCC	50.0	49.1	ug/L	0.182	1.90	40	
Chlorobenzene	SPCC	50.0	46.0	ug/L	0.879	8.04	40	
Chloromethane	SPCC	50.0	42.6	ug/L	0.340	14.8	40	
1,1-Dichloroethane	SPCC	50.0	52.4	ug/L	0.537	4.77	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	43.4	ug/L	0.303	13.1	40	
Acetone		50.0	51.6	ug/L	0.0396	3.17	40	
Benzene		50.0	50.0	ug/L	0.925	0.0872	40	
Bromobenzene		50.0	46.1	ug/L	0.614	7.84	40	
Bromochloromethane		50.0	50.5	ug/L	0.154	1.04	40	
Bromodichloromethane		50.0	50.1	ug/L	0.362	0.179	40	
Bromomethane		50.0	54.4	ug/L	0.222	8.81	40	
2-Butanone		50.0	48.0	ug/L	0.0502	4.02	40	
n-Butylbenzene		50.0	52.6	ug/L	2.47	5.20	40	
sec-Butylbenzene		50.0	52.4	ug/L	2.96	4.80	40	
tert-Butylbenzene		50.0	51.6	ug/L	0.486	3.20	40	
Carbon Disulfide		50.0	52.9	ug/L	0.832	5.78	40	
Carbon Tetrachloride		50.0	58.6	ug/L	0.516	17.2	40	
Dibromochloromethane		50.0	51.6	ug/L	0.306	3.16	40	
Chloroethane		50.0	55.0	ug/L	0.235	9.94	40	
2-Chloroethyl Vinyl Ether		50.0	48.6	ug/L	0.0857	2.89	40	
2-Chlorotoluene		50.0	47.8	ug/L	2.01	4.49	40	
4-Chlorotoluene		50.0	46.5	ug/L	1.88	7.03	40	
1,2-Dibromo-3-Chloropropane		50.0	46.5	ug/L	0.0624	6.98	40	
1,2-Dibromoethane		50.0	47.4	ug/L	0.195	5.15	40	
Dibromomethane		50.0	49.8	ug/L	0.120	0.365	40	
1,2-Dichlorobenzene		50.0	47.8	ug/L	1.16	4.35	40	
1,3-Dichlorobenzene		50.0	47.1	ug/L	1.35	5.84	40	
1,4-Dichlorobenzene		50.0	51.0	ug/L	1.36	2.08	40	
Dichlorodifluoromethane		50.0	47.4	ug/L	0.484	5.21	40	
1,2-Dichloroethane		50.0	49.4	ug/L	0.351	1.24	40	
cis-1,2-Dichloroethene		50.0	53.5	ug/L	0.288	6.93	40	
trans-1,2-Dichloroethene		50.0	53.9	ug/L	0.289	7.75	40	
1,3-Dichloropropane		50.0	45.8	ug/L	0.339	8.32	40	
2,2-Dichloropropane		50.0	56.4	ug/L	0.529	12.7	40	
cis-1,3-Dichloropropene		50.0	50.8	ug/L	0.365	1.64	40	
trans-1,3-Dichloropropene		50.0	50.9	ug/L	0.420	1.86	40	

CCV - Modified 03/05/2008
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KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00089929

Login Number: L08030315 Run Date: 03/21/2008 Sample ID: WG266110-02
Instrument ID: HPMS6 Run Time: 09:43 Method: 8260B
File ID: 6M73622 Analyst: CMS/ASP QC Key: STD
Workgroup (AAB#): WG266112 Cal ID: HPMS6 - 17-MAR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	53.7	ug/L	0.380	7.37	40	
2-Hexanone		50.0	44.4	ug/L	0.0859	11.3	40	
Hexachlorobutadiene		50.0	53.1	ug/L	0.514	6.22	40	
Isopropylbenzene		50.0	53.9	ug/L	1.64	7.82	40	
p-Isopropyltoluene		50.0	53.5	ug/L	2.68	6.99	40	
4-Methyl-2-Pentanone		50.0	38.9	ug/L	0.0353	22.2	40	
Methylene Chloride		50.0	51.3	ug/L	0.249	2.50	40	
Naphthalene		50.0	46.1	ug/L	1.18	7.86	40	
n-Propylbenzene		50.0	50.4	ug/L	3.15	0.817	40	
Styrene		50.0	52.1	ug/L	1.01	4.14	40	
1,1,1,2-Tetrachloroethane		50.0	49.7	ug/L	0.357	0.586	40	
Tetrachloroethene		50.0	50.6	ug/L	0.368	1.16	40	
1,2,3-Trichlorobenzene		50.0	45.9	ug/L	0.649	8.25	40	
1,2,4-Trichlorobenzene		50.0	47.1	ug/L	0.827	5.90	40	
1,1,1-Trichloroethane		50.0	54.7	ug/L	0.538	9.32	40	
1,1,2-Trichloroethane		50.0	45.7	ug/L	0.189	8.64	40	
Trichloroethene		50.0	52.5	ug/L	0.283	4.98	40	
Trichlorofluoromethane		50.0	55.2	ug/L	0.714	10.4	40	
1,2,3-Trichloropropane		50.0	46.9	ug/L	0.109	6.16	40	
1,2,4-Trimethylbenzene		50.0	49.4	ug/L	2.43	1.17	40	
1,3,5-Trimethylbenzene		50.0	50.8	ug/L	2.32	1.68	40	
Vinyl Acetate		50.0	39.4	ug/L	0.200	21.2	40	
o-Xylene		50.0	51.9	ug/L	0.617	3.71	40	
m-,p-Xylene		100	101	ug/L	0.644	1.38	40	
1,2-Dichloroethene		100	107	ug/L	0.289	7.34	40	
Xylenes		150	153	ug/L	0.630	2.16	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
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KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00089930

Login Number: L08030315 Run Date: 03/22/2008 Sample ID: WG266197-02
Instrument ID: HPMS6 Run Time: 12:15 Method: 8260B
File ID: 6M73659 Analyst: CMS QC Key: STD
Workgroup (AAB#): WG266199 Cal ID: HPMS6 - 17-MAR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	51.1	ug/L	0.544	2.29	20	
1,1-Dichloroethene	CCC	50.0	54.0	ug/L	0.483	7.98	20	
1,2-Dichloropropane	CCC	50.0	47.1	ug/L	0.212	5.75	20	
Ethylbenzene	CCC	50.0	48.8	ug/L	0.481	2.47	20	
Toluene	CCC	50.0	48.0	ug/L	1.23	4.02	20	
Vinyl Chloride	CCC	50.0	46.6	ug/L	0.318	6.82	20	
Bromoform	SPCC	50.0	51.2	ug/L	0.191	2.47	40	
Chlorobenzene	SPCC	50.0	45.7	ug/L	0.873	8.63	40	
Chloromethane	SPCC	50.0	43.4	ug/L	0.346	13.1	40	
1,1-Dichloroethane	SPCC	50.0	50.1	ug/L	0.514	0.256	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	45.3	ug/L	0.316	9.32	40	
Acetone		50.0	50.9	ug/L	0.0390	1.71	40	
Benzene		50.0	48.0	ug/L	0.888	4.06	40	
Bromobenzene		50.0	47.1	ug/L	0.627	5.80	40	
Bromochloromethane		50.0	52.2	ug/L	0.159	4.36	40	
Bromodichloromethane		50.0	51.3	ug/L	0.370	2.52	40	
Bromomethane		50.0	55.5	ug/L	0.226	11.1	40	
2-Butanone		50.0	46.7	ug/L	0.0488	6.69	40	
n-Butylbenzene		50.0	49.7	ug/L	2.33	0.643	40	
sec-Butylbenzene		50.0	49.8	ug/L	2.81	0.478	40	
tert-Butylbenzene		50.0	50.1	ug/L	0.472	0.184	40	
Carbon Disulfide		50.0	46.4	ug/L	0.730	7.15	40	
Carbon Tetrachloride		50.0	57.9	ug/L	0.509	15.7	40	
Dibromochloromethane		50.0	53.3	ug/L	0.316	6.66	40	
Chloroethane		50.0	48.0	ug/L	0.205	4.09	40	
2-Chloroethyl Vinyl Ether		50.0	50.6	ug/L	0.0894	1.28	40	
2-Chlorotoluene		50.0	45.8	ug/L	1.93	8.34	40	
4-Chlorotoluene		50.0	45.4	ug/L	1.84	9.13	40	
1,2-Dibromo-3-Chloropropane		50.0	49.9	ug/L	0.0671	0.189	40	
1,2-Dibromoethane		50.0	50.4	ug/L	0.207	0.836	40	
Dibromomethane		50.0	52.7	ug/L	0.128	5.48	40	
1,2-Dichlorobenzene		50.0	47.2	ug/L	1.15	5.62	40	
1,3-Dichlorobenzene		50.0	45.6	ug/L	1.31	8.84	40	
1,4-Dichlorobenzene		50.0	49.8	ug/L	1.32	0.398	40	
Dichlorodifluoromethane		50.0	49.1	ug/L	0.502	1.71	40	
1,2-Dichloroethane		50.0	49.8	ug/L	0.354	0.383	40	
cis-1,2-Dichloroethene		50.0	51.4	ug/L	0.277	2.88	40	
trans-1,2-Dichloroethene		50.0	51.6	ug/L	0.277	3.10	40	
1,3-Dichloropropane		50.0	46.5	ug/L	0.344	6.96	40	
2,2-Dichloropropane		50.0	56.2	ug/L	0.528	12.5	40	
cis-1,3-Dichloropropene		50.0	52.1	ug/L	0.374	4.15	40	
trans-1,3-Dichloropropene		50.0	51.9	ug/L	0.428	3.71	40	

CCV - Modified 03/05/2008
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KEMRON ENVIRONMENTAL SERVICES

Login Number: L08030315 Run Date: 03/22/2008 Sample ID: WG266197-02
Instrument ID: HPMS6 Run Time: 12:15 Method: 8260B
File ID: 6M73659 Analyst: CMS QC Key: STD
Workgroup (AAB#): WG266199 Cal ID: HPMS6 - 17-MAR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	53.1	ug/L	0.376	6.28	40	
2-Hexanone		50.0	47.1	ug/L	0.0913	5.72	40	
Hexachlorobutadiene		50.0	51.1	ug/L	0.494	2.15	40	
Isopropylbenzene		50.0	51.2	ug/L	1.56	2.32	40	
p-Isopropyltoluene		50.0	51.0	ug/L	2.56	1.97	40	
4-Methyl-2-Pentanone		50.0	41.8	ug/L	0.0384	16.3	40	
Methylene Chloride		50.0	48.4	ug/L	0.235	3.14	40	
Naphthalene		50.0	48.0	ug/L	1.23	4.10	40	
n-Propylbenzene		50.0	48.5	ug/L	3.03	2.97	40	
Styrene		50.0	49.9	ug/L	0.967	0.219	40	
1,1,1,2-Tetrachloroethane		50.0	49.8	ug/L	0.358	0.376	40	
Tetrachloroethene		50.0	50.6	ug/L	0.368	1.25	40	
1,2,3-Trichlorobenzene		50.0	47.2	ug/L	0.668	5.57	40	
1,2,4-Trichlorobenzene		50.0	48.5	ug/L	0.852	3.03	40	
1,1,1-Trichloroethane		50.0	55.0	ug/L	0.541	10.0	40	
1,1,2-Trichloroethane		50.0	46.3	ug/L	0.192	7.31	40	
Trichloroethene		50.0	52.0	ug/L	0.281	4.05	40	
Trichlorofluoromethane		50.0	52.9	ug/L	0.684	5.82	40	
1,2,3-Trichloropropane		50.0	49.8	ug/L	0.115	0.471	40	
1,2,4-Trimethylbenzene		50.0	47.1	ug/L	2.32	5.86	40	
1,3,5-Trimethylbenzene		50.0	48.8	ug/L	2.23	2.36	40	
Vinyl Acetate		50.0	36.8	ug/L	0.187	26.5	40	
o-Xylene		50.0	49.2	ug/L	0.585	1.52	40	
m-,p-Xylene		100	95.5	ug/L	0.607	4.50	40	
1,2-Dichloroethene		100	103	ug/L	0.277	2.99	40	
Xylenes		150	145	ug/L	0.596	3.51	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1047000
Report generated 03/24/2008 16:33

KEMRON ENVIRONMENTAL SERVICES

Login Number:L08030315
Instrument ID:HPMS6
Workgroup (AAB#):WG266112

CCV Number:WG266110-02
CAL ID: HPMS6-17-MAR-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG266110-02	NA	NA	225233	346135	441961
Upper Limit	NA	NA	450466	692270	883922
Lower Limit	NA	NA	112617	173068	220981
L08030315-01	1.00	01	125363	209027	269799
L08030315-02	25.0	DL01	117005	195173	252771
L08030315-04	1.00	01	153864	259750	329470
WG266112-01	1.00	01	164121	276691	358746
WG266112-02	1.00	01	206647	316123	398031
WG266112-03	1.00	01	208603	328364	406397

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: 1047001
Report generated 03/24/2008 16:33

Login Number: L08030315
Instrument ID: HPMS6
Workgroup (AAB#): WG266199

CCV Number: WG266197-02
CAL ID: HPMS6-17-MAR-08
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG266197-02	NA	NA	261653	412659	516785
Upper Limit	NA	NA	523306	825318	1033570
Lower Limit	NA	NA	130827	206330	258393
L08030315-03	1.00	01	166879	263168	327896
WG266199-01	1.00	01	211555	352733	450654
WG266199-02	1.00	01	227257	355212	434605
WG266199-03	1.00	01	221674	359383	442155

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: 1047001
Report generated 03/24/2008 16:33

Login Number:L08030315
Instrument ID:HPMS6
Workgroup (AAB#):WG266112

ICAL CCV Number:WG265645-08
CAL ID: HPMS6-17-MAR-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG265645-08	NA	NA	262228	418739	534733
Upper Limit	NA	NA	524456	837478	1069466
Lower Limit	NA	NA	131114	209370	267367
L08030315-01	1.00	01	125363	209027	269799
L08030315-02	25.0	DL01	117005	195173	252771
L08030315-04	1.00	01	153864	259750	329470
WG266112-01	1.00	01	164121	276691	358746
WG266112-02	1.00	01	206647	316123	398031
WG266112-03	1.00	01	208603	328364	406397

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_ICAL - Modified 03/06/2008
PDF File ID: 1047004
Report generated 03/24/2008 16:37

Login Number:L08030315
Instrument ID:HPMS6
Workgroup (AAB#):WG266199

ICAL CCV Number:WG265645-08
CAL ID: HPMS6-17-MAR-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG265645-08	NA	NA	262228	418739	534733
Upper Limit	NA	NA	524456	837478	1069466
Lower Limit	NA	NA	131114	209370	267367
L08030315-03	1.00	01	166879	263168	327896
WG266199-01	1.00	01	211555	352733	450654
WG266199-02	1.00	01	227257	355212	434605
WG266199-03	1.00	01	221674	359383	442155

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_ICAL - Modified 03/06/2008
PDF File ID: 1047004
Report generated 03/24/2008 16:37

Login Number:L08030315 CCV Number:WG266110-02
Instrument ID:HPMS6 CAL ID: HPMS6-17-MAR-08
Workgroup (AAB#):WG266112 Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG266110-02	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
L08030315-01	1.00	01	18.86	15.3	10.83
L08030315-02	25.0	DL01	18.86	15.3	10.83
L08030315-04	1.00	01	18.86	15.3	10.82
WG266112-01	1.00	01	18.86	15.31	10.83
WG266112-02	1.00	01	18.86	15.3	10.83
WG266112-03	1.00	01	18.86	15.3	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: 1047003
Report generated 03/24/2008 16:33

Login Number:L08030315 CCV Number:WG266197-02
Instrument ID:HPMS6 CAL ID: HPMS6-17-MAR-08
Workgroup (AAB#):WG266199 Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG266197-02	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
L08030315-03	1.00	01	18.86	15.31	10.82
WG266199-01	1.00	01	18.86	15.31	10.83
WG266199-02	1.00	01	18.86	15.31	10.82
WG266199-03	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: 1047003
Report generated 03/24/2008 16:33

KEMRON Environmental Services, Inc.
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO MIDPOINT OF ICAL)

00089938

Login Number:L08030315
Instrument ID:HPMS6
Workgroup (AAB#):WG266112

ICAL CCV Number:WG265645-08
CAL ID: HPMS6-17-MAR-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG265645-08	NA	NA	18.86	15.31	10.82
Upper Limit	NA	NA	19.36	15.81	11.32
Lower Limit	NA	NA	18.36	14.81	10.32
L08030315-01	1.00	01	18.86	15.3	10.83
L08030315-02	25.0	DL01	18.86	15.3	10.83
L08030315-04	1.00	01	18.86	15.3	10.82
WG266112-01	1.00	01	18.86	15.31	10.83
WG266112-02	1.00	01	18.86	15.3	10.83
WG266112-03	1.00	01	18.86	15.3	10.82

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT_ICAL - Modified 03/06/2008
PDF File ID: 1047005
Report generated: 03/24/2008 16:37

KEMRON ENVIRONMENTAL SERVICES

KEMRON Environmental Services, Inc.
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO MIDPOINT OF ICAL)

Login Number:L08030315
Instrument ID:HPMS6
Workgroup (AAB#):WG266199

ICAL CCV Number:WG265645-08
CAL ID: HPMS6-17-MAR-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG265645-08	NA	NA	18.86	15.31	10.82
Upper Limit	NA	NA	19.36	15.81	11.32
Lower Limit	NA	NA	18.36	14.81	10.32
L08030315-03	1.00	01	18.86	15.31	10.82
WG266199-01	1.00	01	18.86	15.31	10.83
WG266199-02	1.00	01	18.86	15.31	10.82
WG266199-03	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_ICAL - Modified 03/06/2008
PDF File ID: 1047005
Report generated: 03/24/2008 16:37

KEMRON ENVIRONMENTAL SERVICES

3.0 Attachments

Kemron Environmental Services
Analyst Listing
March 25, 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 25, 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.

KEMRON ENVIRONMENTAL SERVICES

00089943

Chain of Custody

NO. 10249

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.: 117591.0009B810 Project Contact: ALLEN WILLMORE Project Telephone No.: 713-996-4586

Point of Contact: ALLEN WILLMORE Telephone No.: 713-996-4586

Project Manager/Supervisor: PRAVEEN SRIVASTAV

Item No.	~~Telephone~~ Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOA							Remarks
1	47WW33-031408	3/14/08	9:50		✓	W	GROUNDWATER, SITE 47	2	2							
2	47WW34-031408	3/14/08	12:00		✓	W	GROUNDWATER, SITE 47	2	2							
3	17WW17-031408	3/14/08	3:10		✓	W	GROUNDWATER, SITE 17	2	2							
4	TRIP BLANK							2	2							
5																
6																
7																
8																
9																
10																

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
Scott Beesley	3/14/08 16:00	Erin Elder	3-15-08 10:10	7 DAY TAT
				FedEx Airbill No.:
		Laboratory		Sampler's Signature: Scott Beesley

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 Longhorn
Workorder Number:	B 9190
Date Received:	3-15-08
Delivered by:	( ) Fedx (✓) UPS ( ) Client ( ) Courier **Time:** 1010
Opened by:	EE
IR Temp Gun:	( ) D (✓) G
Logged by:	EC/JKT/SM L0803031S

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
393	1	1Z66V7254492754749		7DTAT

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

Stored in walk-in cooler over weekend

Distribution

Name of KEMRON representative
Client/Company:
Person Contacted:
Date contacted:

Resolution/other comments:

KEMRON Environmental Services, Inc.

Internal Chain of Custody Report

Login: L08030315
Account: 2773
Project: 2773.025
Samples: 4
Due Date: 24-MAR-2008

Samplenum	Container ID	Products
L08030315-01	435830	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-MAR-2008 13:37	ERE	
2	ANALYZ	V1	ORG4	18-MAR-2008 09:41	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-MAR-2008 13:37	ERE	
2	ANALYZ	V1	ORG4	18-MAR-2008 09:41	KJW	RLK

Samplenum	Container ID	Products
L08030315-04	435833	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-MAR-2008 13:38	ERE	
2	ANALYZ	V1	ORG4	18-MAR-2008 09:41	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-MAR-2008 13:38	ERE	
2	ANALYZ	V1	ORG4	18-MAR-2008 09:41	KJW	RLK

Samplenum	Container ID	Products
L08030315-03	435832	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-MAR-2008 13:38	ERE	
2	ANALYZ	V1	ORG4	18-MAR-2008 09:41	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-MAR-2008 13:38	ERE	
2	ANALYZ	V1	ORG4	18-MAR-2008 09:41	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: L08030315
Account: 2773
Project: 2773.025
Samples: 4
Due Date: 24-MAR-2008

Samplenum	Container ID	Products
L08030315-02	435831	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-MAR-2008 13:38	ERE	
2	ANALYZ	V1	ORG4	18-MAR-2008 09:41	KJW	RLK

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-MAR-2008 13:38	ERE	
2	ANALYZ	V1	ORG4	18-MAR-2008 09:41	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

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: L08040523

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 May 02, 2008.

Stephanie Mossburg

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 02, 2008.

David E. Vandenberg

David Vandenberg - Vice President

Accrediting authority: Texas Commission on Environmental Quality (Texas) ID:T104704252-07-TX
This report contains a total of 146 pages.

Look closer. Go further. Do more.

Microbac REPORT L08040523
PREPARED FOR Shaw E I, Inc.
WORK ID:

1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L08040523

CHAIN OF CUSTODY: The chain of custody number was 10252.

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 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: 21-APR-08
Stephanie Moushung

Laboratory Data Package Cover Page

00089952

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 2, 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:	L08040523
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	WG269631, WG169550, WG269770
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	May 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?		✓			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?	✓				
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) 1,2-Dichloroethane-d4 was below the lower control limit in the method blank analyzed 04/25/08 on HPMS-6. Toluene-d8 exceeded the upper control limit in sample 02 and the method blank analyzed 04/28/08 on HPMS-8.

2) Dichlorodifluoromethane and methyl acetate exceeded the upper control limit in the alternate source analyzed 04/18/08 on HPMS-6. Dichlorodifluoromethane exceeded the upper control limit in the alternate source analyzed 04/19/08 on HPMS-10.

3) The presence of 1,1,2,2-tetrachloroethane in sample 01 may be attributed to carry-over contamination from a previous analysis. Insufficient sample volume remained for additional analyses of sample 01.

Footnotes:

(1) NA = Not applicable to method or project

(2) NR = Not reviewed

(3) ER# = Exception report number

Laboratory Data Package Cover Page

00089956

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	April 23, 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:	L08040523
Project Name:	798-LONGHORN
Method:	314
Prep Batch Number(s):	WG269159
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	April 23, 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)	RPD(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?	✓				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)	RPD(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:	L08040523
Project Name:	798-LONGHORN
Method:	314
Prep Batch Number(s):	WG269159
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	April 23, 2008

EXCEPTIONS REPORT
ER# - Description
1. Sample -01 was analyzed at a dilution only due to high conductivity reading.

(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

00089964

L08040523

05/02/08 16:28

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
MW19-041608	L08040523-01	8260B	1	17-APR-08
MW18-041608	L08040523-02	8260B	1	17-APR-08
TRIP BLANK	L08040523-03	8260B	1	17-APR-08

Report Number: **L08040523**
Report Date : **May 2, 2008**

00089965

Sample Number: **L08040523-01**
Client ID: **MW19-041608**
Matrix: **Water**
Workgroup Number: **WG269770**
Collect Date: **04/16/2008 11:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **04/29/2008 14:21**
Cal Date: **04/19/2008 21:04**
Run Date: **04/29/2008 14:21**
File ID: **10M64262**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5	0.308	J	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	0.512	J	1.00	0.250
cis-1,2-Dichloroethene	156-59-2	0.270	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	3.83		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: **L08040523**
Report Date : **May 2, 2008**

00089966

Sample Number: **L08040523-01**
Client ID: **MW19-041608**
Matrix: **Water**
Workgroup Number: **WG269770**
Collect Date: **04/16/2008 11:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS10**
Prep Date: **04/29/2008 14:21**
Cal Date: **04/19/2008 21:04**
Run Date: **04/29/2008 14:21**
File ID: **10M64262**

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	112	80	120	
Dibromofluoromethane	104	86	118	
p-Bromofluorobenzene	107	86	115	
Toluene-d8	104	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: **L08040523**
Report Date : **May 2, 2008**

00089967

Sample Number: **L08040523-02**
Client ID: **MW18-041608**
Matrix: **Water**
Workgroup Number: **WG269631**
Collect Date: **04/16/2008 14:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **04/28/2008 19:16**
Cal Date: **04/02/2008 18:28**
Run Date: **04/28/2008 19:16**
File ID: **8M344800**

Analyte	CAS. Number	Result	Qual	PQL	SDL
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	0.371	J	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

Sample Number: **L08040523-02**
Client ID: **MW18-041608**
Matrix: **Water**
Workgroup Number: **WG269631**
Collect Date: **04/16/2008 14:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **04/28/2008 19:16**
Cal Date: **04/02/2008 18:28**
Run Date: **04/28/2008 19:16**
File ID: **8M344800**

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	119	80	120	
Dibromofluoromethane	112	86	118	
p-Bromofluorobenzene	105	86	115	
Toluene-d8	111	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
***** Surrogate or spike compound out of range

Report Number: **L08040523**
Report Date : **May 2, 2008**

00089969

Sample Number: **L08040523-03**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG269550**
Collect Date: **04/16/2008 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **04/25/2008 22:51**
Cal Date: **04/17/2008 17:34**
Run Date: **04/25/2008 22:51**
File ID: **6M74619**

Analyte	CAS. Number	Result	Qual	PQL	SDL
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	8.05	J	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	0.414	J	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: **L08040523**
Report Date : **May 2, 2008**

00089970

Sample Number: **L08040523-03**
Client ID: **TRIP BLANK**
Matrix: **Water**
Workgroup Number: **WG269550**
Collect Date: **04/16/2008 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **04/25/2008 22:51**
Cal Date: **04/17/2008 17:34**
Run Date: **04/25/2008 22:51**
File ID: **6M74619**

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	83.6	80	120	
Dibromofluoromethane	91.9	86	118	
p-Bromofluorobenzene	102	86	115	
Toluene-d8	109	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

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: HPMS8 Dataset: 040208
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: 23540

Internal Standard: STD25500 Surrogate Standard: STD25501
CCV: STD25474 LCS: STD25469 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG267167

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	8M344055	SOIL STD CHK	NA	1	1		04/02/08 09:16
2	8M344057	STD CHK NEW MOUNT	NA	1	1		04/02/08 11:10
3	8M344058	C/O CHK NEW MOUNT	NA	1	1		04/02/08 11:43
4	8M344060	WG267167-01 BFB 50ng STD 8260	NA	1	1	STD25005	04/02/08 12:38
5	8M344061	SYSTEM BLANK	NA	1	1		04/02/08 13:06
6	8M344062	WG267167-02 0.30ug/L STD 8260	NA	1	1	STD25474	04/02/08 13:38
7	8M344063	WG267167-03 0.40ug/L STD 8260	NA	1	1	STD25474	04/02/08 14:10
8	8M344064	WG267167-04 1ug/L STD 8260	NA	1	1	STD25474	04/02/08 14:42
9	8M344065	WG267167-00 2ug/L STD 8260	NA	1	1	STD25474	04/02/08 15:14
10	8M344066	WG267167-05 5ug/L STD 8260	NA	1	1	STD25474	04/02/08 15:47
11	8M344067	WG267167-06 20ug/L STD 8260	NA	1	1	STD25474	04/02/08 16:19
12	8M344068	WG267167-07 50ug/L STD 8260	NA	1	1	STD25474	04/02/08 16:51
13	8M344069	WG267167-08 100ug/L STD 8260	NA	1	1	STD25474	04/02/08 17:23
14	8M344070	WG267167-09 200ug/L STD 8260	NA	1	1	STD25474	04/02/08 17:56
15	8M344071	WG267167-10 300ug/L STD 8260	NA	1	1	STD25474	04/02/08 18:28
16	8M344072	SYSTEM BLANK	NA	1	1		04/02/08 19:00
17	8M344073	SYSTEM BLANK	NA	1	1		04/02/08 19:32
18	8M344074	WG267167-11 20ug/L ALT SRC STD 8260	NA	1	1	STD25469	04/02/08 20:05
19	8M344075	SYSTEM BLANK	NA	1	1		04/02/08 20:37

Comments

Seq.	Rerun	Dil.	Reason	Analytes
9				
File ID: 8M344065				
	DNR-NOT NEEDED			

Approved: April 04, 2008

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Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 041708
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: 23802

Internal Standard: STD25713 Surrogate Standard: STD25615
CCV: STD25741 LCS: STD25665 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG268581

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M74324	WG268581-01 BFB 50ng STD 8260	NA	1	1	STD25539	04/17/08 08:37
2	6M74325	WG268581-02 0.30ug/L STD 8260	NA	1	1	STD25741	04/17/08 09:07
3	6M74326	WG268581-03 0.40ug/L STD 8260	NA	1	1	STD25741	04/17/08 09:41
4	6M74327	WG268581-04 1ug/L STD 8260	NA	1	1	STD25741	04/17/08 10:14
5	6M74328	WG268581-05 2ug/L STD 8260	NA	1	1	STD25741	04/17/08 10:47
6	6M74329	WG268581-06 5ug/L STD 8260	NA	1	1	STD25741	04/17/08 11:22
7	6M74330	WG268581-07 20ug/L STD 8260	NA	1	1	STD25741	04/17/08 11:55
8	6M74331	WG268581-08 50ug/L STD 8260	NA	1	1	STD25741	04/17/08 12:30
9	6M74332	WG268581-09 100ug/L STD 8260	NA	1	1	STD25741	04/17/08 13:03
10	6M74333	WG268581-10 200ug/L STD 8260	NA	1	1	STD25741	04/17/08 13:36
11	6M74334	WG268581-11 300ug/L STD 8260	NA	1	1	STD25741	04/17/08 14:09
12	6M74335	SYSTEM BLANK	NA	1	1		04/17/08 14:49
13	6M74336	SYSTEM BLANK	NA	1	1		04/17/08 15:22
14	6M74337	WG268581-05 2ug/L STD 8260	NA	1	1	STD25741	04/17/08 15:55
15	6M74338	WG268581-05 2ug/L STD 8260	NA	1	1	STD25741	04/17/08 16:28
16	6M74339	WG268581-04 1ug/L STD 8260	NA	1	1	STD25741	04/17/08 17:01
17	6M74340	WG268581-03 0.40ug/L STD 8260	NA	1	1	STD25741	04/17/08 17:34
18	6M74341	WG268581-12 20ug/L ALT SRC STD 8260	NA	1	1	STD25665	04/17/08 18:08

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X			
File ID: 6M74326				
	DNR			
4	X			
File ID: 6M74327				
	DNR			
5	X			
File ID: 6M74328				
	DNR			
18	X			
File ID: 6M74341				
	DNR			

Approved: April 23, 2008

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Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 041808
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: 23806

Internal Standard: STD25713 Surrogate Standard: STD25615
CCV: STD25741 LCS: STD25665 MS/MSD: NA

Column 1 ID: RTX5 Column 2 ID: NA
Workgroups: WG268745, WG268581

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M74343	WG268744-01 BFB 50ng STD 8260	NA	1	1	STD25539	04/18/08 10:29
2	6M74344	WG268744-01 BFB 50ng STD 8260	NA	1	1	STD25539	04/18/08 10:46
3	6M74345	WG268744-01 BFB 50ng STD 8260	NA	1	1	STD25539	04/18/08 11:14
4	6M74346	WG268744-01 BFB 50ng STD 8260	NA	1	1	STD25539	04/18/08 11:41
5	6M74347	WG268744-02 50ug/L STD 8260	NA	1	1	STD25741	04/18/08 12:10
6	6M74348	WG268745-01 VBLK0418 BLANK 8260	NA	1	1		04/18/08 12:49
7	6M74349	WG268745-01 VBLK0418 BLANK 8260	NA	1	1		04/18/08 13:22
8	6M74350	WG268581-12 20ug/L ALT SRC STD 8260	NA	1	1	STD25665	04/18/08 13:55
9	6M74351	WG268745-02 20ug/L LCS STD 8260	NA	1	1	STD25665	04/18/08 14:28
10	6M74352	WG268745-03 20ug/L LCSDUP STD 8260	NA	1	1	STD25665	04/18/08 15:01
11	6M74353	L08040217-08 A 8260	<2	1	1		04/18/08 15:35
12	6M74354	L08040217-06 A 8260	<2	1	1		04/18/08 16:08
13	6M74355	L08040222-05 A 8260	<2	1	1		04/18/08 16:41
14	6M74356	L08040217-01 A 50X 8260	<2	1	50		04/18/08 17:14
15	6M74357	L08040217-03 A 50X 8260	<2	1	50		04/18/08 17:47
16	6M74358	L08040217-04 A 50X 8260	<2	1	50		04/18/08 18:21
17	6M74359	L08040217-05 A 50X 8260	<2	1	50		04/18/08 18:54
18	6M74360	L08040217-07 A 50X 8260	<2	1	50		04/18/08 19:27
19	6M74361	L08040222-01 A 50X 8260	<2	1	50		04/18/08 20:00
20	6M74362	L08040222-02 A 50X 8260	7	1	50		04/18/08 20:33
21	6M74363	L08040222-03 A 50X 8260	<2	1	50		04/18/08 21:07
22	6M74364	L08040222-04 A 50X 8260	<2	1	50		04/18/08 21:40
23	6M74365	L08040222-06 A 50X 8260	<2	1	50		04/18/08 22:13
24	6M74366	L08040222-08 A 50X 8260	<2	1	50		04/18/08 22:46
25	6M74367	L08040222-10 A 50X 8260	<2	1	50		04/18/08 23:20
26	6M74368	SYSTEM CHECK	NA	1	1		04/18/08 23:53
27	6M74369	SYSTEM CHECK	NA	1	1		04/19/08 00:26

Comments

Seq.	Rerun	Dil.	Reason	Analytes
2				
File ID: 6M74344				
	Replaced septa.			

Approved: April 23, 2008

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Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 041808
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: 23806

Internal Standard: STD25713 Surrogate Standard: STD25615
CCV: STD25741 LCS: STD25665 MS/MSD: NA

Column 1 ID: RTX5 Column 2 ID: NA
Workgroups: WG268745, WG268581

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3				
File ID: 6M74345				
Calibrated mass axis and peak width.				
6	X			
File ID: 6M74348				
14	X	1	Analyzed too dilute	
File ID: 6M74356				
15	X	1	Analyzed too dilute	
File ID: 6M74357				
16	X	1	Analyzed too dilute	
File ID: 6M74358				
17	X	1	Analyzed too dilute	
File ID: 6M74359				
19	X	1	Analyzed too dilute	
File ID: 6M74361				
20	X	1	Analyzed too dilute	
File ID: 6M74362				
21	X	1	Analyzed too dilute	
File ID: 6M74363				
22	X	1	Analyzed too dilute	
File ID: 6M74364				
23	X	1	Analyzed too dilute	
File ID: 6M74365				
24	X	1	Analyzed too dilute	
File ID: 6M74366				

Approved: April 23, 2008

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 041808
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: 23806

Internal Standard: STD25713 Surrogate Standard: STD25615
CCV: STD25741 LCS: STD25665 MS/MSD: NA

Column 1 ID: RTX5 Column 2 ID: NA
Workgroups: WG268745, WG268581

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
25	X	1	Analyzed too dilute	
File ID: 6M74367				

Approved: April 23, 2008

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS10 Dataset: 041908
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID: 23850

Internal Standard: STD25257 Surrogate Standard: STD25620
CCV: STD25836 LCS: STD25838 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG268868

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M63973	SYSTEM BLANK	NA	1	1		04/19/08 09:48
2	10M63974	SYSTEM BLANK	NA	1	1		04/19/08 10:21
3	10M63975	SYSTEM BLANK 2129	NA	1	1		04/19/08 11:10
4	10M63976	WG268868-01 50ng BFB STD 8260	NA	1	1	STD25539	04/19/08 13:16
5	10M63977	CCV 1-4 DIOX CHECK	NA	1	1	STD25681	04/19/08 13:43
6	10M63978	SYSTEM BLANK	NA	1	1		04/19/08 14:16
7	10M63979	SYSTEM BLANK	NA	1	1		04/19/08 14:49
8	10M63980	SYSTEM BLANK	NA	1	1		04/19/08 15:35
9	10M63981	WG268868-02 0.3ug/L STD 8260	NA	1	1	STD25836	04/19/08 16:10
10	10M63982	WG268868-03 0.4ug/L STD 8260	NA	1	1	STD25836	04/19/08 16:43
11	10M63983	WG268868-04 1ug/L STD 8260	NA	1	1	STD25836	04/19/08 17:16
12	10M63984	WG268868-05 2ug/L STD 8260	NA	1	1	STD25836	04/19/08 17:48
13	10M63985	WG268868-06 5ug/L STD 8260	NA	1	1	STD25836	04/19/08 18:21
14	10M63986	WG268868-07 20ug/L STD 8260	NA	1	1	STD25836	04/19/08 18:54
15	10M63987	WG268868-08 50ug/L STD 8260	NA	1	1	STD25836	04/19/08 19:26
16	10M63988	WG268868-09 100ug/L STD 8260	NA	1	1	STD25836	04/19/08 19:59
17	10M63989	WG268868-10 200ug/L STD 8260	NA	1	1	STD25836	04/19/08 20:31
18	10M63990	WG268868-11 300ug/L STD 8260	NA	1	1	STD25836	04/19/08 21:04
19	10M63991	SYSTEM BLANK	NA	1	1		04/19/08 21:38
20	10M63992	SYSTEM BLANK	NA	1	1		04/19/08 22:12
21	10M63993	WG268868-12 20ug/L ALT SRC STD 8260	NA	1	1	STD25838	04/19/08 22:47

Approved: April 25, 2008

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 042508
Analyst1: CMS Analyst2: TMB
Method: 8260B SOP: MSV01 Rev: 10
Method: 624 SOP: MSV10 Rev: 9
Method: 5030B SOP: PAT01 Rev: 10
Maintenance Log ID: 23921

Internal Standard: STD25965 Surrogate Standard: STD25615
CCV: STD25741;STD25998 LCS: STD25940 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG269447;WG269550

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M74589	WG269446-01 BFB 50ng STD 8260	NA	1	1	STD25539	04/25/08 06:08
2	6M74590	WG269446-01 BFB 50ng STD 8260	NA	1	1	STD25539	04/25/08 06:23
3	6M74591	WG269446-01 BFB 50ng STD 8260	NA	1	1	STD25539	04/25/08 06:52
4	6M74592	WG269446-02 50ug/L STD 8260	NA	1	1	STD25741	04/25/08 07:20
5	6M74593	WG269446-02 50ug/L STD 8260	NA	1	1	STD25741	04/25/08 07:57
6	6M74594	WG269447-01 EXT BLK 100X 8260 5g/10m	NA	7	50		04/25/08 08:30
7	6M74595	WG269447-02 EXT LCS 100X 8260 5g/10m	NA	7	50		04/25/08 09:03
8	6M74596	WG269447-03 EXT LCSDUP 100X 8260 5g	NA	7	50		04/25/08 09:37
9	6M74597	WG269447-03 EXT LCSDUP 100X 8260 5g	NA	7	50		04/25/08 10:10
10	6M74598	L08040481-05 100X 8260	NA	10	50		04/25/08 10:47
11	6M74599	L08040432-03 C 100X 826-SPE	NA	7	50		04/25/08 11:20
12	6M74600	L08040430-01 C 100X 826-SPE M1	NA	7	50		04/25/08 11:53
13	6M74601	L08040430-11 C 100X 826-SPE	NA	7	50		04/25/08 12:27
14	6M74602	L08040430-05 C 100X 826-SPE	NA	7	50		04/25/08 12:59
15	6M74603	L08040430-04 C 100X 826-SPE	NA	7	50		04/25/08 13:32
16	6M74604	L08040469-02 C 100X 826-SPE M1	NA	7	50		04/25/08 14:05
17	6M74605	L08040469-05 C 100X 826-SPE	NA	7	50		04/25/08 14:38
18	6M74606	L08040469-07 C 100X 826-SPE	NA	7	50		04/25/08 15:11
19	6M74607	L08040468-02 C 100X 826-SPE	NA	7	50		04/25/08 15:44
20	6M74608	L08040468-04 C 100X 826-SPE	NA	7	50		04/25/08 16:17
21	6M74609	L08040386-01 50000X 826-TC (4/23@700	NA	17	5000		04/25/08 16:50
22	6M74610	SYSTEM BLANK	NA	1	1		04/25/08 17:23
23	6M74611	WG269549-01 50ng BFB STD 8260	NA	1	1	STD25539	04/25/08 18:19
24	6M74612	WG269549-02 50ug/L CCV STD 8260	NA	1	1	STD25998	04/25/08 18:45
25	6M74613	WG269550-01 VBLK0425 BLANK STD 826	NA	1	1		04/25/08 19:33
26	6M74614	WG269550-01 VBLK0425 BLANK STD 826	NA	1	1		04/25/08 20:06
27	6M74615	WG269550-01 20ug/L LCS STD 8260	NA	1	1	STD25940	04/25/08 20:39
28	6M74616	WG269550-03 20ug/L LCSDUP STD 8260	NA	1	1	STD25940	04/25/08 21:12
29	6M74617	WG269550-04 624 BLANK STD 8260	NA	1	1		04/25/08 21:45
30	6M74618	L08040468-01 A 826-SPE	<2	1	1		04/25/08 22:18
31	6M74619	L08040523-03 A 826-SPE	<2	1	1		04/25/08 22:51
32	6M74620	L08040555-05 A 826-LOW	<2	1	1		04/25/08 23:25
33	6M74621	L08040554-01 A 826-SPE	=7	1	1		04/25/08 23:58
34	6M74622	L08040554-02 A 826-SPE	=7	1	1		04/26/08 00:31

Approved: May 01, 2008

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 042508
Analyst1: CMS Analyst2: TMB
Method: 8260B SOP: MSV01 Rev: 10
Method: 624 SOP: MSV10 Rev: 9
Method: 5030B SOP: PAT01 Rev: 10
Maintenance Log ID: 23921

Internal Standard: STD25965 Surrogate Standard: STD25615
CCV: STD25741;STD25998 LCS: STD25940 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG269447;WG269550

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
35	6M74623	L08040554-03 A 826-SPE	=7	1	1		04/26/08 01:04
36	6M74624	L08040554-04 A 826-SPE	=7	1	1		04/26/08 01:37
37	6M74625	L08040554-05 A 826-SPE	=7	1	1		04/26/08 02:10
38	6M74626	L08040554-06 A 826-SPE	=7	1	1		04/26/08 02:44
39	6M74627	L08040554-07 A 826-SPE	=7	1	1		04/26/08 03:17
40	6M74628	L08040554-08 A 826-SPE	<2	1	1		04/26/08 03:51
41	6M74629	L08040554-10 A 826-SPE	=7	1	1		04/26/08 04:24
42	6M74630	L08040554-09 A 25X 826-SPE	=7	1	25		04/26/08 04:57
43	6M74631	L08040765-01 A 624	=7	2	1		04/26/08 05:30
44	6M74632	L08040765-02 A 10X 624	=7	2	10		04/26/08 06:04
45	6M74633	L08040766-01 A 624	=7	2	1		04/26/08 06:37
46	6M74634	L08040766-02 A 10X 624	=7	2	10		04/26/08 07:10
47	6M74635	L08040656-01 A 624-SPE2	=7	2	1		04/26/08 07:43
48	6M74636	SYSTEM CHECK	NA	1	1		04/26/08 08:16
49	6M74637	SYSTEM CHECK	NA	1	1		04/26/08 08:50

Comments

Seq.	Rerun	Dil.	Reason	Analytes
1	X			
File ID: 6M74589				
	Tune failed/DNR			
2	X			
File ID: 6M74590				
	Tune failed/DNR-Replaced septa			
4	X		Check Standard Failure	
File ID: 6M74592				
	DNR			
8	X		Surrogate standard failure	
File ID: 6M74596				
	SS not extracted			
19	X		Analyzed too dilute	
File ID: 6M74607				
	DNR			
20	X		Analyzed too dilute	

Approved: May 01, 2008

Page: 2

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 042508
Analyst1: CMS Analyst2: TMB
Method: 8260B SOP: MSV01 Rev: 10
Method: 624 SOP: MSV10 Rev: 9
Method: 5030B SOP: PAT01 Rev: 10
Maintenance Log ID: 23921

Internal Standard: STD25965 Surrogate Standard: STD25615
CCV: STD25741;STD25998 LCS: STD25940 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG269447;WG269550

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 6M74608				
	DNR			
21				
File ID: 6M74609				
	Wrong sample injexted-DNR			
25	X		Carry-over contamination	
File ID: 6M74613				
	DNR			
41	X	10	Over Calibration Range	Benzene
File ID: 6M74629				
42	X	5	Analyzed too dilute	
File ID: 6M74630				
	DNR			
44	X	5	Analyzed too dilute	
File ID: 6M74632				
	DNR			
45	X		Missed Tune	
File ID: 6M74633				
	DNR			
46	X	2	Missed Tune	
File ID: 6M74634				
	DNR			

Approved: May 01, 2008

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS8 Dataset: 042808
Analyst1: CMS Analyst2: APS
Method: 5030B SOP: MSV01 Rev: 10
Method: 8260B SOP: PAT01 Rev: 10
Method: 624 SOP: MSV01 Rev: 9
Maintenance Log ID: 23956

Internal Standard: STD26115 Surrogate Standard: STD26089
CCV: STD26064 LCS: STD25940 MS/MSD: NA

Column 1 ID: RTX5 Column 2 ID: NA
Workgroups: WG269631

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	8M344778	WG269630-01 50ng BFB STD 8260	NA	1	1	STD25539	04/28/08 07:27
2	8M344779	WG269630-02 50ug/L STD 8260	NA	1	1	STD25998	04/28/08 07:55
3	8M344780	WG269631-01 VBLK0428 BLANK 8260	NA	1	1		04/28/08 08:28
4	8M344781	WG269631-01 VBLK0428 BLANK 8260	NA	1	1		04/28/08 09:00
5	8M344782	WG269631-02 20ug/L LCS STD 8260	NA	1	1	STD25940	04/28/08 09:32
6	8M344783	L08040585-01 B 100X 826-TC	NA	17	10		04/28/08 10:05
7	8M344784	L08040555-04 A 826-LOW	<2	1	1		04/28/08 10:39
8	8M344785	L08040342-06 B 826-SPE	<2	1	1		04/28/08 11:11
9	8M344786	L08040566-02 B 826-SPE	<2	1	1		04/28/08 11:44
10	8M344787	L08040566-03 MS B 826-SPE	<2	1	1	STD25940	04/28/08 12:16
11	8M344788	L08040566-04 MSD B 826-SPE	<2	1	1	STD25940	04/28/08 12:48
12	8M344789	L08040560-02 A 826-SPE	<2	1	1		04/28/08 13:21
13	8M344790	L08040560-03 A 826-SPE	<2	1	1		04/28/08 13:53
14	8M344791	L08040555-01 A 826-LOW	<2	1	1		04/28/08 14:26
15	8M344792	L08040555-02 A 826-LOW	<2	1	1		04/28/08 14:58
16	8M344793	L08040555-03 A 826-LOW	<2	1	1		04/28/08 15:30
17	8M344794	L08040566-05 A 826-SPE	<2	1	1		04/28/08 16:03
18	8M344795	L08040566-06 A 826-SPE	<2	1	1		04/28/08 16:35
19	8M344796	L08040566-07 A 826-SPE	<2	1	1		04/28/08 17:07
20	8M344797	L08040566-08 A 826-SPE	<2	1	1		04/28/08 17:39
21	8M344798	L08040559-01 A 826-SPE	<2	1	1		04/28/08 18:12
22	8M344799	L08040523-01 B 826-SPE	<2	1	1		04/28/08 18:44
23	8M344800	L08040523-02 B 826-SPE	<2	1	1		04/28/08 19:16
24	8M344801	SYSTEM BLANK	NA	1	1		04/28/08 19:48
25	8M344802	WG269631-06 624 BLANK	NA	1	1		04/28/08 20:20
26	8M344803	L08040755-01 A 624-SPE	7	2	1		04/28/08 20:52
27	8M344804	SYSTEM CHECK	NA	2	1		04/28/08 21:25

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X			
File ID: 8M344780				

Approved: May 02, 2008

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Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS8 Dataset: 042808
Analyst1: CMS Analyst2: APS
Method: 5030B SOP: MSV01 Rev: 10
Method: 8260B SOP: PAT01 Rev: 10
Method: 624 SOP: MSV01 Rev: 9
Maintenance Log ID: 23956

Internal Standard: STD26115 Surrogate Standard: STD26089
CCV: STD26064 LCS: STD25940 MS/MSD: NA

Column 1 ID: RTX5 Column 2 ID: NA
Workgroups: WG269631

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
14	X		Carry-over contamination	acetone
File ID: 8M344791				
22	X		Surrogate standard failure	
File ID: 8M344799				

Approved: May 02, 2008

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS10 Dataset: 042908
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 10
Method: 5030/5035 SOP: PAT01 Rev: 10

Maintenance Log ID:

Internal Standard: NA Surrogate Standard: NA
CCV: NA LCS: NA MS/MSD: NA

Column 1 ID: Column 2 ID: NA
Workgroups: WG269770

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	10M64251	WG269769-01 50ng BFB STD 8260	NA	1	1	STD25539	04/29/08 08:25
2	10M64252	WG269769-02 50ug/L CCV STD 8260	NA	1	1	STD25998	04/29/08 08:50
3	10M64253	WG269770-01 VBLK0429 BLANK STD 826	NA	1	1		04/29/08 09:24
4	10M64254	WG269770-01 VBLK0429 BLANK STD 826	NA	1	1		04/29/08 09:57
5	10M64255	WG269770-02 20ug/L LCS STD 8260	NA	1	1	STD25940	04/29/08 10:30
6	10M64256	L08040485-04 C 250X 826-SPE	NA	1	250		04/29/08 11:03
7	10M64257	L08040582-05 B 5X 826-SPE	NA	1	5		04/29/08 11:35
8	10M64258	L08040614-06 A 826-SPE	NA	1	1		04/29/08 12:09
9	10M64259	L08040557-05 B 826-SPE	NA	1	1		04/29/08 12:43
10	10M64260	L08040582-06 B 826-SPE	NA	1	1		04/29/08 13:15
11	10M64261	L08040409-10 B 826-SPE	NA	1	1		04/29/08 13:48
12	10M64262	L08040523-01 A 826-SPE	NA	1	1		04/29/08 14:21
13	10M64263	L08040555-01 B 826-LOW	NA	1	1		04/29/08 14:54
14	10M64264	L08040581-05 A 826-SPLP	NA	18	1		04/29/08 15:27
15	10M64265	L08040581-07 A MS 826-SPLP	NA	18	1	STD25940	04/29/08 16:01
16	10M64266	L08040581-09 A MSD 826-SPLP	NA	18	1	STD25940	04/29/08 16:35
17	10M64267	L08040581-13 A 826-SPLP	NA	18	1		04/29/08 17:08
18	10M64268	L08040614-01 A 10X 826-SPE	NA	1	10		04/29/08 17:42
19	10M64269	L08040614-02 A 10X 826-SPE	NA	1	10		04/29/08 18:17
20	10M64270	L08040614-03 A 10X 826-SPE	NA	1	10		04/29/08 18:50
21	10M64271	L08040614-04 A 10X 826-SPE	NA	1	10		04/29/08 19:24
22	10M64272	L08040614-05 A 10X 826-SPE	NA	1	10		04/29/08 19:57
23	10M64273	SYSTEM BLANK	NA	1	1		04/29/08 20:31
24	10M64274	WG269770-06 624 BLANK	NA	2	1		04/29/08 21:05
25	10M64275	L08040789-01 A 624	NA	2	1		04/29/08 21:38

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X	1	Carry-over contamination	
File ID: 10M64253				
	DNR			

Approved:

Page: 1

Microbac Laboratories Inc.

Data Checklist

Date: 02-APR-2008
Analyst: CMS
Analyst: NA
Method: 8260B/624
Instrument: HPMS8
Curve Workgroup: NA
Runlog ID: 21455
Analytical Workgroups: WG267167

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:
04-APR-2008

Secondary Reviewer:
04-APR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: APR-04-2008 15:12:14

Microbac Laboratories Inc.

Data Checklist

Date: 17-APR-2008
Analyst: CMS
Analyst: NA
Method: 8260B/624
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 21761
Analytical Workgroups: WG268581

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	X
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:
22-APR-2008

Secondary Reviewer:
23-APR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: APR-23-2008 09:57:54

Microbac Laboratories Inc.

Data Checklist

Date: 18-APR-2008
Analyst: ASP
Analyst: CMS
Method: 8260B
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 21767
Analytical Workgroups: WG268745

System Performance Check	X
BFB	X
Initial Calibration	NA
Average RF	NA
Linear Reg or Higher Order Curve	NA
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	NA
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:
23-APR-2008

Secondary Reviewer:
23-APR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: APR-23-2008 09:58:36

Microbac Laboratories Inc.

Data Checklist

Date: 19-APR-2008
Analyst: TMB
Analyst: NA
Method: 8260
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 21820
Analytical Workgroups: WG268868

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:
24-APR-2008
Tiffany Bailey

Secondary Reviewer:
25-APR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: APR-25-2008 13:30:49

Microbac Laboratories Inc.

Data Checklist

Date: 25-APR-2008
Analyst: CMS
Analyst: TMB
Method: 8260B/624
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 21914
Analytical Workgroups: WG269447;WG269550

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:
30-APR-2008

Secondary Reviewer:
01-MAY-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAY-01-2008 11:15:38

Microbac Laboratories Inc.

Data Checklist

Date: 28-APR-2008
Analyst: CMS
Analyst: ASP
Method: 8260B
Instrument: HPMS8
Curve Workgroup: NA
Runlog ID: 21956
Analytical Workgroups: WG269631

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	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	X
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:
02-MAY-2008

Secondary Reviewer:
02-MAY-2008

CHECKLIST1 - Modified 03/05/2008
Generated: MAY-02-2008 13:39:14

Microbac Laboratories Inc.

Data Checklist

Date: 29-APR-2008
Analyst: TMB
Analyst: NA
Method: 8260
Instrument: HPMS10
Curve Workgroup: NA
Runlog ID: 21927
Analytical Workgroups: WG269770

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	
Check for compliance with method and project specific requirements	
Check the completeness of reported information	
Check the information for the report narrative	
Check the reasonableness of the results	

Primary Reviewer:
02-MAY-2008

Tiffany Bailey

Secondary Reviewer:

CHECKLIST1 - Modified 03/05/2008
Generated: MAY-02-2008 16:01:55

Microbac Laboratories Inc.

HOLDING TIMES

EQUIVALENT TO AFCEE FORM 9

00089993

Analytical Method: 8260B AAB#: WG269631

Login Number: L08040523

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
MW18-041608	04/16/08	04/17/08	04/28/08	14	12.2	04/28/08	14	12.2	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008

PDF File ID: 1084718

Report generated 05/02/2008 16:15

Microbac Laboratories Inc.

HOLDING TIMES

EQUIVALENT TO AFCEE FORM 9

00089994

Analytical Method: 8260B AAB#: WG269550

Login Number: L08040523

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	04/16/08	04/17/08	04/25/08	14	9.95	04/25/08	14	9.95	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008

PDF File ID: 1084718

Report generated 05/02/2008 16:15

Microbac Laboratories Inc.

HOLDING TIMES

EQUIVALENT TO AFCEE FORM 9

00089995

Analytical Method: 8260B AAB#: WG269770

Login Number: L08040523

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
MW19-041608	04/16/08	04/17/08	04/29/08	14	13.1	04/29/08	14	13.1	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008

PDF File ID: 1084718

Report generated 05/02/2008 16:15

Login Number: L08040523
Instrument Id: HPMS6
Workgroup (AAB#): WG269550

Method: 8260
CAL ID: HPMS6-17-APR-08
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L08040523-03	1.00	01	83.6	91.9	102	109
WG269550-01	1.00	01	80.5	89.8	103	108
WG269550-02	1.00	01	82.4	91.8	102	107
WG269550-03	1.00	01	80.8	91.0	101	108
WG269550-04	1.00	01	79.7	88.5	103	108

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

SURROGATES - Modified 03/06/2008
PDF File ID: 1084729
Report generated: 05/02/2008 16:15

Login Number: L08040523
Instrument Id: HPMS10
Workgroup (AAB#): WG269770

Method: 8260
CAL ID: HPMS10-19-APR-08
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L08040523-01	1.00	01	112	104	107	104
WG269770-01	1.00	01	110	103	109	107
WG269770-02	1.00	01	110	101	104	105

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

SURROGATES - Modified 03/06/2008
PDF File ID: 1084729
Report generated: 05/02/2008 16:15

Login Number: L08040523
Instrument Id: HPMS8
Workgroup (AAB#): WG269631

Method: 8260
CAL ID: HPMS8-02-APR-08
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L08040523-02	1.00	01	119	112	105	111
WG269631-01	1.00	01	109	108	109	111
WG269631-02	1.00	01	108	110	107	110
WG269631-06	1.00	01	158	144	132	139

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

SURROGATES - Modified 03/06/2008
PDF File ID: 1084729
Report generated: 05/02/2008 16:15

METHOD BLANK SUMMARY

Login Number:	L08040523	Work Group:	WG269770
Blank File ID:	10M64254	Blank Sample ID:	WG269770-01
Prep Date:	04/29/08 09:57	Instrument ID:	HPMS10
Analyzed Date:	04/29/08 09:57	Method:	8260B
Analyst:	TMB		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG269770-02	10M64255	04/29/08 10:30	01
MW19-041608	L08040523-01	10M64262	04/29/08 14:21	01

Report Name: BLANK_SUMMARY
PDF File ID: 1084356
Report generated 05/02/2008 16:15

METHOD BLANK SUMMARY

Login Number: L08040523
Work Group: WG269550
Blank File ID: 6M74614
Blank Sample ID: WG269550-01
Prep Date: 04/25/08 20:06
Instrument ID: HPMS6
Analyzed Date: 04/25/08 20:06
Method: 8260B
Analyst: TMB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG269550-02	6M74615	04/25/08 20:39	01
LCS2	WG269550-03	6M74616	04/25/08 21:12	01
TRIP BLANK	L08040523-03	6M74619	04/25/08 22:51	01

Report Name: BLANK_SUMMARY
PDF File ID: 1084356
Report generated 05/02/2008 16:15

METHOD BLANK SUMMARY

Login Number: L08040523
Work Group: WG269631
Blank File ID: 8M344781
Blank Sample ID: WG269631-01
Prep Date: 04/28/08 09:00
Instrument ID: HPMS8
Analyzed Date: 04/28/08 09:00
Method: 8260B
Analyst: CMS

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG269631-02	8M344782	04/28/08 09:32	01
MW18-041608	L08040523-02	8M344800	04/28/08 19:16	01

Report Name: BLANK_SUMMARY
PDF File ID: 1084356
Report generated 05/02/2008 16:15

METHOD BLANK REPORT

Login Number:L08040523 Prep Date:04/29/08 09:57 Sample ID:WG269770-01
Instrument ID:HPMS10 Run Date:04/29/08 09:57 Prep Method:5030B
File ID:10M64254 Analyst:TMB Method:8260B
Workgroup (AAB#):WG269770 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:HPMS10-19-APR-08

Analytes	SDL	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	0.200	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
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

Report Name:BLANK
PDF ID: 1084723
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METHOD BLANK REPORT

Login Number: L08040523 Prep Date: 04/29/08 09:57 Sample ID: WG269770-01
Instrument ID: HPMS10 Run Date: 04/29/08 09:57 Prep Method: 5030B
File ID: 10M64254 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG269770 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HPMS10-19-APR-08

Analytes	SDL	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	110	80	-	120	PASS
Dibromofluoromethane	103	86	-	118	PASS
p-Bromofluorobenzene	109	86	-	115	PASS
Toluene-d8	107	88	-	110	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: 1084723
02-MAY-2008 16:15

Login Number:L08040523 Prep Date:04/25/08 20:06 Sample ID:WG269550-01
Instrument ID:HPMS6 Run Date:04/25/08 20:06 Prep Method:5030B
File ID:6M74614 Analyst:TMB Method:8260B
Workgroup (AAB#):WG269550 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-17-APR-08

Analytes	SDL	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	0.200	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
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

Report Name:BLANK
PDF ID: 1084723
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METHOD BLANK REPORT

Login Number: L08040523 Prep Date: 04/25/08 20:06 Sample ID: WG269550-01
Instrument ID: HPMS6 Run Date: 04/25/08 20:06 Prep Method: 5030B
File ID: 6M74614 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG269550 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HPMS6-17-APR-08

Analytes	SDL	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	80.5	80	-	120	PASS
Dibromofluoromethane	89.8	86	-	118	PASS
p-Bromofluorobenzene	103	86	-	115	PASS
Toluene-d8	108	88	-	110	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: 1084723
02-MAY-2008 16:15

METHOD BLANK REPORT

Login Number:L08040523 Prep Date:04/28/08 09:00 Sample ID:WG269631-01
Instrument ID:HPMS8 Run Date:04/28/08 09:00 Prep Method:5030B
File ID:8M344781 Analyst:CMS Method:8260B
Workgroup (AAB#):WG269631 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS8-02-APR-08

Analytes	SDL	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	0.200	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
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

Report Name:BLANK
PDF ID: 1084723
02-MAY-2008 16:15

METHOD BLANK REPORT

Login Number: L08040523 Prep Date: 04/28/08 09:00 Sample ID: WG269631-01
Instrument ID: HPMS8 Run Date: 04/28/08 09:00 Prep Method: 5030B
File ID: 8M344781 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG269631 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: HPMS8-02-APR-08

Analytes	SDL	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	109	80	-	120	PASS
Dibromofluoromethane	108	86	-	118	PASS
p-Bromofluorobenzene	109	86	-	115	PASS
Toluene-d8	111	88	-	110	FAIL

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: 1084723
02-MAY-2008 16:15

Login Number: L08040523 Run Date: 04/29/2008 Sample ID: WG269770-02
Instrument ID: HPMS10 Run Time: 10:30 Prep Method: 5030B
File ID: 10M64255 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG269770 Matrix: Water Units: ug/L
QC Key: STD Lot#: STD25940 Cal ID: HPMS10-19-APR-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
1,1,1-Trichloroethane	20.0	21.5	107	80 - 134	
1,1,2,2-Tetrachloroethane	20.0	23.0	115	79 - 125	
1,1,2-Trichloro-1,2,2-Trifluoroethane	20.0	20.0	100	80 - 130	
1,1,2-Trichloroethane	20.0	23.2	116	80 - 125	
1,1-Dichloroethane	20.0	20.0	100	80 - 125	
1,1-Dichloroethene	20.0	18.3	91.6	80 - 132	
1,2,4-Trichlorobenzene	20.0	21.8	109	65 - 135	
1,2-Dibromo-3-chloropropane	20.0	19.9	99.4	50 - 130	
1,2-Dibromoethane	20.0	22.3	111	80 - 125	
1,2-Dichlorobenzene	20.0	22.2	111	80 - 125	
1,2-Dichloroethane	20.0	22.3	112	80 - 129	
cis-1,2-Dichloroethene	20.0	19.0	95.1	70 - 125	
trans-1,2-Dichloroethene	20.0	17.7	88.7	80 - 127	
1,2-Dichloropropane	20.0	19.2	96.0	80 - 120	
1,3-Dichlorobenzene	20.0	21.4	107	80 - 120	
1,4-Dichlorobenzene	20.0	21.3	106	80 - 120	
2-Butanone	20.0	25.1	126	30 - 150	
2-Hexanone	20.0	24.5	122	55 - 130	
4-Methyl-2-pentanone	20.0	20.2	101	64 - 140	
Acetone	20.0	25.1	126	40 - 142	
Benzene	20.0	18.5	92.4	80 - 121	
Bromodichloromethane	20.0	22.1	110	80 - 131	
Bromoform	20.0	20.5	103	70 - 130	
Bromomethane	20.0	18.7	93.5	30 - 145	
Carbon disulfide	20.0	16.8	83.8	58 - 138	
Carbon tetrachloride	20.0	21.8	109	65 - 140	
Chlorobenzene	20.0	20.4	102	80 - 120	
Chloroethane	20.0	17.7	88.7	60 - 135	
Chloroform	20.0	20.7	104	80 - 125	
Chloromethane	20.0	18.6	92.8	40 - 125	
cis-1,3-Dichloropropene	20.0	19.9	99.4	70 - 130	
Cyclohexane	20.0	19.4	96.9	80 - 130	
Dibromochloromethane	20.0	23.9	119	60 - 135	
Dichlorodifluoromethane	20.0	17.0	85.0	50 - 133	
Ethyl benzene	20.0	21.9	110	80 - 122	
Isopropylbenzene	20.0	20.7	103	80 - 122	
Methyl acetate	20.0	24.4	122	80 - 130	
Methyl tert-butyl ether	20.0	19.6	97.8	65 - 125	
Methylcyclohexane	20.0	18.6	93.1	80 - 130	
Methylene chloride	20.0	18.4	91.8	80 - 123	
Styrene	20.0	23.1	116	80 - 123	

LCS - Modified 03/06/2008
PDF File ID: 1083221
Report generated: 05/02/2008 16:15

Login Number: L08040523 Run Date: 04/29/2008 Sample ID: WG269770-02
Instrument ID: HPMS10 Run Time: 10:30 Prep Method: 5030B
File ID: 10M64255 Analyst: TMB Method: 8260B
Workgroup (AAB#): WG269770 Matrix: Water Units: ug/L
QC Key: STD Lot#: STD25940 Cal ID: HPMS10-19-APR-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Tetrachloroethene	20.0	21.9	109	80 - 124	
Toluene	20.0	20.8	104	80 - 124	
trans-1,3-Dichloropropene	20.0	21.4	107	80 - 130	
Trichloroethene	20.0	19.3	96.3	80 - 122	
Trichlorofluoromethane	20.0	22.5	112	62 - 151	
Vinyl chloride	20.0	20.8	104	65 - 140	
Xylenes, Total	60.0	65.1	108	80 - 121	

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	110	80 - 120	PASS
Dibromofluoromethane	101	86 - 118	PASS
p-Bromofluorobenzene	104	86 - 115	PASS
Toluene-d8	105	88 - 110	PASS

* FAILS %REC LIMIT

LCS - Modified 03/06/2008
PDF File ID: 1083221
Report generated: 05/02/2008 16:15

Login Number: L08040523 Run Date: 04/28/2008 Sample ID: WG269631-02
Instrument ID: HPMS8 Run Time: 09:32 Prep Method: 5030B
File ID: 8M344782 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG269631 Matrix: Water Units: ug/L
QC Key: STD Lot#: STD25940 Cal ID: HPMS8-02-APR-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
1,1,1-Trichloroethane	20.0	21.3	106	80 - 134	
1,1,2,2-Tetrachloroethane	20.0	21.8	109	79 - 125	
1,1,2-Trichloro-1,2,2-Trifluoroethane	20.0	23.7	118	80 - 130	
1,1,2-Trichloroethane	20.0	20.7	104	80 - 125	
1,1-Dichloroethane	20.0	22.6	113	80 - 125	
1,1-Dichloroethene	20.0	19.6	98.2	80 - 132	
1,2,4-Trichlorobenzene	20.0	18.4	92.0	65 - 135	
1,2-Dibromo-3-chloropropane	20.0	18.4	92.2	50 - 130	
1,2-Dibromoethane	20.0	19.9	99.4	80 - 125	
1,2-Dichlorobenzene	20.0	20.2	101	80 - 125	
1,2-Dichloroethane	20.0	21.8	109	80 - 129	
cis-1,2-Dichloroethene	20.0	21.6	108	70 - 125	
trans-1,2-Dichloroethene	20.0	22.9	114	80 - 127	
1,2-Dichloropropane	20.0	19.0	95.2	80 - 120	
1,3-Dichlorobenzene	20.0	21.1	105	80 - 120	
1,4-Dichlorobenzene	20.0	20.6	103	80 - 120	
2-Butanone	20.0	16.7	83.5	30 - 150	
2-Hexanone	20.0	17.3	86.7	55 - 130	
4-Methyl-2-pentanone	20.0	17.1	85.5	64 - 140	
Acetone	20.0	18.8	93.9	40 - 142	
Benzene	20.0	20.4	102	80 - 121	
Bromodichloromethane	20.0	21.9	110	80 - 131	
Bromoform	20.0	20.2	101	70 - 130	
Bromomethane	20.0	18.1	90.5	30 - 145	
Carbon disulfide	20.0	19.1	95.5	58 - 138	
Carbon tetrachloride	20.0	22.6	113	65 - 140	
Chlorobenzene	20.0	20.7	103	80 - 120	
Chloroethane	20.0	18.7	93.3	60 - 135	
Chloroform	20.0	22.1	110	80 - 125	
Chloromethane	20.0	17.1	85.3	40 - 125	
cis-1,3-Dichloropropene	20.0	18.8	94.2	70 - 130	
Cyclohexane	20.0	21.1	106	80 - 130	
Dibromochloromethane	20.0	22.8	114	60 - 135	
Dichlorodifluoromethane	20.0	18.4	91.8	50 - 133	
Ethyl benzene	20.0	22.0	110	80 - 122	
Isopropylbenzene	20.0	20.4	102	80 - 122	
Methyl acetate	20.0	21.3	106	80 - 130	
Methyl tert-butyl ether	20.0	24.6	123	65 - 125	
Methylcyclohexane	20.0	19.8	98.8	80 - 130	
Methylene chloride	20.0	18.4	91.8	80 - 123	
Styrene	20.0	20.8	104	80 - 123	

LCS - Modified 03/06/2008
PDF File ID: 1083221
Report generated: 05/02/2008 16:15

Login Number: L08040523 Run Date: 04/28/2008 Sample ID: WG269631-02
Instrument ID: HPMS8 Run Time: 09:32 Prep Method: 5030B
File ID: 8M344782 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG269631 Matrix: Water Units: ug/L
QC Key: STD Lot#: STD25940 Cal ID: HPMS8-02-APR-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Tetrachloroethene	20.0	23.0	115	80 - 124	
Toluene	20.0	22.0	110	80 - 124	
trans-1,3-Dichloropropene	20.0	19.3	96.7	80 - 130	
Trichloroethene	20.0	20.0	99.8	80 - 122	
Trichlorofluoromethane	20.0	19.9	99.5	62 - 151	
Vinyl chloride	20.0	24.0	120	65 - 140	
Xylenes, Total	60.0	64.0	107	80 - 121	

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	108	80 - 120	PASS
Dibromofluoromethane	110	86 - 118	PASS
p-Bromofluorobenzene	107	86 - 115	PASS
Toluene-d8	110	88 - 110	PASS

* FAILS %REC LIMIT

LCS - Modified 03/06/2008
PDF File ID: 1083221
Report generated: 05/02/2008 16:15

Login Number:L08040523 Analyst:TMB Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG269550 Units:ug/L
QC Key:STD Lot #:STD25940

Sample ID:WG269550-02 LCS File ID:6M74615 Run Date:04/25/2008 20:39
Sample ID:WG269550-03 LCS2 File ID:6M74616 Run Date:04/25/2008 21:12

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,1,1-Trichloroethane	20.0	17.9	89.3	20.0	18.0	90.1	0.884	80 - 134	20	
1,1,2,2-Tetrachloroethane	20.0	20.7	103	20.0	21.0	105	1.43	79 - 125	20	
1,1,2-Trichloro-1,2,2-Trifluoroethane	20.0	19.0	95.2	20.0	18.9	94.7	0.567	80 - 130	20	
1,1,2-Trichloroethane	20.0	20.4	102	20.0	20.7	104	1.73	80 - 125	20	
1,1-Dichloroethane	20.0	20.2	101	20.0	20.6	103	2.01	80 - 125	20	
1,1-Dichloroethene	20.0	17.7	88.6	20.0	18.3	91.5	3.28	80 - 132	20	
1,2,4-Trichlorobenzene	20.0	22.1	111	20.0	22.4	112	1.16	65 - 135	20	
1,2-Dibromo-3-chloropropane	20.0	16.9	84.5	20.0	17.4	87.1	3.02	50 - 130	20	
1,2-Dibromoethane	20.0	20.5	103	20.0	20.5	103	0.0641	80 - 125	20	
1,2-Dichlorobenzene	20.0	21.8	109	20.0	22.0	110	0.557	80 - 125	20	
1,2-Dichloroethane	20.0	17.8	89.0	20.0	17.9	89.3	0.278	80 - 129	20	
cis-1,2-Dichloroethene	20.0	22.5	112	20.0	23.1	116	2.84	70 - 125	20	
trans-1,2-Dichloroethene	20.0	19.2	96.2	20.0	20.0	99.8	3.68	80 - 127	20	
1,2-Dichloropropane	20.0	20.5	103	20.0	20.5	103	0.0295	80 - 120	20	
1,3-Dichlorobenzene	20.0	21.4	107	20.0	21.9	109	2.18	80 - 120	20	
1,4-Dichlorobenzene	20.0	20.5	103	20.0	20.8	104	1.38	80 - 120	20	
2-Butanone	20.0	20.0	100	20.0	20.0	99.8	0.208	30 - 150	20	
2-Hexanone	20.0	18.1	90.6	20.0	18.1	90.3	0.328	55 - 130	20	
4-Methyl-2-pentanone	20.0	21.5	108	20.0	21.5	107	0.166	64 - 140	20	
Acetone	20.0	21.3	106	20.0	21.6	108	1.38	40 - 142	20	
Benzene	20.0	21.4	107	20.0	21.6	108	0.789	80 - 121	20	
Bromodichloromethane	20.0	20.4	102	20.0	20.3	101	0.332	80 - 131	20	
Bromoform	20.0	17.3	86.4	20.0	17.6	87.8	1.68	70 - 130	20	
Bromomethane	20.0	21.3	107	20.0	22.6	113	6.06	30 - 145	20	
Carbon disulfide	20.0	18.8	94.1	20.0	19.3	96.7	2.69	58 - 138	20	
Carbon tetrachloride	20.0	17.8	88.8	20.0	17.8	88.8	0.0870	65 - 140	20	
Chlorobenzene	20.0	21.1	105	20.0	21.2	106	0.377	80 - 120	20	
Chloroethane	20.0	18.0	90.0	20.0	18.0	89.8	0.223	60 - 135	20	
Chloroform	20.0	19.7	98.7	20.0	19.8	99.0	0.347	80 - 125	20	
Chloromethane	20.0	17.5	87.4	20.0	17.3	86.6	0.933	40 - 125	20	
cis-1,3-Dichloropropene	20.0	18.6	93.2	20.0	18.8	94.1	0.880	70 - 130	20	
Cyclohexane	20.0	20.1	100	20.0	20.0	100	0.203	80 - 130	20	
Dibromochloromethane	20.0	18.0	90.0	20.0	18.1	90.4	0.488	60 - 135	20	
Dichlorodifluoromethane	20.0	20.6	103	20.0	20.2	101	2.09	50 - 133	20	
Ethyl benzene	20.0	22.9	114	20.0	23.2	116	1.38	80 - 122	20	
Isopropylbenzene	20.0	17.7	88.5	20.0	17.8	89.0	0.512	80 - 122	20	
Methyl acetate	20.0	21.1	105	20.0	21.3	106	0.964	80 - 130	20	
Methyl tert-butyl ether	20.0	20.3	102	20.0	20.8	104	2.32	65 - 125	20	
Methylcyclohexane	20.0	20.3	101	20.0	20.2	101	0.401	80 - 130	20	
Methylene chloride	20.0	17.8	89.2	20.0	18.6	92.8	3.93	80 - 123	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1080806
Report generated: 05/02/2008 16:15

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L08040523 Analyst: TMB Prep Method: 5030B
Instrument ID: HPMS6 Matrix: Water Method: 8260B
Workgroup (AAB#): WG269550 Units: ug/L
QC Key: STD Lot #: STD25940

Sample ID: WG269550-02 LCS File ID: 6M74615 Run Date: 04/25/2008 20:39
Sample ID: WG269550-03 LCS2 File ID: 6M74616 Run Date: 04/25/2008 21:12

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Styrene	20.0	19.9	99.5	20.0	20.1	101	1.02	80 - 123	20	
Tetrachloroethene	20.0	23.0	115	20.0	23.1	116	0.615	80 - 124	20	
Toluene	20.0	22.7	113	20.0	22.9	114	0.959	80 - 124	20	
trans-1,3-Dichloropropene	20.0	17.8	89.0	20.0	17.7	88.7	0.264	80 - 130	20	
Trichloroethene	20.0	20.0	100	20.0	20.4	102	2.01	80 - 122	20	
Trichlorofluoromethane	20.0	17.2	85.9	20.0	17.6	88.1	2.55	62 - 151	20	
Vinyl chloride	20.0	18.7	93.3	20.0	18.7	93.5	0.296	65 - 140	20	
Xylenes, Total	60.0	66.1	110	60.0	66.9	111	1.11	80 - 121	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	91.8	91.0	86 - 118	PASS
1,2-Dichloroethane-d4	82.4	80.8	80 - 120	PASS
Toluene-d8	107	108	88 - 110	PASS
p-Bromofluorobenzene	102	101	86 - 115	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1080806
Report generated: 05/02/2008 16:15

BFB

Login Number: L08040523
Instrument: HPMS10
Analyst: TMB
Workgroup: WG268868

Tune ID: WG268868-01
Run Date: 04/19/2008
Run Time: 13:16
File ID: 10M63976
Cal ID: HPMS10-19-APR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	17.9	5923	PASS
75.0	95.0	30.0	60.0	44.6	14770	PASS
95.0	95.0	100	100	100	33093	PASS
96.0	95.0	5.00	9.00	7.04	2331	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	78.1	25833	PASS
175	174	5.00	9.00	8.16	2107	PASS
176	174	95.0	101	97.5	25196	PASS
177	176	5.00	9.00	7.20	1815	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG268868-02	STD	01	04/19/2008 16:10	
WG268868-03	STD	01	04/19/2008 16:43	
WG268868-04	STD	01	04/19/2008 17:16	
WG268868-05	STD	01	04/19/2008 17:48	
WG268868-06	STD	01	04/19/2008 18:21	
WG268868-07	STD	01	04/19/2008 18:54	
WG268868-08	STD-CCV	01	04/19/2008 19:26	
WG268868-09	STD	01	04/19/2008 19:59	
WG268868-10	STD	01	04/19/2008 20:31	
WG268868-11	STD	01	04/19/2008 21:04	
WG268868-12	SSCV	01	04/19/2008 22:47	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1084726
Report generated 05/02/2008 16:15

BFB

Login Number: L08040523
Instrument: HPMS10
Analyst: TMB
Workgroup: WG269769

Tune ID: WG269769-01
Run Date: 04/29/2008
Run Time: 08:25
File ID: 10M64251
Cal ID: HPMS10-19-APR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	22.7	8034	PASS
75.0	95.0	30.0	60.0	48.0	17009	PASS
95.0	95.0	100	100	100	35400	PASS
96.0	95.0	5.00	9.00	7.20	2548	PASS
173	174	0	2.00	0.448	121	PASS
174	95.0	50.0	100	76.4	27032	PASS
175	174	5.00	9.00	8.80	2378	PASS
176	174	95.0	101	95.7	25869	PASS
177	176	5.00	9.00	7.39	1913	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG269769-02	CCV	01	04/29/2008 08:50	
WG269770-01	BLANK	01	04/29/2008 09:57	
WG269770-02	LCS	01	04/29/2008 10:30	
L08040523-01	MW19-041608	01	04/29/2008 14:21	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1084726
Report generated 05/02/2008 16:15

BFB

Login Number: L08040523
Instrument: HPMS6
Analyst: CMS
Workgroup: WG268581

Tune ID: WG268581-01
Run Date: 04/17/2008
Run Time: 08:37
File ID: 6M74324
Cal ID: HPMS6-17-APR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	24.7	5835	PASS
75.0	95.0	30.0	60.0	54.3	12819	PASS
95.0	95.0	100	100	100	23626	PASS
96.0	95.0	5.00	9.00	6.76	1597	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	65.0	15368	PASS
175	174	5.00	9.00	6.51	1001	PASS
176	174	95.0	101	99.4	15270	PASS
177	176	5.00	9.00	6.11	933	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG268581-02	STD	01	04/17/2008 09:07	
WG268581-06	STD	01	04/17/2008 11:22	
WG268581-07	STD	01	04/17/2008 11:55	
WG268581-08	STD-CCV	01	04/17/2008 12:30	
WG268581-09	STD	01	04/17/2008 13:03	
WG268581-10	STD	01	04/17/2008 13:36	
WG268581-11	STD	01	04/17/2008 14:09	
WG268581-05	STD	01	04/17/2008 16:28	
WG268581-04	STD	01	04/17/2008 17:01	
WG268581-03	STD	01	04/17/2008 17:34	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1084726
Report generated 05/02/2008 16:15

BFB

Login Number: L08040523
Instrument: HPMS6
Analyst: CMS
Workgroup: WG268744

Tune ID: WG268744-01
Run Date: 04/18/2008
Run Time: 11:41
File ID: 6M74346
Cal ID: HPMS6-17-APR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	23.1	6222	PASS
75.0	95.0	30.0	60.0	54.1	14553	PASS
95.0	95.0	100	100	100	26922	PASS
96.0	95.0	5.00	9.00	6.39	1719	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	61.5	16556	PASS
175	174	5.00	9.00	7.12	1179	PASS
176	174	95.0	101	98.6	16324	PASS
177	176	5.00	9.00	5.68	927	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG268581-12	SSCV	01	04/18/2008 13:55	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1084726
Report generated 05/02/2008 16:15

BFB

Login Number: L08040523
Instrument: HPMS6
Analyst: TMB
Workgroup: WG269549

Tune ID: WG269549-01
Run Date: 04/25/2008
Run Time: 18:19
File ID: 6M74611
Cal ID: HPMS6-17-APR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	22.8	14612	PASS
75.0	95.0	30.0	60.0	49.5	31765	PASS
95.0	95.0	100	100	100	64224	PASS
96.0	95.0	5.00	9.00	6.90	4431	PASS
173	174	0	2.00	0.707	279	PASS
174	95.0	50.0	100	61.4	39464	PASS
175	174	5.00	9.00	7.89	3113	PASS
176	174	95.0	101	98.1	38701	PASS
177	176	5.00	9.00	6.68	2587	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG269549-02	CCV	01	04/25/2008 18:45	
WG269550-01	BLANK	01	04/25/2008 20:06	
WG269550-02	LCS	01	04/25/2008 20:39	
WG269550-03	LCS2	01	04/25/2008 21:12	
WG269550-04	BLANK2	01	04/25/2008 21:45	
L08040523-03	TRIP BLANK	01	04/25/2008 22:51	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1084726
Report generated 05/02/2008 16:15

BFB

Login Number: L08040523
Instrument: HPMS8
Analyst: CMS
Workgroup: WG267167

Tune ID: WG267167-01
Run Date: 04/02/2008
Run Time: 12:38
File ID: 8M344060
Cal ID: HPMS8-02-APR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	19.4	12938	PASS
75.0	95.0	30.0	60.0	48.7	32461	PASS
95.0	95.0	100	100	100	66597	PASS
96.0	95.0	5.00	9.00	7.23	4816	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	73.6	49010	PASS
175	174	5.00	9.00	7.31	3582	PASS
176	174	95.0	101	98.0	48053	PASS
177	176	5.00	9.00	6.32	3038	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG267167-02	STD	01	04/02/2008 13:38	
WG267167-03	STD	01	04/02/2008 14:10	
WG267167-04	STD	01	04/02/2008 14:42	
WG267167-05	STD	01	04/02/2008 15:47	
WG267167-06	STD	01	04/02/2008 16:19	
WG267167-07	STD-CCV	01	04/02/2008 16:51	
WG267167-08	STD	01	04/02/2008 17:23	
WG267167-09	STD	01	04/02/2008 17:56	
WG267167-10	STD	01	04/02/2008 18:28	
WG267167-11	SSCV	01	04/02/2008 20:05	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1084726
Report generated 05/02/2008 16:15

BFB

Login Number: L08040523
Instrument: HPMS8
Analyst: CMS
Workgroup: WG269630

Tune ID: WG269630-01
Run Date: 04/28/2008
Run Time: 07:27
File ID: 8M344778
Cal ID: HPMS8-02-APR-08

Target	Rel. to	Lower	Upper	Rel.	Raw	Result
50.0	95.0	15.0	40.0	20.2	14138	PASS
75.0	95.0	30.0	60.0	50.6	35429	PASS
95.0	95.0	100	100	100	69949	PASS
96.0	95.0	5.00	9.00	6.54	4578	PASS
173	174	0	2.00	0.681	359	PASS
174	95.0	50.0	100	75.4	52730	PASS
175	174	5.00	9.00	7.41	3908	PASS
176	174	95.0	101	95.6	50413	PASS
177	176	5.00	9.00	6.75	3404	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG269630-02	CCV	01	04/28/2008 07:55	
WG269631-01	BLANK	01	04/28/2008 09:00	
WG269631-02	LCS	01	04/28/2008 09:32	
WG269631-03	REF	01	04/28/2008 11:44	
WG269631-04	MS	01	04/28/2008 12:16	
WG269631-05	MSD	01	04/28/2008 12:48	
L08040523-02	MW18-041608	01	04/28/2008 19:16	
WG269631-06	BLANK2	01	04/28/2008 20:20	*

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1084726
Report generated 05/02/2008 16:15

INITIAL CALIBRATION SUMMARY

Login Number: L08040523 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 19-APR-08 21:04
ICAL Workgroup: WG268868 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.2170	6.48		
1,2-Dichloropropane	CCC	0.2456	5.45		
Chloroform	CCC	0.4374	4.81		
Ethylbenzene	CCC	0.4070	4.72		
Toluene	CCC	1.165	3.73		
Vinyl Chloride	CCC	0.2249	19.7		1.00
1,1,2,2-Tetrachloroethane	SPCC	0.3688	8.23		
1,1-Dichloroethane	SPCC	0.4840	3.92		
Bromoform	SPCC	0.1500	15.1	0.999	
Chlorobenzene	SPCC	0.8121	10.3		
Chloromethane	SPCC	0.2162	8.97		
1,1,1-Trichloroethane		0.4068	6.32		
1,1,2-Trichloro-1,2,2-Trifluoroethane		0.2404	5.65		
1,1,2-Trichloroethane		0.1959	8.90		
1,2,4-Trichlorobenzene		0.7303	4.61		
1,2-Dibromo-3-Chloropropane		0.07220	18.8	1.00	
1,2-Dibromoethane		0.2031	9.34		
1,2-Dichlorobenzene		1.048	3.06		
1,2-Dichloroethane		0.3483	3.86		
1,3-Dichlorobenzene		1.162	3.08		
1,4-Dichlorobenzene		1.220	4.38		
2-Butanone		0.05372	4.00		
2-Hexanone		0.09265	5.32		
4-Methyl-2-Pentanone		0.06030	5.09		
Acetone		0.03940	5.76		
Benzene		0.8752	3.63		
Bromodichloromethane		0.2959	9.98		
Bromomethane		0.1766	7.23		
Carbon Disulfide		0.6833	4.20		
Carbon Tetrachloride		0.3451	8.75		
Chloroethane		0.1889	3.89		
Cyclohexane		0.4390	4.54		
Dibromochloromethane		0.2582	14.7		
Dichlorodifluoromethane		0.2687	5.24		
Isopropylbenzene		1.219	5.02		
Methyl Tert Butyl Ether		0.5391	4.82		
Methyl acetate		0.1204	5.68		
Methylcyclohexane		0.3516	4.95		
Methylene Chloride		0.2690	26.7		
Styrene		0.7482	13.1		
Tetrachloroethene		0.2468	4.53		
Trichloroethene		0.2578	4.77		
Trichlorofluoromethane		0.4527	5.85		
cis-1,2-Dichloroethene		0.2604	3.57		
cis-1,3-Dichloropropene		0.3250	11.1		

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INITIAL CALIBRATION SUMMARY

Login Number: L08040523 **Instrument ID:** HPMS10
Analytical Method: 8260B **Initial Calibration Date:** 19-APR-08 21:04
ICAL Workgroup: WG268868 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
m-,p-Xylene		0.4943	4.65		
o-Xylene		0.4767	4.71		
trans-1,2-Dichloroethene		0.2492	4.12		
trans-1,3-Dichloropropene		0.3632	10.7		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

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INITIAL CALIBRATION SUMMARY

00090023

Login Number: L08040523 **Instrument ID:** HPMS6

Analytical Method: 8260B **Initial Calibration Date:** 17-APR-08 17:34

ICAL Workgroup: WG268581 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.3223	21.7		1.00
1,2-Dichloropropane	CCC	0.2059	11.4		
Chloroform	CCC	0.4245	7.77		
Ethylbenzene	CCC	0.3544	14.0		
Toluene	CCC	0.9880	9.37		
Vinyl Chloride	CCC	0.1848	14.0		
1,1,2,2-Tetrachloroethane	SPCC	0.3941	11.3		
1,1-Dichloroethane	SPCC	0.4171	11.5		
Bromoform	SPCC	0.1346	18.5	1.00	
Chlorobenzene	SPCC	0.7123	4.25		
Chloromethane	SPCC	0.2801	7.35		
1,1,1-Trichloroethane		0.3724	21.9	1.00	
1,1,2-Trichloro-1,2,2-Trifluoroethane		0.1986	28.8	1.00	
1,1,2-Trichloroethane		0.1864	5.86		
1,2,4-Trichlorobenzene		0.6579	6.63		
1,2-Dibromo-3-Chloropropane		0.08423	17.3	0.999	
1,2-Dibromoethane		0.1877	10.6		
1,2-Dichlorobenzene		0.9364	5.40		
1,2-Dichloroethane		0.3502	4.00		
1,3-Dichlorobenzene		1.022	4.90		
1,4-Dichlorobenzene		1.092	3.52		
2-Butanone		0.06587	11.1		
2-Hexanone		0.1291	11.8		
4-Methyl-2-Pentanone		0.05044	22.0	0.998	
Acetone		0.04653	7.11		
Benzene		0.7533	10.3		
Bromodichloromethane		0.3033	14.3		
Bromomethane		0.1167	38.7		1.00
Carbon Disulfide		0.5297	21.1		1.00
Carbon Tetrachloride		0.2937	24.1	1.00	
Chloroethane		0.1615	22.2		1.00
Cyclohexane		0.3341	39.0		1.00
Dibromochloromethane		0.2280	16.2	1.00	
Dichlorodifluoromethane		0.2586	22.2	1.00	
Isopropylbenzene		1.131	21.0		1.00
Methyl Tert Butyl Ether		0.4486	15.5		
Methyl acetate		0.1148	6.47		
Methylcyclohexane		0.2742	34.1		
Methylene Chloride		0.2016	11.2		
Styrene		0.7948	17.1		1.00
Tetrachloroethene		0.2174	14.0		
Trichloroethene		0.1669	19.2		1.00
Trichlorofluoromethane		0.4008	20.6		1.00
cis-1,2-Dichloroethene		0.1906	14.2		
cis-1,3-Dichloropropene		0.3033	22.4		1.00

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INITIAL CALIBRATION SUMMARY

00090024

Login Number: L08040523
Analytical Method: 8260B
ICAL Workgroup: WG268581

Instrument ID: HPMS6
Initial Calibration Date: 17-APR-08 17:34
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
m-,p-Xylene		0.4460	13.9		
o-Xylene		0.4387	16.7		1.00
trans-1,2-Dichloroethene		0.1703	18.7		1.00
trans-1,3-Dichloropropene		0.4226	12.9		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

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INITIAL CALIBRATION SUMMARY

00090025

Login Number: L08040523 **Instrument ID:** HPMS8

Analytical Method: 8260B **Initial Calibration Date:** 02-APR-08 18:28

ICAL Workgroup: WG267167 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.2968	18.9		1.00
1,2-Dichloropropane	CCC	0.2036	2.73		
Chloroform	CCC	0.3846	5.29		
Ethylbenzene	CCC	0.4065	10.9		
Toluene	CCC	1.090	8.83		
Vinyl Chloride	CCC	0.1345	8.59		
1,1,2,2-Tetrachloroethane	SPCC	0.3439	10.1		
1,1-Dichloroethane	SPCC	0.3477	8.92		
Bromoform	SPCC	0.1188	19.6	1.00	
Chlorobenzene	SPCC	0.7541	9.70		
Chloromethane	SPCC	0.2008	5.30		
1,1,1-Trichloroethane		0.3207	17.8		1.00
1,1,2-Trichloro-1,2,2-Trifluoroethane		0.1598	20.9		1.00
1,1,2-Trichloroethane		0.1732	3.74		
1,2,4-Trichlorobenzene		0.8386	11.6		
1,2-Dibromo-3-Chloropropane		0.06427	28.2		1.00
1,2-Dibromoethane		0.1805	1.72		
1,2-Dichlorobenzene		1.077	9.53		
1,2-Dichloroethane		0.2654	2.66		
1,3-Dichlorobenzene		1.188	8.90		
1,4-Dichlorobenzene		1.207	10.5		
2-Butanone		0.04607	8.28		
2-Hexanone		0.04898	7.14		
4-Methyl-2-Pentanone		0.04197	8.84		
Acetone		0.03183	4.79		
Benzene		0.8125	6.33		
Bromodichloromethane		0.2789	9.23		
Bromomethane		0.1550	19.3		1.00
Carbon Disulfide		0.5907	23.2	0.999	
Carbon Tetrachloride		0.2525	27.2	1.00	
Chloroethane		0.1598	10.7		
Cyclohexane		0.2950	24.1		1.00
Dibromochloromethane		0.2083	14.6		
Dichlorodifluoromethane		0.2446	19.0		1.00
Isopropylbenzene		1.247	11.6		
Methyl Tert Butyl Ether		0.3734	3.68		
Methyl acetate		0.08946	6.57		
Methylcyclohexane		0.3347	11.5		
Methylene Chloride		0.2582	28.3		1.00
Styrene		0.8548	8.82		
Tetrachloroethene		0.2103	13.0		
Trichloroethene		0.2156	7.60		
Trichlorofluoromethane		0.3811	22.1	1.00	
cis-1,2-Dichloroethene		0.2098	4.12		
cis-1,3-Dichloropropene		0.3322	6.55		

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INITIAL CALIBRATION SUMMARY

00090026

Login Number: L08040523
Analytical Method: 8260B
ICAL Workgroup: WG267167

Instrument ID: HPMS8
Initial Calibration Date: 02-APR-08 18:28
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD(R^2)
m-,p-Xylene		0.5090	12.1		
o-Xylene		0.5253	8.20		
trans-1,2-Dichloroethene		0.2731	8.56		
trans-1,3-Dichloropropene		0.3535	5.58		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

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INITIAL CALIBRATION DATA

00090027

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS10
Initial Calibration Date: 19-APR-08 21:04
Column ID: F

Analyte	WG268868-02			WG268868-03			WG268868-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	2768.00000	0.1911	1.00	7478.00000	0.2082
1,2-Dichloropropane	NA	NA	NA	0.400	3187.00000	0.2200	1.00	9142.00000	0.2545
Chloroform	0.300	5102.00000	0.4662	0.400	6017.00000	0.4154	1.00	15274.0000	0.4252
Ethylbenzene	NA	NA	NA	0.400	4590.00000	0.3898	1.00	11850.0000	0.3992
Toluene	NA	NA	NA	0.400	13390.0000	1.137	1.00	34223.0000	1.153
Vinyl Chloride	NA	NA	NA	0.400	4348.00000	0.3002	1.00	9178.00000	0.2555
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	1856.00000	0.3006	1.00	5719.00000	0.3688
1,1-Dichloroethane	NA	NA	NA	0.400	6702.00000	0.4627	1.00	17800.0000	0.4955
Bromoform	NA	NA	NA	NA	NA	NA	1.00	3457.00000	0.1164
Chlorobenzene	NA	NA	NA	0.400	11590.0000	0.9842	1.00	25445.0000	0.8571
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	8882.00000	0.2472
1,1,1-Trichloroethane	NA	NA	NA	0.400	5348.00000	0.3692	1.00	13746.0000	0.3826
1,1,2-Trichloro-1,2,2-Trifluoroethane	NA	NA	NA	NA	NA	NA	1.00	7819.00000	0.2177
1,1,2-Trichloroethane	NA	NA	NA	0.400	1928.00000	0.1637	1.00	5447.00000	0.1835
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	4659.00000	0.7545	1.00	10500.0000	0.6770
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	1956.00000	0.1661	1.00	5639.00000	0.1899
1,2-Dichlorobenzene	0.300	5013.00000	1.068	0.400	6413.00000	1.039	1.00	15895.0000	1.025
1,2-Dichloroethane	NA	NA	NA	0.400	4811.00000	0.3321	1.00	12291.0000	0.3421
1,3-Dichlorobenzene	NA	NA	NA	0.400	7301.00000	1.182	1.00	17572.0000	1.133
1,4-Dichlorobenzene	0.300	6134.00000	1.307	0.400	7713.00000	1.249	1.00	18701.0000	1.206
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	12943.0000	0.8935	1.00	32226.0000	0.8971
Bromodichloromethane	NA	NA	NA	0.400	3656.00000	0.2524	1.00	9652.00000	0.2687
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	5528.00000	0.1539
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	24255.0000	0.6752
Carbon Tetrachloride	NA	NA	NA	0.400	4292.00000	0.2963	1.00	11759.0000	0.3273
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	6607.00000	0.1839
Cyclohexane	NA	NA	NA	NA	NA	NA	1.00	15244.0000	0.4243
Dibromochloromethane	NA	NA	NA	0.400	2377.00000	0.2018	1.00	6166.00000	0.2077
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	9688.00000	0.2697
Isopropylbenzene	NA	NA	NA	0.400	13595.0000	1.154	1.00	34864.0000	1.174
Methyl Tert Butyl Ether	NA	NA	NA	NA	NA	NA	1.00	18082.0000	0.5033
Methyl acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	NA	NA	NA	0.400	6227.00000	0.4299	1.00	10836.0000	0.3016
Styrene	NA	NA	NA	0.400	7275.00000	0.6178	1.00	18697.0000	0.6298
Tetrachloroethene	NA	NA	NA	0.400	2848.00000	0.2418	1.00	7498.00000	0.2526
Trichloroethene	NA	NA	NA	0.400	3507.00000	0.2421	1.00	8781.00000	0.2444

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INITIAL CALIBRATION DATA

00090028

Login Number:L08040523
Analytical Method:8260B

Instrument ID:HPMS10
Initial Calibration Date:19-APR-08 21:04
Column ID:F

Analyte	WG268868-05			WG268868-06			WG268868-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	16160.0000	0.2227	5.00	40990.0000	0.2224	20.0	155810.000	0.2102
1,2-Dichloropropane	2.00	17847.0000	0.2459	5.00	44528.0000	0.2416	20.0	176801.000	0.2385
Chloroform	2.00	30734.0000	0.4234	5.00	80659.0000	0.4376	20.0	312196.000	0.4212
Ethylbenzene	2.00	24070.0000	0.4072	5.00	61704.0000	0.4166	20.0	237169.000	0.3955
Toluene	2.00	69953.0000	1.184	5.00	175126.000	1.182	20.0	673479.000	1.123
Vinyl Chloride	2.00	17235.0000	0.2375	5.00	41107.0000	0.2230	20.0	145607.000	0.1965
1,1,2,2-Tetrachloroethane	2.00	11410.0000	0.3652	5.00	30506.0000	0.3855	20.0	121100.000	0.3770
1,1-Dichloroethane	2.00	34946.0000	0.4815	5.00	88872.0000	0.4821	20.0	345418.000	0.4661
Bromoform	2.00	7378.00000	0.1248	5.00	21607.0000	0.1459	20.0	96307.0000	0.1606
Chlorobenzene	2.00	48162.0000	0.8148	5.00	118364.000	0.7992	20.0	450946.000	0.7520
Chloromethane	2.00	17004.0000	0.2343	5.00	39533.0000	0.2145	20.0	154121.000	0.2079
1,1,1-Trichloroethane	2.00	29763.0000	0.4101	5.00	76511.0000	0.4151	20.0	293239.000	0.3957
1,1,2-Trichloro-1,2,2-Trifluoroethane	2.00	16766.0000	0.2310	5.00	46131.0000	0.2503	20.0	181011.000	0.2442
1,1,2-Trichloroethane	2.00	11116.0000	0.1881	5.00	30435.0000	0.2055	20.0	122846.000	0.2049
1,2,4-Trichlorobenzene	2.00	22567.0000	0.7222	5.00	56499.0000	0.7140	20.0	228056.000	0.7099
1,2-Dibromo-3-Chloropropane	2.00	1534.00000	0.04910	5.00	5061.00000	0.06400	20.0	23403.0000	0.07280
1,2-Dibromoethane	2.00	11778.0000	0.1993	5.00	30906.0000	0.2087	20.0	127130.000	0.2120
1,2-Dichlorobenzene	2.00	32823.0000	1.050	5.00	83372.0000	1.054	20.0	331533.000	1.032
1,2-Dichloroethane	2.00	25432.0000	0.3504	5.00	65532.0000	0.3555	20.0	253630.000	0.3422
1,3-Dichlorobenzene	2.00	36167.0000	1.158	5.00	92370.0000	1.167	20.0	360659.000	1.123
1,4-Dichlorobenzene	2.00	38807.0000	1.242	5.00	96405.0000	1.218	20.0	372864.000	1.161
2-Butanone	NA	NA	NA	5.00	10012.0000	0.05430	20.0	38746.0000	0.05230
2-Hexanone	NA	NA	NA	5.00	13235.0000	0.08940	20.0	55389.0000	0.09240
4-Methyl-2-Pentanone	NA	NA	NA	5.00	10547.0000	0.05720	20.0	44741.0000	0.06040
Acetone	NA	NA	NA	5.00	7711.00000	0.04180	20.0	28057.0000	0.03790
Benzene	2.00	62484.0000	0.8609	5.00	158254.000	0.8585	20.0	613495.000	0.8278
Bromodichloromethane	2.00	20110.0000	0.2771	5.00	54050.0000	0.2932	20.0	221651.000	0.2991
Bromomethane	2.00	13002.0000	0.1791	5.00	31302.0000	0.1698	20.0	127000.000	0.1714
Carbon Disulfide	2.00	48984.0000	0.6749	5.00	124868.000	0.6774	20.0	487371.000	0.6576
Carbon Tetrachloride	2.00	23457.0000	0.3232	5.00	64732.0000	0.3512	20.0	254983.000	0.3440
Chloroethane	2.00	13708.0000	0.1889	5.00	35134.0000	0.1906	20.0	141792.000	0.1913
Cyclohexane	2.00	31812.0000	0.4383	5.00	81586.0000	0.4426	20.0	310199.000	0.4185
Dibromochloromethane	2.00	14495.0000	0.2452	5.00	38863.0000	0.2624	20.0	164502.000	0.2743
Dichlorodifluoromethane	2.00	20644.0000	0.2844	5.00	50566.0000	0.2743	20.0	201625.000	0.2720
Isopropylbenzene	2.00	72567.0000	1.228	5.00	183344.000	1.238	20.0	714454.000	1.191
Methyl Tert Butyl Ether	2.00	38875.0000	0.5356	5.00	100358.000	0.5445	20.0	385963.000	0.5208
Methyl acetate	2.00	8138.00000	0.1121	5.00	23119.0000	0.1254	20.0	84793.0000	0.1144
Methylcyclohexane	2.00	24712.0000	0.3405	5.00	64122.0000	0.3479	20.0	248898.000	0.3358
Methylene Chloride	2.00	20166.0000	0.2778	5.00	45632.0000	0.2476	20.0	162067.000	0.2187
Styrene	2.00	40075.0000	0.6780	5.00	110226.000	0.7442	20.0	475515.000	0.7930
Tetrachloroethene	2.00	14274.0000	0.2415	5.00	37539.0000	0.2535	20.0	142912.000	0.2383
Trichloroethene	2.00	18678.0000	0.2573	5.00	48508.0000	0.2632	20.0	187694.000	0.2532

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INITIAL CALIBRATION DATA

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Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS10
Initial Calibration Date: 19-APR-08 21:04
Column ID: F

Analyte	WG268868-08			WG268868-09			WG268868-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	416737.000	0.2385	100	849971.000	0.2252	200	1696968.00	0.2173
1,2-Dichloropropane	50.0	464435.000	0.2658	100	953049.000	0.2525	200	1919202.00	0.2458
Chloroform	50.0	832711.000	0.4765	100	1669592.00	0.4423	200	3347757.00	0.4287
Ethylbenzene	50.0	632077.000	0.4471	100	1269350.00	0.4126	200	2472528.00	0.3881
Toluene	50.0	1775476.00	1.256	100	3577793.00	1.163	200	7166610.00	1.125
Vinyl Chloride	50.0	340039.000	0.1946	100	630680.000	0.1671	NA	NA	NA
1,1,2,2-Tetrachloroethane	50.0	308233.000	0.4050	100	606210.000	0.3794	200	1189312.00	0.3691
1,1-Dichloroethane	50.0	910984.000	0.5213	100	1853828.00	0.4911	200	3680780.00	0.4714
Bromoform	50.0	255453.000	0.1807	100	502573.000	0.1634	200	1008194.00	0.1582
Chlorobenzene	50.0	1160984.00	0.8212	100	2329654.00	0.7573	200	4531884.00	0.7113
Chloromethane	50.0	382203.000	0.2187	100	747642.000	0.1981	200	1503946.00	0.1926
1,1,1-Trichloroethane	50.0	791328.000	0.4528	100	1602407.00	0.4245	200	3158658.00	0.4045
1,1,2-Trichloro-1,2,2-Trifluoroethane	50.0	454511.000	0.2601	100	905384.000	0.2398	200	1873476.00	0.2399
1,1,2-Trichloroethane	50.0	313523.000	0.2218	100	618015.000	0.2009	200	1268101.00	0.1990
1,2,4-Trichlorobenzene	50.0	599649.000	0.7880	100	1199639.00	0.7508	200	2338189.00	0.7256
1,2-Dibromo-3-Chloropropane	50.0	63941.0000	0.08400	100	128186.000	0.08020	200	267783.000	0.08310
1,2-Dibromoethane	50.0	326553.000	0.2310	100	648392.000	0.2108	200	1318700.00	0.2070
1,2-Dichlorobenzene	50.0	851463.000	1.119	100	1660167.00	1.039	200	3240509.00	1.006
1,2-Dichloroethane	50.0	658371.000	0.3767	100	1311889.00	0.3475	200	2656750.00	0.3402
1,3-Dichlorobenzene	50.0	937484.000	1.232	100	1872765.00	1.172	200	3635571.00	1.128
1,4-Dichlorobenzene	50.0	968002.000	1.272	100	1904598.00	1.192	200	3663764.00	1.137
2-Butanone	50.0	99536.0000	0.05700	100	198093.000	0.05250	200	399212.000	0.05110
2-Hexanone	50.0	144083.000	0.1019	100	275460.000	0.08950	200	566671.000	0.08890
4-Methyl-2-Pentanone	50.0	115234.000	0.06590	100	221584.000	0.05870	200	457757.000	0.05860
Acetone	50.0	73939.0000	0.04230	100	145563.000	0.03860	200	306838.000	0.03930
Benzene	50.0	1626704.00	0.9308	100	3316725.00	0.8786	200	6673834.00	0.8546
Bromodichloromethane	50.0	598421.000	0.3424	100	1212098.00	0.3211	200	2446557.00	0.3133
Bromomethane	50.0	335284.000	0.1918	100	695489.000	0.1842	200	1453665.00	0.1862
Carbon Disulfide	50.0	1296587.00	0.7419	100	2627549.00	0.6960	200	5157178.00	0.6604
Carbon Tetrachloride	50.0	692236.000	0.3961	100	1381226.00	0.3659	200	2787094.00	0.3569
Chloroethane	50.0	354437.000	0.2028	100	699175.000	0.1852	200	1403888.00	0.1798
Cyclohexane	50.0	832376.000	0.4763	100	1695868.00	0.4492	200	3307702.00	0.4236
Dibromochloromethane	50.0	440826.000	0.3118	100	876380.000	0.2849	200	1767793.00	0.2774
Dichlorodifluoromethane	50.0	491256.000	0.2811	100	958540.000	0.2539	200	1919290.00	0.2458
Isopropylbenzene	50.0	1905108.00	1.348	100	3812117.00	1.239	200	7489651.00	1.176
Methyl Tert Butyl Ether	50.0	1027400.00	0.5879	100	2047819.00	0.5425	200	4211874.00	0.5394
Methyl acetate	50.0	222275.000	0.1272	100	439961.000	0.1165	200	991694.000	0.1270
Methylcyclohexane	50.0	671005.000	0.3839	100	1348322.00	0.3572	200	2688888.00	0.3443
Methylene Chloride	50.0	418711.000	0.2396	100	836059.000	0.2215	200	1680565.00	0.2152
Styrene	50.0	1257207.00	0.8893	100	2556440.00	0.8310	200	5112736.00	0.8024
Tetrachloroethene	50.0	380078.000	0.2689	100	752245.000	0.2445	200	1487224.00	0.2334
Trichloroethene	50.0	492143.000	0.2816	100	989648.000	0.2622	200	2018133.00	0.2584

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Analytical Method: 8260B **Initial Calibration Date:** 19-APR-08 21:04
Column ID: F

Analyte	WG268868-11		
	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-Trichloroethane	NA	NA	NA
1,1,2-Trichloro-1,2,2-Trifluoroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,2,4-Trichlorobenzene	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-Dichlorobenzene	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2-Butanone	300	632874.000	0.05510
2-Hexanone	300	878239.000	0.09380
4-Methyl-2-Pentanone	300	700999.000	0.06100
Acetone	300	419522.000	0.03650
Benzene	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA
Chloroethane	NA	NA	NA
Cyclohexane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methyl Tert Butyl Ether	NA	NA	NA
Methyl acetate	NA	NA	NA
Methylcyclohexane	NA	NA	NA
Methylene Chloride	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA

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INITIAL CALIBRATION DATA

Login Number: L08040523
Instrument ID: HPMS10
Analytical Method: 8260B
Initial Calibration Date: 19-APR-08 21:04
Column ID: F

Analyte	WG268868-02			WG268868-03			WG268868-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Trichlorofluoromethane	NA	NA	NA	0.400	6127.00000	0.4230	1.00	15825.0000	0.4405
cis-1,2-Dichloroethene	NA	NA	NA	0.400	3754.00000	0.2592	1.00	9211.00000	0.2564
cis-1,3-Dichloropropene	NA	NA	NA	0.400	3934.00000	0.2716	1.00	10274.0000	0.2860
m-,p-Xylene	NA	NA	NA	0.800	11150.0000	0.4734	2.00	29040.0000	0.4891
o-Xylene	NA	NA	NA	0.400	5679.00000	0.4822	1.00	13512.0000	0.4552
trans-1,2-Dichloroethene	NA	NA	NA	0.400	3694.00000	0.2550	1.00	9050.00000	0.2519
trans-1,3-Dichloropropene	NA	NA	NA	0.400	3620.00000	0.3074	1.00	9496.00000	0.3199

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00090032

Login Number:L08040523
Analytical Method:8260B

Instrument ID:HPMS10
Initial Calibration Date:19-APR-08 21:04
Column ID:F

Analyte	WG268868-05			WG268868-06			WG268868-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Trichlorofluoromethane	2.00	34397.0000	0.4739	5.00	87670.0000	0.4756	20.0	343611.000	0.4636
cis-1,2-Dichloroethene	2.00	18733.0000	0.2581	5.00	47482.0000	0.2576	20.0	183366.000	0.2474
cis-1,3-Dichloropropene	2.00	21896.0000	0.3017	5.00	60734.0000	0.3295	20.0	246761.000	0.3329
m-,p-Xylene	4.00	58284.0000	0.4930	10.0	149357.000	0.5042	40.0	577825.000	0.4818
o-Xylene	2.00	27028.0000	0.4573	5.00	71090.0000	0.4800	20.0	281532.000	0.4695
trans-1,2-Dichloroethene	2.00	17662.0000	0.2433	5.00	44498.0000	0.2414	20.0	173382.000	0.2339
trans-1,3-Dichloropropene	2.00	19969.0000	0.3378	5.00	54896.0000	0.3706	20.0	225523.000	0.3761

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INITIAL CALIBRATION DATA

00090033

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS10
Initial Calibration Date: 19-APR-08 21:04
Column ID: F

Analyte	WG268868-08			WG268868-09			WG268868-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Trichlorofluoromethane	50.0	855226.000	0.4894	100	1652265.00	0.4377	200	3262508.00	0.4178
cis-1,2-Dichloroethene	50.0	488885.000	0.2797	100	1003552.00	0.2658	200	2021598.00	0.2589
cis-1,3-Dichloropropene	50.0	659359.000	0.3773	100	1334446.00	0.3535	200	2711469.00	0.3472
m-,p-Xylene	100	1533987.00	0.5425	200	3079327.00	0.5005	400	5982505.00	0.4695
o-Xylene	50.0	741860.000	0.5248	100	1487578.00	0.4835	200	2939201.00	0.4613
trans-1,2-Dichloroethene	50.0	468751.000	0.2682	100	949162.000	0.2514	200	1938457.00	0.2482
trans-1,3-Dichloropropene	50.0	598829.000	0.4236	100	1196330.00	0.3889	200	2430920.00	0.3815

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Login Number: L08040523
Analytical Method: 8260B
Instrument ID: HPMS10
Initial Calibration Date: 19-APR-08 21:04
Column ID: F

Analyte	WG268868-11		
	CONC	RESP	RF
Trichlorofluoromethane	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
o-Xylene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

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INITIAL CALIBRATION DATA

00090035

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS6
Initial Calibration Date: 17-APR-08 17:34
Column ID: F

Analyte	WG268581-02			WG268581-03			WG268581-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	1.00	7093.00000	0.2582
1,2-Dichloropropane	NA	NA	NA	NA	NA	NA	1.00	5051.00000	0.1839
Chloroform	0.300	3813.00000	0.4238	0.400	4177.00000	0.3953	1.00	10990.0000	0.4000
Ethylbenzene	NA	NA	NA	0.400	2333.00000	0.3035	1.00	6244.00000	0.3128
Toluene	NA	NA	NA	0.400	7027.00000	0.9142	1.00	17568.0000	0.8802
Vinyl Chloride	NA	NA	NA	0.400	1684.00000	0.1594	1.00	5494.00000	0.2000
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	1339.00000	0.3131	1.00	4089.00000	0.3658
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	1.00	10008.0000	0.3643
Bromoform	NA	NA	NA	NA	NA	NA	1.00	2140.00000	0.1072
Chlorobenzene	NA	NA	NA	0.400	5272.00000	0.6859	1.00	13791.0000	0.6909
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	7787.00000	0.2835
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	1.00	7587.00000	0.2762
1,1,2-Trichloro-1,2,2-Trifluoroethane	NA	NA	NA	NA	NA	NA	1.00	3814.00000	0.1388
1,1,2-Trichloroethane	NA	NA	NA	0.400	1285.00000	0.1672	1.00	3704.00000	0.1856
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	2689.00000	0.6287	1.00	6958.00000	0.6224
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	NA	NA	NA	1.00	3060.00000	0.1533
1,2-Dichlorobenzene	0.300	3091.00000	0.8576	0.400	4000.00000	0.9353	1.00	10075.0000	0.9012
1,2-Dichloroethane	NA	NA	NA	0.400	3634.00000	0.3439	1.00	9523.00000	0.3466
1,3-Dichlorobenzene	NA	NA	NA	0.400	4191.00000	0.9799	1.00	11119.0000	0.9946
1,4-Dichlorobenzene	0.300	4089.00000	1.135	0.400	4893.00000	1.144	1.00	11757.0000	1.052
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	7108.00000	0.6726	1.00	18411.0000	0.6702
Bromodichloromethane	NA	NA	NA	0.400	2541.00000	0.2405	1.00	7121.00000	0.2592
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	1611.00000	0.05860
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	11751.0000	0.4277
Carbon Tetrachloride	NA	NA	NA	NA	NA	NA	1.00	5717.00000	0.2081
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	3438.00000	0.1251
Cyclohexane	NA	NA	NA	NA	NA	NA	1.00	5401.00000	0.1966
Dibromochloromethane	NA	NA	NA	0.400	1320.00000	0.1717	1.00	3588.00000	0.1798
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	6041.00000	0.2199
Isopropylbenzene	NA	NA	NA	NA	NA	NA	1.00	16482.0000	0.8258
Methyl Tert Butyl Ether	NA	NA	NA	NA	NA	NA	1.00	9325.00000	0.3394
Methyl acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	NA	NA	NA	NA	NA	NA	1.00	6632.00000	0.2414
Styrene	NA	NA	NA	NA	NA	NA	1.00	11488.0000	0.5756
Tetrachloroethene	NA	NA	NA	NA	NA	NA	1.00	3763.00000	0.1885
Trichloroethene	NA	NA	NA	NA	NA	NA	1.00	3623.00000	0.1319

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INITIAL CALIBRATION DATA

00090036

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS6
Initial Calibration Date: 17-APR-08 17:34
Column ID: F

Analyte	WG268581-05			WG268581-06			WG268581-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	11704.0000	0.2057	5.00	39967.0000	0.2960	20.0	210973.000	0.3754
1,2-Dichloropropane	2.00	9770.00000	0.1717	5.00	26235.0000	0.1943	20.0	119890.000	0.2133
Chloroform	2.00	20663.0000	0.3632	5.00	57384.0000	0.4250	20.0	259831.000	0.4623
Ethylbenzene	2.00	11462.0000	0.2815	5.00	34219.0000	0.3489	20.0	166968.000	0.4040
Toluene	2.00	35511.0000	0.8721	5.00	98405.0000	1.003	20.0	460399.000	1.114
Vinyl Chloride	2.00	8770.00000	0.1542	5.00	24211.0000	0.1793	20.0	127011.000	0.2260
1,1,2,2-Tetrachloroethane	2.00	8347.00000	0.3633	5.00	22149.0000	0.3944	20.0	99609.0000	0.4112
1,1-Dichloroethane	2.00	19558.0000	0.3438	5.00	53741.0000	0.3980	20.0	252955.000	0.4501
Bromoform	2.00	3892.00000	0.09560	5.00	12605.0000	0.1285	20.0	60095.0000	0.1454
Chlorobenzene	2.00	27110.0000	0.6658	5.00	70575.0000	0.7195	20.0	310688.000	0.7518
Chloromethane	2.00	14056.0000	0.2471	5.00	37656.0000	0.2789	20.0	169543.000	0.3017
1,1,1-Trichloroethane	2.00	14284.0000	0.2511	5.00	46362.0000	0.3434	20.0	240250.000	0.4275
1,1,2-Trichloro-1,2,2-Trifluoroethane	2.00	6650.00000	0.1169	5.00	21745.0000	0.1611	20.0	136371.000	0.2427
1,1,2-Trichloroethane	2.00	6995.00000	0.1718	5.00	18567.0000	0.1893	20.0	80316.0000	0.1944
1,2,4-Trichlorobenzene	2.00	13797.0000	0.6005	5.00	35236.0000	0.6275	20.0	170762.000	0.7049
1,2-Dibromo-3-Chloropropane	2.00	1372.00000	0.05970	5.00	4165.00000	0.07420	20.0	21086.0000	0.08700
1,2-Dibromoethane	2.00	6956.00000	0.1708	5.00	17681.0000	0.1803	20.0	82694.0000	0.2001
1,2-Dichlorobenzene	2.00	20148.0000	0.8769	5.00	52836.0000	0.9409	20.0	241736.000	0.9978
1,2-Dichloroethane	2.00	18683.0000	0.3284	5.00	49174.0000	0.3642	20.0	208067.000	0.3702
1,3-Dichlorobenzene	2.00	21553.0000	0.9381	5.00	56922.0000	1.014	20.0	260893.000	1.077
1,4-Dichlorobenzene	2.00	24026.0000	1.046	5.00	60389.0000	1.076	20.0	272238.000	1.124
2-Butanone	NA	NA	NA	5.00	7202.00000	0.05330	20.0	35956.0000	0.06400
2-Hexanone	NA	NA	NA	5.00	9934.00000	0.1013	20.0	50209.0000	0.1215
4-Methyl-2-Pentanone	NA	NA	NA	5.00	4590.00000	0.03400	20.0	26580.0000	0.04730
Acetone	NA	NA	NA	5.00	6422.00000	0.04760	20.0	25598.0000	0.04550
Benzene	2.00	37198.0000	0.6539	5.00	100756.000	0.7463	20.0	458791.000	0.8164
Bromodichloromethane	2.00	14941.0000	0.2627	5.00	40999.0000	0.3037	20.0	186160.000	0.3312
Bromomethane	2.00	3691.00000	0.06490	5.00	12078.0000	0.08950	20.0	73020.0000	0.1299
Carbon Disulfide	2.00	21241.0000	0.3734	5.00	58973.0000	0.4368	20.0	343762.000	0.6117
Carbon Tetrachloride	2.00	10739.0000	0.1888	5.00	36796.0000	0.2725	20.0	197031.000	0.3506
Chloroethane	2.00	6644.00000	0.1168	5.00	17819.0000	0.1320	20.0	96918.0000	0.1725
Cyclohexane	2.00	8902.00000	0.1565	5.00	32700.0000	0.2422	20.0	230890.000	0.4108
Dibromochloromethane	2.00	8595.00000	0.2111	5.00	22302.0000	0.2274	20.0	104110.000	0.2519
Dichlorodifluoromethane	2.00	9234.00000	0.1623	5.00	29792.0000	0.2207	20.0	170404.000	0.3032
Isopropylbenzene	2.00	32679.0000	0.8025	5.00	104264.000	1.063	20.0	553432.000	1.339
Methyl Tert Butyl Ether	2.00	21662.0000	0.3808	5.00	56087.0000	0.4154	20.0	273014.000	0.4858
Methyl acetate	2.00	5900.00000	0.1037	5.00	14637.0000	0.1084	20.0	66042.0000	0.1175
Methylcyclohexane	2.00	7031.00000	0.1236	5.00	25666.0000	0.1901	20.0	189207.000	0.3367
Methylene Chloride	2.00	10938.0000	0.1923	5.00	24838.0000	0.1840	20.0	103270.000	0.1838
Styrene	2.00	26279.0000	0.6454	5.00	75081.0000	0.7654	20.0	366268.000	0.8863
Tetrachloroethene	2.00	6882.00000	0.1690	5.00	20377.0000	0.2077	20.0	103033.000	0.2493
Trichloroethene	2.00	6771.00000	0.1190	5.00	20644.0000	0.1529	20.0	103831.000	0.1848

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INITIAL CALIBRATION DATA

00090037

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS6
Initial Calibration Date: 17-APR-08 17:34
Column ID: F

Analyte	WG268581-08			WG268581-09			WG268581-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	562131.000	0.3769	100	1141885.00	0.3636	200	2436117.00	0.3805
1,2-Dichloropropane	50.0	322549.000	0.2163	100	704787.000	0.2244	200	1520359.00	0.2375
Chloroform	50.0	680375.000	0.4562	100	1393348.00	0.4437	200	2885625.00	0.4508
Ethylbenzene	50.0	445584.000	0.4038	100	969141.000	0.3965	200	2039560.00	0.3840
Toluene	50.0	1209595.00	1.096	100	2511236.00	1.027	200	5294261.00	0.9967
Vinyl Chloride	50.0	317455.000	0.2129	100	563286.000	0.1794	200	1071861.00	0.1674
1,1,2,2-Tetrachloroethane	50.0	272945.000	0.4203	100	615154.000	0.4430	200	1323514.00	0.4415
1,1-Dichloroethane	50.0	680789.000	0.4565	100	1406692.00	0.4479	200	2938297.00	0.4590
Bromoform	50.0	167457.000	0.1518	100	384923.000	0.1575	200	828892.000	0.1560
Chlorobenzene	50.0	822625.000	0.7455	100	1787747.00	0.7313	200	3759113.00	0.7077
Chloromethane	50.0	402302.000	0.2697	100	852946.000	0.2716	200	1973945.00	0.3083
1,1,1-Trichloroethane	50.0	650539.000	0.4362	100	1374210.00	0.4376	200	2782956.00	0.4347
1,1,2-Trichloro-1,2,2-Trifluoroethane	50.0	369537.000	0.2478	100	750130.000	0.2389	200	1560032.00	0.2437
1,1,2-Trichloroethane	50.0	214580.000	0.1945	100	474392.000	0.1941	200	1029927.00	0.1939
1,2,4-Trichlorobenzene	50.0	459816.000	0.7080	100	978864.000	0.7049	200	1997794.00	0.6664
1,2-Dibromo-3-Chloropropane	50.0	61460.0000	0.09460	100	135777.000	0.09780	200	276069.000	0.09210
1,2-Dibromoethane	50.0	225614.000	0.2045	100	497706.000	0.2036	200	1067621.00	0.2010
1,2-Dichlorobenzene	50.0	644553.000	0.9924	100	1370231.00	0.9867	200	2814978.00	0.9389
1,2-Dichloroethane	50.0	539583.000	0.3618	100	1087561.00	0.3463	200	2177668.00	0.3402
1,3-Dichlorobenzene	50.0	698094.000	1.075	100	1482306.00	1.067	200	3086815.00	1.030
1,4-Dichlorobenzene	50.0	717858.000	1.105	100	1522735.00	1.097	200	3139083.00	1.047
2-Butanone	50.0	99317.0000	0.06660	100	221029.000	0.07040	200	481146.000	0.07520
2-Hexanone	50.0	148924.000	0.1350	100	342021.000	0.1399	200	741638.000	0.1396
4-Methyl-2-Pentanone	50.0	74987.0000	0.05030	100	180280.000	0.05740	200	404576.000	0.06320
Acetone	50.0	70387.0000	0.04720	100	143288.000	0.04560	200	331088.000	0.05170
Benzene	50.0	1225188.00	0.8215	100	2621867.00	0.8349	200	5190201.00	0.8107
Bromodichloromethane	50.0	500728.000	0.3357	100	1070111.00	0.3408	200	2256520.00	0.3525
Bromomethane	50.0	223555.000	0.1499	100	499768.000	0.1591	200	1057992.00	0.1653
Carbon Disulfide	50.0	915546.000	0.6139	100	1888566.00	0.6014	200	4114624.00	0.6427
Carbon Tetrachloride	50.0	519252.000	0.3482	100	1082844.00	0.3448	200	2197062.00	0.3432
Chloroethane	50.0	279241.000	0.1872	100	623362.000	0.1985	200	1270360.00	0.1984
Cyclohexane	50.0	636018.000	0.4265	100	1395902.00	0.4445	200	2955623.00	0.4617
Dibromochloromethane	50.0	287162.000	0.2602	100	643565.000	0.2633	200	1373056.00	0.2585
Dichlorodifluoromethane	50.0	452956.000	0.3037	100	942348.000	0.3001	200	1923229.00	0.3004
Isopropylbenzene	50.0	1488327.00	1.349	100	3201045.00	1.310	200	6530070.00	1.229
Methyl Tert Butyl Ether	50.0	749527.000	0.5026	100	1578651.00	0.5027	200	3287582.00	0.5135
Methyl acetate	50.0	174112.000	0.1167	100	370712.000	0.1180	200	795929.000	0.1243
Methylcyclohexane	50.0	507757.000	0.3405	100	1054309.00	0.3357	200	2040795.00	0.3188
Methylene Chloride	50.0	276619.000	0.1855	100	630171.000	0.2007	200	1432491.00	0.2238
Styrene	50.0	1004569.00	0.9104	100	2200845.00	0.9003	200	4676870.00	0.8805
Tetrachloroethene	50.0	273731.000	0.2481	100	569707.000	0.2331	200	1199421.00	0.2258
Trichloroethene	50.0	278920.000	0.1870	100	612889.000	0.1952	200	1264126.00	0.1975

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Login Number: L08040523 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 17-APR-08 17:34
Column ID: F

Analyte	WG268581-11		
	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-Trichloroethane	NA	NA	NA
1,1,2-Trichloro-1,2,2-Trifluoroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,2,4-Trichlorobenzene	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-Dichlorobenzene	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2-Butanone	300	672287.000	0.06570
2-Hexanone	300	1020911.00	0.1373
4-Methyl-2-Pentanone	NA	NA	NA
Acetone	300	425575.000	0.04160
Benzene	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA
Chloroethane	NA	NA	NA
Cyclohexane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methyl Tert Butyl Ether	NA	NA	NA
Methyl acetate	NA	NA	NA
Methylcyclohexane	NA	NA	NA
Methylene Chloride	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA

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INITIAL CALIBRATION DATA

00090039

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS6
Initial Calibration Date: 17-APR-08 17:34
Column ID: F

Analyte	WG268581-02			WG268581-03			WG268581-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Trichlorofluoromethane	NA	NA	NA	NA	NA	NA	1.00	9657.00000	0.3515
cis-1,2-Dichloroethene	NA	NA	NA	0.400	1546.00000	0.1463	1.00	4737.00000	0.1724
cis-1,3-Dichloropropene	NA	NA	NA	0.400	2062.00000	0.1951	1.00	6617.00000	0.2409
m-,p-Xylene	NA	NA	NA	0.800	5491.00000	0.3572	2.00	15909.0000	0.3985
o-Xylene	NA	NA	NA	NA	NA	NA	1.00	6824.00000	0.3419
trans-1,2-Dichloroethene	NA	NA	NA	0.400	1317.00000	0.1246	1.00	3871.00000	0.1409
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	6737.00000	0.3375

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INITIAL CALIBRATION DATA

00090040

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS6
Initial Calibration Date: 17-APR-08 17:34
Column ID: F

Analyte	WG268581-05			WG268581-06			WG268581-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Trichlorofluoromethane	2.00	15028.0000	0.2642	5.00	45684.0000	0.3384	20.0	265407.000	0.4723
cis-1,2-Dichloroethene	2.00	9369.00000	0.1647	5.00	25212.0000	0.1867	20.0	119836.000	0.2132
cis-1,3-Dichloropropene	2.00	14338.0000	0.2521	5.00	39961.0000	0.2960	20.0	192254.000	0.3421
m-,p-Xylene	4.00	30558.0000	0.3752	10.0	88429.0000	0.4508	40.0	422748.000	0.5115
o-Xylene	2.00	13599.0000	0.3340	5.00	41797.0000	0.4261	20.0	204836.000	0.4957
trans-1,2-Dichloroethene	2.00	7868.00000	0.1383	5.00	22410.0000	0.1660	20.0	111072.000	0.1976
trans-1,3-Dichloropropene	2.00	14567.0000	0.3577	5.00	40654.0000	0.4145	20.0	193074.000	0.4672

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INITIAL CALIBRATION DATA

00090041

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS6
Initial Calibration Date: 17-APR-08 17:34
Column ID: F

Analyte	WG268581-08			WG268581-09			WG268581-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Trichlorofluoromethane	50.0	687360.000	0.4609	100	1397579.00	0.4450	200	3027839.00	0.4730
cis-1,2-Dichloroethene	50.0	319303.000	0.2141	100	662548.000	0.2110	200	1384922.00	0.2163
cis-1,3-Dichloropropene	50.0	528341.000	0.3543	100	1143283.00	0.3641	200	2442187.00	0.3815
m-,p-Xylene	100	1129083.00	0.5116	200	2425557.00	0.4961	400	4958617.00	0.4668
o-Xylene	50.0	552223.000	0.5004	100	1203757.00	0.4924	200	2553083.00	0.4806
trans-1,2-Dichloroethene	50.0	297999.000	0.1998	100	617709.000	0.1967	200	1269936.00	0.1984
trans-1,3-Dichloropropene	50.0	518589.000	0.4700	100	1123613.00	0.4597	200	2400145.00	0.4519

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Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00090042

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS6
Initial Calibration Date: 17-APR-08 17:34
Column ID: F

Analyte	WG268581-11		
	CONC	RESP	RF
Trichlorofluoromethane	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
o-Xylene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

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INITIAL CALIBRATION DATA

00090043

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS8
Initial Calibration Date: 02-APR-08 18:28
Column ID: F

Analyte	WG267167-02			WG267167-03			WG267167-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	4236.00000	0.2384	1.00	7722.00000	0.2009
1,2-Dichloropropane	NA	NA	NA	0.400	3686.00000	0.2075	1.00	7650.00000	0.1990
Chloroform	0.300	5629.00000	0.4201	0.400	7124.00000	0.4010	1.00	13512.0000	0.3515
Ethylbenzene	NA	NA	NA	0.400	5466.00000	0.4099	1.00	11445.0000	0.3633
Toluene	NA	NA	NA	0.400	15368.0000	1.153	1.00	32227.0000	1.023
Vinyl Chloride	NA	NA	NA	0.400	2646.00000	0.1489	1.00	4958.00000	0.1290
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	2109.00000	0.3017	1.00	4938.00000	0.2881
1,1-Dichloroethane	NA	NA	NA	0.400	6122.00000	0.3446	1.00	11041.0000	0.2873
Bromoform	NA	NA	NA	NA	NA	NA	1.00	2560.00000	0.08130
Chlorobenzene	NA	NA	NA	0.400	10861.0000	0.8145	1.00	24100.0000	0.7650
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	8302.00000	0.2160
1,1,1-Trichloroethane	NA	NA	NA	0.400	4364.00000	0.2456	1.00	8902.00000	0.2316
1,1,2-Trichloro-1,2,2-Trifluoroethane	NA	NA	NA	NA	NA	NA	1.00	4022.00000	0.1046
1,1,2-Trichloroethane	NA	NA	NA	0.400	2369.00000	0.1777	1.00	5112.00000	0.1623
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	6786.00000	0.9708	1.00	14855.0000	0.8666
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	1.00	540.000000	0.03150
1,2-Dibromoethane	NA	NA	NA	0.400	2341.00000	0.1756	1.00	5652.00000	0.1794
1,2-Dichlorobenzene	0.300	6202.00000	1.165	0.400	8520.00000	1.219	1.00	18842.0000	1.099
1,2-Dichloroethane	NA	NA	NA	0.400	4641.00000	0.2612	1.00	9890.00000	0.2573
1,3-Dichlorobenzene	NA	NA	NA	0.400	9012.00000	1.289	1.00	20960.0000	1.223
1,4-Dichlorobenzene	0.300	7074.00000	1.329	0.400	9548.00000	1.366	1.00	20115.0000	1.174
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	15136.0000	0.8519	1.00	30206.0000	0.7859
Bromodichloromethane	NA	NA	NA	0.400	4320.00000	0.2431	1.00	9269.00000	0.2412
Bromomethane	NA	NA	NA	0.400	2498.00000	0.1406	1.00	4142.00000	0.1078
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	13227.0000	0.3441
Carbon Tetrachloride	NA	NA	NA	0.400	2688.00000	0.1513	1.00	6035.00000	0.1570
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	5172.00000	0.1346
Cyclohexane	NA	NA	NA	NA	NA	NA	1.00	6358.00000	0.1654
Dibromochloromethane	NA	NA	NA	0.400	2262.00000	0.1696	1.00	5140.00000	0.1632
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	6621.00000	0.1723
Isopropylbenzene	NA	NA	NA	0.400	15582.0000	1.169	1.00	33845.0000	1.074
Methyl Tert Butyl Ether	NA	NA	NA	NA	NA	NA	1.00	13555.0000	0.3527
Methyl acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	NA	NA	NA	0.400	7374.00000	0.4150	1.00	10818.0000	0.2815
Styrene	NA	NA	NA	0.400	11458.0000	0.8593	1.00	25986.0000	0.8249
Tetrachloroethene	NA	NA	NA	0.400	2318.00000	0.1738	1.00	5619.00000	0.1784
Trichloroethene	NA	NA	NA	0.400	3748.00000	0.2109	1.00	7151.00000	0.1860

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INITIAL CALIBRATION DATA

00090044

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS8
Initial Calibration Date: 02-APR-08 18:28
Column ID: F

Analyte	WG267167-05			WG267167-06			WG267167-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	5.00	57187.0000	0.2975	20.0	240661.000	0.3218	50.0	646729.000	0.3320
1,2-Dichloropropane	5.00	40520.0000	0.2108	20.0	154875.000	0.2071	50.0	399212.000	0.2050
Chloroform	5.00	74643.0000	0.3883	20.0	285691.000	0.3820	50.0	746260.000	0.3831
Ethylbenzene	5.00	72729.0000	0.4620	20.0	280588.000	0.4455	50.0	704316.000	0.4317
Toluene	5.00	189370.000	1.203	20.0	729484.000	1.158	50.0	1821598.00	1.117
Vinyl Chloride	5.00	22316.0000	0.1161	20.0	109924.000	0.1470	50.0	272698.000	0.1400
1,1,2,2-Tetrachloroethane	5.00	29763.0000	0.3488	20.0	124367.000	0.3571	50.0	326315.000	0.3691
1,1-Dichloroethane	5.00	66935.0000	0.3482	20.0	257035.000	0.3437	50.0	682482.000	0.3504
Bromoform	5.00	15807.0000	0.1004	20.0	77339.0000	0.1228	50.0	214860.000	0.1317
Chlorobenzene	5.00	129788.000	0.8244	20.0	499268.000	0.7926	50.0	1241100.00	0.7607
Chloromethane	5.00	36373.0000	0.1892	20.0	147066.000	0.1966	50.0	375854.000	0.1930
1,1,1-Trichloroethane	5.00	65313.0000	0.3398	20.0	266933.000	0.3569	50.0	715274.000	0.3672
1,1,2-Trichloro-1,2,2-Trifluoroethane	5.00	25724.0000	0.1338	20.0	137375.000	0.1837	50.0	354186.000	0.1818
1,1,2-Trichloroethane	5.00	28409.0000	0.1805	20.0	112112.000	0.1780	50.0	281001.000	0.1722
1,2,4-Trichlorobenzene	5.00	77483.0000	0.9079	20.0	301473.000	0.8657	50.0	724708.000	0.8197
1,2-Dibromo-3-Chloropropane	5.00	4790.00000	0.05610	20.0	23537.0000	0.06760	50.0	64358.0000	0.07280
1,2-Dibromoethane	5.00	28394.0000	0.1804	20.0	115156.000	0.1828	50.0	296402.000	0.1817
1,2-Dichlorobenzene	5.00	95268.0000	1.116	20.0	377482.000	1.084	50.0	932217.000	1.054
1,2-Dichloroethane	5.00	52854.0000	0.2750	20.0	200875.000	0.2686	50.0	526634.000	0.2704
1,3-Dichlorobenzene	5.00	108217.000	1.268	20.0	430699.000	1.237	50.0	1062257.00	1.202
1,4-Dichlorobenzene	5.00	110108.000	1.290	20.0	426081.000	1.224	50.0	1049866.00	1.188
2-Butanone	5.00	7936.00000	0.04130	20.0	31997.0000	0.04280	50.0	86270.0000	0.04430
2-Hexanone	5.00	6748.00000	0.04290	20.0	30128.0000	0.04780	50.0	78566.0000	0.04820
4-Methyl-2-Pentanone	5.00	6789.00000	0.03530	20.0	30601.0000	0.04090	50.0	81638.0000	0.04190
Acetone	5.00	6102.00000	0.03170	20.0	23194.0000	0.03100	50.0	58417.0000	0.03000
Benzene	5.00	165469.000	0.8608	20.0	633605.000	0.8472	50.0	1622693.00	0.8331
Bromodichloromethane	5.00	54742.0000	0.2848	20.0	222980.000	0.2982	50.0	585690.000	0.3007
Bromomethane	5.00	25037.0000	0.1302	20.0	119005.000	0.1591	50.0	342349.000	0.1758
Carbon Disulfide	5.00	98561.0000	0.5127	20.0	487784.000	0.6522	50.0	1312925.00	0.6741
Carbon Tetrachloride	5.00	50415.0000	0.2623	20.0	216091.000	0.2889	50.0	593555.000	0.3047
Chloroethane	5.00	27850.0000	0.1449	20.0	133435.000	0.1784	50.0	337277.000	0.1732
Cyclohexane	5.00	49799.0000	0.2591	20.0	255956.000	0.3422	50.0	660546.000	0.3391
Dibromochloromethane	5.00	32362.0000	0.2056	20.0	139524.000	0.2215	50.0	375114.000	0.2299
Dichlorodifluoromethane	5.00	39439.0000	0.2052	20.0	218942.000	0.2928	50.0	534683.000	0.2745
Isopropylbenzene	5.00	219706.000	1.396	20.0	888482.000	1.411	50.0	2199355.00	1.348
Methyl Tert Butyl Ether	5.00	72725.0000	0.3783	20.0	275915.000	0.3689	50.0	716479.000	0.3678
Methyl acetate	5.00	18987.0000	0.09880	20.0	64263.0000	0.08590	50.0	162789.000	0.08360
Methylcyclohexane	5.00	52834.0000	0.2748	20.0	277405.000	0.3709	50.0	690209.000	0.3544
Methylene Chloride	5.00	45174.0000	0.2350	20.0	168483.000	0.2253	50.0	434932.000	0.2233
Styrene	5.00	146637.000	0.9315	20.0	586909.000	0.9318	50.0	1455407.00	0.8921
Tetrachloroethene	5.00	37406.0000	0.2376	20.0	149959.000	0.2381	50.0	373076.000	0.2287
Trichloroethene	5.00	43065.0000	0.2240	20.0	175307.000	0.2344	50.0	444864.000	0.2284

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INITIAL CALIBRATION DATA

00090045

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS8
Initial Calibration Date: 02-APR-08 18:28
Column ID: F

Analyte	WG267167-08			WG267167-09			WG267167-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	100	1366539.00	0.3442	200	2710323.00	0.3427	NA	NA	NA
1,2-Dichloropropane	100	797397.000	0.2009	200	1541132.00	0.1948	NA	NA	NA
Chloroform	100	1513166.00	0.3811	200	2920892.00	0.3693	NA	NA	NA
Ethylbenzene	100	1285969.00	0.3929	200	2275887.00	0.3400	NA	NA	NA
Toluene	100	3440261.00	1.051	200	6184504.00	0.9239	NA	NA	NA
Vinyl Chloride	100	521997.000	0.1315	200	1022132.00	0.1292	NA	NA	NA
1,1,2,2-Tetrachloroethane	100	673859.000	0.3747	200	1323506.00	0.3679	NA	NA	NA
1,1-Dichloroethane	100	1506873.00	0.3796	200	3008789.00	0.3804	NA	NA	NA
Bromoform	100	458910.000	0.1402	200	913121.000	0.1364	NA	NA	NA
Chlorobenzene	100	2318700.00	0.7085	200	4105600.00	0.6133	NA	NA	NA
Chloromethane	100	787032.000	0.1982	200	1673392.00	0.2116	NA	NA	NA
1,1,1-Trichloroethane	100	1435890.00	0.3617	200	2705390.00	0.3420	NA	NA	NA
1,1,2-Trichloro-1,2,2-Trifluoroethane	100	740208.000	0.1864	200	1333525.00	0.1686	NA	NA	NA
1,1,2-Trichloroethane	100	570566.000	0.1743	200	1120368.00	0.1674	NA	NA	NA
1,2,4-Trichlorobenzene	100	1374337.00	0.7643	200	2428950.00	0.6751	NA	NA	NA
1,2-Dibromo-3-Chloropropane	100	140439.000	0.07810	200	285931.000	0.07950	NA	NA	NA
1,2-Dibromoethane	100	605654.000	0.1851	200	1193829.00	0.1783	NA	NA	NA
1,2-Dichlorobenzene	100	1780913.00	0.9904	200	3194342.00	0.8878	NA	NA	NA
1,2-Dichloroethane	100	1067515.00	0.2689	200	2029300.00	0.2566	NA	NA	NA
1,3-Dichlorobenzene	100	1997415.00	1.111	200	3548092.00	0.9862	NA	NA	NA
1,4-Dichlorobenzene	100	1996804.00	1.110	200	3501559.00	0.9732	NA	NA	NA
2-Butanone	100	192895.000	0.04860	200	402899.000	0.05090	300	561597.000	0.04850
2-Hexanone	100	169558.000	0.05180	200	344147.000	0.05140	300	491141.000	0.05180
4-Methyl-2-Pentanone	100	177583.000	0.04470	200	361803.000	0.04570	300	501387.000	0.04330
Acetone	100	132207.000	0.03330	200	269061.000	0.03400	300	359411.000	0.03100
Benzene	100	3147140.00	0.7927	200	5665034.00	0.7162	NA	NA	NA
Bromodichloromethane	100	1175896.00	0.2962	200	2280921.00	0.2884	NA	NA	NA
Bromomethane	100	736953.000	0.1856	200	1470511.00	0.1859	NA	NA	NA
Carbon Disulfide	100	2759601.00	0.6951	200	5269311.00	0.6662	NA	NA	NA
Carbon Tetrachloride	100	1198669.00	0.3019	200	2382766.00	0.3012	NA	NA	NA
Chloroethane	100	669688.000	0.1687	200	1255491.00	0.1587	NA	NA	NA
Cyclohexane	100	1369121.00	0.3449	200	2527240.00	0.3195	NA	NA	NA
Dibromochloromethane	100	776971.000	0.2374	200	1547631.00	0.2312	NA	NA	NA
Dichlorodifluoromethane	100	1078466.00	0.2716	200	1984434.00	0.2509	NA	NA	NA
Isopropylbenzene	100	4124353.00	1.260	200	7169069.00	1.071	NA	NA	NA
Methyl Tert Butyl Ether	100	1562080.00	0.3935	200	3001126.00	0.3794	NA	NA	NA
Methyl acetate	100	361124.000	0.09100	200	696442.000	0.08800	NA	NA	NA
Methylcyclohexane	100	1405076.00	0.3539	200	2526008.00	0.3194	NA	NA	NA
Methylene Chloride	100	873454.000	0.2200	200	1642077.00	0.2076	NA	NA	NA
Styrene	100	2709493.00	0.8279	200	4792504.00	0.7159	NA	NA	NA
Tetrachloroethene	100	718186.000	0.2195	200	1313333.00	0.1962	NA	NA	NA
Trichloroethene	100	873476.000	0.2200	200	1623305.00	0.2052	NA	NA	NA

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INITIAL CALIBRATION DATA

00090046

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS8
Initial Calibration Date: 02-APR-08 18:28
Column ID: F

Analyte	WG267167-02			WG267167-03			WG267167-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Trichlorofluoromethane	NA	NA	NA	0.400	5267.00000	0.2964	1.00	10421.0000	0.2711
cis-1,2-Dichloroethene	NA	NA	NA	0.400	3792.00000	0.2134	1.00	7385.00000	0.1921
cis-1,3-Dichloropropene	NA	NA	NA	0.400	5545.00000	0.3121	1.00	11287.0000	0.2937
m-,p-Xylene	NA	NA	NA	0.800	13961.0000	0.5235	2.00	30612.0000	0.4858
o-Xylene	NA	NA	NA	0.400	7054.00000	0.5290	1.00	15772.0000	0.5006
trans-1,2-Dichloroethene	NA	NA	NA	0.400	4577.00000	0.2576	1.00	8719.00000	0.2268
trans-1,3-Dichloropropene	NA	NA	NA	0.400	4340.00000	0.3255	1.00	10278.0000	0.3262

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INITIAL CALIBRATION DATA

00090047

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS8
Initial Calibration Date: 02-APR-08 18:28
Column ID: F

Analyte	WG267167-05			WG267167-06			WG267167-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Trichlorofluoromethane	5.00	59239.0000	0.3082	20.0	331308.000	0.4430	50.0	869669.000	0.4465
cis-1,2-Dichloroethene	5.00	41718.0000	0.2170	20.0	155410.000	0.2078	50.0	409776.000	0.2104
cis-1,3-Dichloropropene	5.00	65444.0000	0.3404	20.0	263242.000	0.3520	50.0	684240.000	0.3513
m-,p-Xylene	10.0	183072.000	0.5814	40.0	711925.000	0.5651	100	1722300.00	0.5278
o-Xylene	5.00	90111.0000	0.5724	20.0	357595.000	0.5677	50.0	891329.000	0.5463
trans-1,2-Dichloroethene	5.00	54943.0000	0.2858	20.0	207919.000	0.2780	50.0	548706.000	0.2817
trans-1,3-Dichloropropene	5.00	57773.0000	0.3670	20.0	231684.000	0.3678	50.0	597267.000	0.3661

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INITIAL CALIBRATION DATA

00090048

Login Number: L08040523
Analytical Method: 8260B

Instrument ID: HPMS8
Initial Calibration Date: 02-APR-08 18:28
Column ID: F

Analyte	WG267167-08			WG267167-09			WG267167-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Trichlorofluoromethane	100	1811850.00	0.4564	200	3529657.00	0.4462	NA	NA	NA
cis-1,2-Dichloroethene	100	865312.000	0.2180	200	1662662.00	0.2102	NA	NA	NA
cis-1,3-Dichloropropene	100	1364034.00	0.3436	200	2628676.00	0.3323	NA	NA	NA
m-,p-Xylene	200	3155961.00	0.4822	400	5317550.00	0.3972	NA	NA	NA
o-Xylene	100	1676336.00	0.5122	200	3002948.00	0.4486	NA	NA	NA
trans-1,2-Dichloroethene	100	1161976.00	0.2927	200	2287097.00	0.2891	NA	NA	NA
trans-1,3-Dichloropropene	100	1209197.00	0.3695	200	2358173.00	0.3523	NA	NA	NA

INT_CAL - Modified 03/06/2008
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Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L08040523 Run Date: 04/19/2008 Sample ID: WG268868-12
Instrument ID: HPMS10 Run Time: 22:47 Method: 8260B
File ID: 10M63993 Analyst: TMB QC Key: STD
ICal Workgroup: WG268868 Cal ID: HPMS10 - 19-APR-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloroethene	CCC	20.0	21.7	ug/L	0.235	8.30	30	
1,2-Dichloropropane	CCC	20.0	20.9	ug/L	0.257	4.60	30	
Chloroform	CCC	20.0	20.9	ug/L	0.458	4.60	30	
Ethylbenzene	CCC	20.0	21.6	ug/L	0.439	7.80	30	
Toluene	CCC	20.0	21.3	ug/L	1.24	6.40	30	
Vinyl Chloride	CCC	20.0	21.1	ug/L	0.218	5.40	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	21.6	ug/L	0.399	8.10	30	
1,1-Dichloroethane	SPCC	20.0	20.9	ug/L	0.505	4.40	30	
Bromoform	SPCC	20.0	18.5	ug/L	0.157	7.60	30	
Chlorobenzene	SPCC	20.0	20.0	ug/L	0.811	0.100	30	
Chloromethane	SPCC	20.0	22.3	ug/L	0.241	11.3	30	
1,1,1-Trichloroethane		20.0	21.2	ug/L	0.430	5.80	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane		20.0	19.7	ug/L	0.236	1.70	30	
1,1,2-Trichloroethane		20.0	22.0	ug/L	0.216	10.2	30	
1,2,4-Trichlorobenzene		20.0	20.7	ug/L	0.755	3.40	30	
1,2-Dibromo-3-Chloropropane		20.0	19.1	ug/L	0.0737	4.60	30	
1,2-Dibromoethane		20.0	21.9	ug/L	0.223	9.70	30	
1,2-Dichlorobenzene		20.0	21.2	ug/L	1.11	6.00	30	
1,2-Dichloroethane		20.0	20.4	ug/L	0.355	1.80	30	
cis-1,2-Dichloroethene		20.0	21.6	ug/L	0.281	7.80	30	
trans-1,2-Dichloroethene		20.0	20.5	ug/L	0.255	2.40	30	
1,3-Dichlorobenzene		20.0	20.7	ug/L	1.20	3.30	30	
1,4-Dichlorobenzene		20.0	20.1	ug/L	1.23	0.500	30	
2-Butanone		20.0	22.8	ug/L	0.0613	14.1	30	
2-Hexanone		20.0	20.4	ug/L	0.0947	2.20	30	
4-Methyl-2-Pentanone		20.0	20.9	ug/L	0.0629	4.30	30	
Acetone		20.0	22.7	ug/L	0.0447	13.4	30	
Benzene		20.0	21.1	ug/L	0.924	5.60	30	
Bromodichloromethane		20.0	21.9	ug/L	0.324	9.60	30	
Bromomethane		20.0	22.9	ug/L	0.203	14.7	30	
Carbon Disulfide		20.0	19.1	ug/L	0.652	4.60	30	
Carbon Tetrachloride		20.0	21.4	ug/L	0.369	6.90	30	
Chloroethane		20.0	21.7	ug/L	0.205	8.40	30	
cis-1,3-Dichloropropene		20.0	21.3	ug/L	0.346	6.50	30	
Cyclohexane		20.0	19.5	ug/L	0.429	2.30	30	
Dibromochloromethane		20.0	22.0	ug/L	0.284	10.0	30	
Dichlorodifluoromethane		20.0	27.0	ug/L	0.363	35.1	30	*
Isopropylbenzene		20.0	19.7	ug/L	1.20	1.30	30	
Methyl acetate		20.0	24.2	ug/L	0.146	20.9	30	
Methyl Tert Butyl Ether		20.0	21.4	ug/L	0.577	7.00	30	
Methylcyclohexane		20.0	19.9	ug/L	0.350	0.500	30	
Methylene Chloride		20.0	21.1	ug/L	0.247	5.60	30	

ALT - Modified 09/06/2007
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Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L08040523 Run Date: 04/19/2008 Sample ID: WG268868-12
Instrument ID: HPMS10 Run Time: 22:47 Method: 8260B
File ID: 10M63993 Analyst: TMB QC Key: STD
ICal Workgroup: WG268868 Cal ID: HPMS10 - 19-APR-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Styrene		20.0	23.3	ug/L	0.873	16.6	30	
Tetrachloroethene		20.0	20.9	ug/L	0.258	4.40	30	
trans-1,3-Dichloropropene		20.0	19.6	ug/L	0.356	2.00	30	
Trichloroethene		20.0	21.4	ug/L	0.276	7.10	30	
Trichlorofluoromethane		20.0	17.6	ug/L	0.399	11.8	30	
Xylenes		60.0	64.3	ug/L	0.521	7.20	30	
o-Xylene		20.0	21.5	ug/L	0.512	7.30	30	
1,2-Dichloroethene		40.0	42.0	ug/L	0.268	5.10	30	
m-,p-Xylene		40.0	42.9	ug/L	0.530	7.20	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L08040523 Run Date: 04/18/2008 Sample ID: WG268581-12
Instrument ID: HPMS6 Run Time: 13:55 Method: 8260B
File ID: 6M74350 Analyst: CMS QC Key: STD
ICal Workgroup: WG268581 Cal ID: HPMS6 - 17-APR-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloroethene	CCC	20.0	20.4	ug/L	0.365	1.90	30	
1,2-Dichloropropane	CCC	20.0	21.5	ug/L	0.221	7.30	30	
Chloroform	CCC	20.0	21.8	ug/L	0.462	8.90	30	
Ethylbenzene	CCC	20.0	23.5	ug/L	0.416	17.3	30	
Toluene	CCC	20.0	22.5	ug/L	1.11	12.5	30	
Vinyl Chloride	CCC	20.0	24.1	ug/L	0.223	20.6	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	20.7	ug/L	0.409	3.70	30	
1,1-Dichloroethane	SPCC	20.0	22.1	ug/L	0.460	10.3	30	
Bromoform	SPCC	20.0	18.9	ug/L	0.141	5.60	30	
Chlorobenzene	SPCC	20.0	21.5	ug/L	0.767	7.70	30	
Chloromethane	SPCC	20.0	21.5	ug/L	0.302	7.70	30	
1,1,1-Trichloroethane		20.0	20.2	ug/L	0.431	1.20	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane		20.0	19.8	ug/L	0.233	1.00	30	
1,1,2-Trichloroethane		20.0	20.9	ug/L	0.195	4.60	30	
1,2,4-Trichlorobenzene		20.0	22.5	ug/L	0.739	12.3	30	
1,2-Dibromo-3-Chloropropane		20.0	18.1	ug/L	0.0846	9.40	30	
1,2-Dibromoethane		20.0	21.3	ug/L	0.200	6.60	30	
1,2-Dichlorobenzene		20.0	22.0	ug/L	1.03	10.1	30	
1,2-Dichloroethane		20.0	20.6	ug/L	0.360	2.80	30	
cis-1,2-Dichloroethene		20.0	23.4	ug/L	0.223	16.8	30	
trans-1,2-Dichloroethene		20.0	20.5	ug/L	0.200	2.40	30	
1,3-Dichlorobenzene		20.0	21.7	ug/L	1.11	8.60	30	
1,4-Dichlorobenzene		20.0	20.8	ug/L	1.14	4.10	30	
2-Butanone		20.0	21.0	ug/L	0.0692	5.00	30	
2-Hexanone		20.0	18.7	ug/L	0.120	6.70	30	
4-Methyl-2-Pentanone		20.0	21.7	ug/L	0.0485	8.50	30	
Acetone		20.0	21.2	ug/L	0.0492	5.80	30	
Benzene		20.0	22.2	ug/L	0.835	10.9	30	
Bromodichloromethane		20.0	22.6	ug/L	0.343	13.1	30	
Bromomethane		20.0	18.3	ug/L	0.128	8.70	30	
Carbon Disulfide		20.0	19.0	ug/L	0.550	5.10	30	
Carbon Tetrachloride		20.0	20.8	ug/L	0.352	3.80	30	
Chloroethane		20.0	19.9	ug/L	0.182	0.600	30	
cis-1,3-Dichloropropene		20.0	20.1	ug/L	0.346	0.600	30	
Cyclohexane		20.0	20.1	ug/L	0.410	0.500	30	
Dibromochloromethane		20.0	19.5	ug/L	0.251	2.40	30	
Dichlorodifluoromethane		20.0	26.7	ug/L	0.396	33.7	30	*
Isopropylbenzene		20.0	18.1	ug/L	1.20	9.70	30	
Methyl acetate		20.0	26.8	ug/L	0.154	33.9	30	*
Methyl Tert Butyl Ether		20.0	20.5	ug/L	0.501	2.60	30	
Methylcyclohexane		20.0	20.1	ug/L	0.332	0.400	30	
Methylene Chloride		20.0	19.0	ug/L	0.192	4.90	30	

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Login Number: L08040523 Run Date: 04/18/2008 Sample ID: WG268581-12
Instrument ID: HPMS6 Run Time: 13:55 Method: 8260B
File ID: 6M74350 Analyst: CMS QC Key: STD
ICal Workgroup: WG268581 Cal ID: HPMS6 - 17-APR-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Styrene		20.0	20.3	ug/L	0.909	1.40	30	
Tetrachloroethene		20.0	23.2	ug/L	0.252	15.9	30	
trans-1,3-Dichloropropene		20.0	18.9	ug/L	0.400	5.40	30	
Trichloroethene		20.0	21.4	ug/L	0.199	7.10	30	
Trichlorofluoromethane		20.0	16.8	ug/L	0.368	15.8	30	
Xylenes		60.0	67.8	ug/L	0.517	12.9	30	
m-,p-Xylene		40.0	47.2	ug/L	0.526	18.0	30	
1,2-Dichloroethene		40.0	43.8	ug/L	0.211	9.60	30	
o-Xylene		20.0	20.6	ug/L	0.508	2.80	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

Login Number: L08040523 Run Date: 04/02/2008 Sample ID: WG267167-11
Instrument ID: HPMS8 Run Time: 20:05 Method: 8260B
File ID: 8M344074 Analyst: CMS QC Key: STD
ICal Workgroup: WG267167 Cal ID: HPMS8 - 02-APR-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloroethene	CCC	20.0	20.1	ug/L	0.333	0.300	30	
1,2-Dichloropropane	CCC	20.0	20.8	ug/L	0.211	3.80	30	
Chloroform	CCC	20.0	21.0	ug/L	0.404	5.00	30	
Ethylbenzene	CCC	20.0	23.3	ug/L	0.473	16.3	30	
Toluene	CCC	20.0	22.1	ug/L	1.20	10.4	30	
Vinyl Chloride	CCC	20.0	23.1	ug/L	0.156	15.6	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	21.5	ug/L	0.370	7.70	30	
1,1-Dichloroethane	SPCC	20.0	21.2	ug/L	0.369	6.20	30	
Bromoform	SPCC	20.0	18.6	ug/L	0.121	7.10	30	
Chlorobenzene	SPCC	20.0	21.6	ug/L	0.815	8.10	30	
Chloromethane	SPCC	20.0	20.4	ug/L	0.204	1.80	30	
1,1,1-Trichloroethane		20.0	20.2	ug/L	0.372	1.00	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane		20.0	19.4	ug/L	0.179	3.20	30	
1,1,2-Trichloroethane		20.0	20.9	ug/L	0.181	4.70	30	
1,2,4-Trichlorobenzene		20.0	21.4	ug/L	0.897	7.00	30	
1,2-Dibromo-3-Chloropropane		20.0	19.9	ug/L	0.0705	0.400	30	
1,2-Dibromoethane		20.0	20.5	ug/L	0.185	2.50	30	
1,2-Dichlorobenzene		20.0	21.0	ug/L	1.13	5.00	30	
1,2-Dichloroethane		20.0	20.5	ug/L	0.273	2.70	30	
cis-1,2-Dichloroethene		20.0	21.9	ug/L	0.230	9.60	30	
trans-1,2-Dichloroethene		20.0	21.7	ug/L	0.296	8.40	30	
1,3-Dichlorobenzene		20.0	21.4	ug/L	1.27	7.10	30	
1,4-Dichlorobenzene		20.0	21.0	ug/L	1.27	5.00	30	
2-Butanone		20.0	20.9	ug/L	0.0482	4.70	30	
2-Hexanone		20.0	19.5	ug/L	0.0476	2.70	30	
4-Methyl-2-Pentanone		20.0	19.9	ug/L	0.0417	0.700	30	
Acetone		20.0	22.1	ug/L	0.0352	10.5	30	
Benzene		20.0	21.8	ug/L	0.886	9.00	30	
Bromodichloromethane		20.0	22.0	ug/L	0.307	10.2	30	
Bromomethane		20.0	19.4	ug/L	0.167	3.10	30	
Carbon Disulfide		20.0	18.7	ug/L	0.627	6.30	30	
Carbon Tetrachloride		20.0	20.3	ug/L	0.301	1.40	30	
Chloroethane		20.0	22.7	ug/L	0.181	13.6	30	
cis-1,3-Dichloropropene		20.0	20.3	ug/L	0.337	1.40	30	
Cyclohexane		20.0	19.9	ug/L	0.340	0.600	30	
Dibromochloromethane		20.0	21.6	ug/L	0.225	8.20	30	
Dichlorodifluoromethane		20.0	23.3	ug/L	0.325	16.3	30	
Isopropylbenzene		20.0	21.6	ug/L	1.35	8.20	30	
Methyl acetate		20.0	20.9	ug/L	0.0937	4.70	30	
Methyl Tert Butyl Ether		20.0	21.4	ug/L	0.400	7.10	30	
Methylcyclohexane		20.0	21.3	ug/L	0.356	6.50	30	
Methylene Chloride		20.0	20.5	ug/L	0.235	2.50	30	

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ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L08040523 Run Date: 04/02/2008 Sample ID: WG267167-11
Instrument ID: HPMS8 Run Time: 20:05 Method: 8260B
File ID: 8M344074 Analyst: CMS QC Key: STD
ICal Workgroup: WG267167 Cal ID: HPMS8 - 02-APR-08

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Styrene		20.0	22.6	ug/L	0.966	13.0	30	
Tetrachloroethene		20.0	22.8	ug/L	0.239	13.8	30	
trans-1,3-Dichloropropene		20.0	19.0	ug/L	0.336	5.10	30	
Trichloroethene		20.0	22.2	ug/L	0.239	10.8	30	
Trichlorofluoromethane		20.0	16.1	ug/L	0.355	19.3	30	
Xylenes		60.0	68.1	ug/L	0.585	13.5	30	
m-,p-Xylene		40.0	45.7	ug/L	0.582	14.3	30	
1,2-Dichloroethene		40.0	43.6	ug/L	0.263	9.00	30	
o-Xylene		20.0	22.4	ug/L	0.588	12.0	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

Login Number: L08040523 Run Date: 04/29/2008 Sample ID: WG269769-02
Instrument ID: HPMS10 Run Time: 08:50 Method: 8260B
File ID: 10M64252 Analyst: TMB QC Key: STD
Workgroup (AAB#): WG269770 Cal ID: HPMS10 - 19-APR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloroethene	CCC	50.0	44.9	ug/L	0.195	10.2	20	
1,2-Dichloropropane	CCC	50.0	48.0	ug/L	0.236	4.06	20	
Chloroform	CCC	50.0	51.1	ug/L	0.447	2.24	20	
Ethylbenzene	CCC	50.0	52.3	ug/L	0.426	4.54	20	
Toluene	CCC	50.0	50.4	ug/L	1.17	0.716	20	
Vinyl Chloride	CCC	50.0	54.9	ug/L	0.208	9.83	20	
1,1,2,2-Tetrachloroethane	SPCC	50.0	51.0	ug/L	0.376	2.01	40	
1,1-Dichloroethane	SPCC	50.0	49.7	ug/L	0.481	0.697	40	
Bromoform	SPCC	50.0	51.9	ug/L	0.177	3.88	40	
Chlorobenzene	SPCC	50.0	48.0	ug/L	0.779	4.07	40	
Chloromethane	SPCC	50.0	49.2	ug/L	0.213	1.51	40	
1,1,1-Trichloroethane		50.0	54.2	ug/L	0.441	8.41	40	
1,1,2-Trichloro-1,2,2-Trifluoroethane		50.0	47.5	ug/L	0.228	5.02	40	
1,1,2-Trichloroethane		50.0	52.6	ug/L	0.206	5.28	40	
1,2,4-Trichlorobenzene		50.0	52.0	ug/L	0.760	4.02	40	
1,2-Dibromo-3-Chloropropane		50.0	49.3	ug/L	0.0798	1.46	40	
1,2-Dibromoethane		50.0	52.1	ug/L	0.212	4.17	40	
1,2-Dichlorobenzene		50.0	51.8	ug/L	1.09	3.54	40	
1,2-Dichloroethane		50.0	53.8	ug/L	0.375	7.53	40	
cis-1,2-Dichloroethene		50.0	47.0	ug/L	0.245	6.00	40	
trans-1,2-Dichloroethene		50.0	45.6	ug/L	0.227	8.88	40	
1,3-Dichlorobenzene		50.0	52.5	ug/L	1.22	4.92	40	
1,4-Dichlorobenzene		50.0	51.3	ug/L	1.25	2.63	40	
2-Butanone		50.0	53.7	ug/L	0.0577	7.48	40	
2-Hexanone		50.0	56.8	ug/L	0.105	13.6	40	
4-Methyl-2-Pentanone		50.0	47.7	ug/L	0.0575	4.62	40	
Acetone		50.0	55.0	ug/L	0.0434	10.1	40	
Benzene		50.0	45.7	ug/L	0.800	8.58	40	
Bromodichloromethane		50.0	54.7	ug/L	0.324	9.40	40	
Bromomethane		50.0	44.5	ug/L	0.157	11.1	40	
Carbon Disulfide		50.0	44.7	ug/L	0.612	10.5	40	
Carbon Tetrachloride		50.0	56.0	ug/L	0.387	12.1	40	
Chloroethane		50.0	44.2	ug/L	0.167	11.6	40	
cis-1,3-Dichloropropene		50.0	51.2	ug/L	0.333	2.39	40	
Cyclohexane		50.0	50.5	ug/L	0.444	1.08	40	
Dibromochloromethane		50.0	59.3	ug/L	0.306	18.5	40	
Dichlorodifluoromethane		50.0	40.9	ug/L	0.220	18.2	40	
Isopropylbenzene		50.0	53.9	ug/L	1.31	7.88	40	
Methyl acetate		50.0	41.4	ug/L	0.0997	17.2	40	
Methyl Tert Butyl Ether		50.0	45.0	ug/L	0.485	10.0	40	
Methylcyclohexane		50.0	47.9	ug/L	0.337	4.19	40	
Methylene Chloride		50.0	44.6	ug/L	0.205	10.9	40	

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CONTINUING CALIBRATION VERIFICATION (CCV)

00090056

Login Number: L08040523 Run Date: 04/29/2008 Sample ID: WG269769-02

Instrument ID: HPMS10 Run Time: 08:50 Method: 8260B

File ID: 10M64252 Analyst: TMB QC Key: STD

Workgroup (AAB#): WG269770 Cal ID: HPMS10 - 19-APR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Styrene		50.0	57.1	ug/L	0.854	14.2	40	
Tetrachloroethene		50.0	52.1	ug/L	0.257	4.16	40	
trans-1,3-Dichloropropene		50.0	57.3	ug/L	0.416	14.5	40	
Trichloroethene		50.0	47.2	ug/L	0.244	5.51	40	
Trichlorofluoromethane		50.0	52.4	ug/L	0.474	4.79	40	
Xylenes		150	157	ug/L	0.509	4.95	40	
1,2-Dichloroethene		100	92.6	ug/L	0.236	7.44	40	
m-,p-Xylene		100	105	ug/L	0.521	5.39	40	
o-Xylene		50.0	52.0	ug/L	0.496	4.07	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
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Login Number: L08040523 Run Date: 04/25/2008 Sample ID: WG269549-02
Instrument ID: HPMS6 Run Time: 18:45 Method: 8260B
File ID: 6M74612 Analyst: TMB QC Key: STD
Workgroup (AAB#): WG269550 Cal ID: HPMS6 - 17-APR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloroethene	CCC	50.0	46.0	ug/L	0.334	7.94	20	
1,2-Dichloropropane	CCC	50.0	51.1	ug/L	0.211	2.21	20	
Chloroform	CCC	50.0	48.8	ug/L	0.415	2.34	20	
Ethylbenzene	CCC	50.0	58.0	ug/L	0.411	16.0	20	
Toluene	CCC	50.0	56.8	ug/L	1.12	13.6	20	
Vinyl Chloride	CCC	50.0	44.2	ug/L	0.163	11.6	20	
1,1,2,2-Tetrachloroethane	SPCC	50.0	47.0	ug/L	0.371	5.91	40	
1,1-Dichloroethane	SPCC	50.0	51.6	ug/L	0.431	3.29	40	
Bromoform	SPCC	50.0	42.9	ug/L	0.132	14.2	40	
Chlorobenzene	SPCC	50.0	52.8	ug/L	0.752	5.63	40	
Chloromethane	SPCC	50.0	42.0	ug/L	0.235	16.0	40	
1,1,1-Trichloroethane		50.0	44.5	ug/L	0.384	11.1	40	
1,1,2-Trichloro-1,2,2-Trifluoroethane		50.0	49.0	ug/L	0.236	1.96	40	
1,1,2-Trichloroethane		50.0	49.1	ug/L	0.183	1.81	40	
1,2,4-Trichlorobenzene		50.0	52.6	ug/L	0.692	5.17	40	
1,2-Dibromo-3-Chloropropane		50.0	39.8	ug/L	0.0743	20.3	40	
1,2-Dibromoethane		50.0	49.8	ug/L	0.187	0.433	40	
1,2-Dichlorobenzene		50.0	53.1	ug/L	0.994	6.16	40	
1,2-Dichloroethane		50.0	42.2	ug/L	0.295	15.7	40	
cis-1,2-Dichloroethene		50.0	55.4	ug/L	0.211	10.8	40	
trans-1,2-Dichloroethene		50.0	50.8	ug/L	0.200	1.68	40	
1,3-Dichlorobenzene		50.0	54.4	ug/L	1.11	8.83	40	
1,4-Dichlorobenzene		50.0	52.0	ug/L	1.13	3.94	40	
2-Butanone		50.0	39.4	ug/L	0.0520	21.1	40	
2-Hexanone		50.0	40.8	ug/L	0.105	18.3	40	
4-Methyl-2-Pentanone		50.0	38.4	ug/L	0.0409	23.2	40	
Acetone		50.0	42.0	ug/L	0.0391	16.1	40	
Benzene		50.0	53.9	ug/L	0.812	7.73	40	
Bromodichloromethane		50.0	48.9	ug/L	0.296	2.26	40	
Bromomethane		50.0	50.0	ug/L	0.152	0.0558	40	
Carbon Disulfide		50.0	50.5	ug/L	0.600	0.933	40	
Carbon Tetrachloride		50.0	43.8	ug/L	0.300	12.4	40	
Chloroethane		50.0	46.7	ug/L	0.179	6.55	40	
cis-1,3-Dichloropropene		50.0	46.8	ug/L	0.331	6.41	40	
Cyclohexane		50.0	50.0	ug/L	0.430	0.0282	40	
Dibromochloromethane		50.0	45.0	ug/L	0.233	9.91	40	
Dichlorodifluoromethane		50.0	44.4	ug/L	0.265	11.2	40	
Isopropylbenzene		50.0	48.7	ug/L	1.31	2.60	40	
Methyl acetate		50.0	56.9	ug/L	0.131	13.9	40	
Methyl Tert Butyl Ether		50.0	44.6	ug/L	0.443	10.8	40	
Methylcyclohexane		50.0	49.6	ug/L	0.338	0.823	40	
Methylene Chloride		50.0	44.9	ug/L	0.181	10.1	40	

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CONTINUING CALIBRATION VERIFICATION (CCV)

00090058

Login Number: L08040523 Run Date: 04/25/2008 Sample ID: WG269549-02

Instrument ID: HPMS6 Run Time: 18:45 Method: 8260B

File ID: 6M74612 Analyst: TMB QC Key: STD

Workgroup (AAB#): WG269550 Cal ID: HPMS6 - 17-APR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Styrene		50.0	51.2	ug/L	0.928	2.32	40	
Tetrachloroethene		50.0	57.8	ug/L	0.252	15.7	40	
trans-1,3-Dichloropropene		50.0	49.0	ug/L	0.414	2.08	40	
Trichloroethene		50.0	49.0	ug/L	0.187	2.10	40	
Trichlorofluoromethane		50.0	44.6	ug/L	0.395	10.8	40	
Xylenes		150	172	ug/L	0.527	14.5	40	
1,2-Dichloroethene		100	106	ug/L	0.206	6.23	40	
m-,p-Xylene		100	119	ug/L	0.533	19.4	40	
o-Xylene		50.0	52.4	ug/L	0.522	4.78	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
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CONTINUING CALIBRATION VERIFICATION (CCV)

00090059

Login Number: L08040523 Run Date: 04/28/2008 Sample ID: WG269630-02

Instrument ID: HPMS8 Run Time: 07:55 Method: 8260B

File ID: 8M344779 Analyst: CMS QC Key: STD

Workgroup (AAB#): WG269631 Cal ID: HPMS8 - 02-APR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloroethene	CCC	50.0	48.9	ug/L	0.331	2.14	20	
1,2-Dichloropropane	CCC	50.0	47.2	ug/L	0.192	5.70	20	
Chloroform	CCC	50.0	53.1	ug/L	0.408	6.18	20	
Ethylbenzene	CCC	50.0	54.8	ug/L	0.446	9.61	20	
Toluene	CCC	50.0	55.4	ug/L	1.21	10.8	20	
Vinyl Chloride	CCC	50.0	54.8	ug/L	0.147	9.58	20	
1,1,2,2-Tetrachloroethane	SPCC	50.0	50.8	ug/L	0.349	1.51	40	
1,1-Dichloroethane	SPCC	50.0	56.5	ug/L	0.393	13.1	40	
Bromoform	SPCC	50.0	46.8	ug/L	0.126	6.39	40	
Chlorobenzene	SPCC	50.0	51.1	ug/L	0.771	2.25	40	
Chloromethane	SPCC	50.0	42.2	ug/L	0.169	15.7	40	
1,1,1-Trichloroethane		50.0	53.5	ug/L	0.394	7.00	40	
1,1,2-Trichloro-1,2,2-Trifluoroethane		50.0	53.3	ug/L	0.201	6.60	40	
1,1,2-Trichloroethane		50.0	47.7	ug/L	0.165	4.54	40	
1,2,4-Trichlorobenzene		50.0	44.6	ug/L	0.748	10.8	40	
1,2-Dibromo-3-Chloropropane		50.0	40.7	ug/L	0.0604	18.6	40	
1,2-Dibromoethane		50.0	46.6	ug/L	0.168	6.76	40	
1,2-Dichlorobenzene		50.0	49.2	ug/L	1.06	1.63	40	
1,2-Dichloroethane		50.0	50.3	ug/L	0.267	0.692	40	
cis-1,2-Dichloroethene		50.0	53.1	ug/L	0.223	6.20	40	
trans-1,2-Dichloroethene		50.0	59.1	ug/L	0.323	18.1	40	
1,3-Dichlorobenzene		50.0	53.1	ug/L	1.26	6.25	40	
1,4-Dichlorobenzene		50.0	51.9	ug/L	1.25	3.73	40	
2-Butanone		50.0	36.6	ug/L	0.0338	26.7	40	
2-Hexanone		50.0	39.3	ug/L	0.0384	21.5	40	
4-Methyl-2-Pentanone		50.0	38.1	ug/L	0.0320	23.9	40	
Acetone		50.0	40.3	ug/L	0.0256	19.5	40	
Benzene		50.0	50.7	ug/L	0.824	1.37	40	
Bromodichloromethane		50.0	51.4	ug/L	0.287	2.77	40	
Bromomethane		50.0	41.8	ug/L	0.150	16.5	40	
Carbon Disulfide		50.0	48.3	ug/L	0.648	3.44	40	
Carbon Tetrachloride		50.0	55.4	ug/L	0.333	10.8	40	
Chloroethane		50.0	47.0	ug/L	0.150	5.94	40	
cis-1,3-Dichloropropene		50.0	47.3	ug/L	0.314	5.35	40	
Cyclohexane		50.0	52.3	ug/L	0.364	4.55	40	
Dibromochloromethane		50.0	54.3	ug/L	0.226	8.68	40	
Dichlorodifluoromethane		50.0	35.9	ug/L	0.201	28.2	40	
Isopropylbenzene		50.0	56.4	ug/L	1.41	12.7	40	
Methyl acetate		50.0	56.3	ug/L	0.101	12.6	40	
Methyl Tert Butyl Ether		50.0	49.9	ug/L	0.373	0.258	40	
Methylcyclohexane		50.0	50.0	ug/L	0.334	0.0764	40	
Methylene Chloride		50.0	43.3	ug/L	0.196	13.3	40	

CCV - Modified 03/05/2008

PDF File ID: 1084727

Report generated 05/02/2008 16:15

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00090060

Login Number: L08040523 Run Date: 04/28/2008 Sample ID: WG269630-02

Instrument ID: HPMS8 Run Time: 07:55 Method: 8260B

File ID: 8M344779 Analyst: CMS QC Key: STD

Workgroup (AAB#): WG269631 Cal ID: HPMS8 - 02-APR-08

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Styrene		50.0	51.5	ug/L	0.881	3.05	40	
Tetrachloroethene		50.0	59.3	ug/L	0.250	18.6	40	
trans-1,3-Dichloropropene		50.0	51.6	ug/L	0.365	3.12	40	
Trichloroethene		50.0	50.0	ug/L	0.215	0.0812	40	
Trichlorofluoromethane		50.0	45.2	ug/L	0.403	9.64	40	
Xylenes		150	160	ug/L	0.547	6.37	40	
1,2-Dichloroethene		100	112	ug/L	0.273	12.2	40	
m-,p-Xylene		100	107	ug/L	0.547	7.36	40	
o-Xylene		50.0	52.2	ug/L	0.548	4.40	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1084727
Report generated 05/02/2008 16:15

Login Number: L08040523
Instrument ID: HPMS6
Workgroup (AAB#): WG269550

CCV Number: WG269549-02
CAL ID: HPMS6-17-APR-08
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG269549-02	NA	NA	358838	617066	883931
Upper Limit	NA	NA	717676	1234132	1767862
Lower Limit	NA	NA	179419	308533	441966
L08040523-03	1.00	01	289386	522590	738998
WG269550-01	1.00	01	311634	568471	802166
WG269550-02	1.00	01	327991	580049	800876
WG269550-03	1.00	01	329839	585728	815222
WG269550-04	1.00	01	303368	556276	792686

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: 1084728
Report generated 05/02/2008 16:15

Login Number: L08040523
Instrument ID: HPMS8
Workgroup (AAB#): WG269631

CCV Number: WG269630-02
CAL ID: HPMS8-02-APR-08
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG269630-02	NA	NA	399895	790546	1075444
Upper Limit	NA	NA	799790	1581092	2150888
Lower Limit	NA	NA	199948	395273	537722
L08040523-02	1.00	01	240588	449142	603798
WG269631-01	1.00	01	372859	738310	998789
WG269631-02	1.00	01	384393	741522	988164
WG269631-03	1.00	01	340573	684574	953751
WG269631-04	1.00	01	363845	670079	909274
WG269631-05	1.00	01	375253	714943	955230
WG269631-06	1.00	01	226014	429309	575779

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: 1084728
Report generated 05/02/2008 16:15

Login Number: L08040523
Instrument ID: HPMS10
Workgroup (AAB#): WG269770

CCV Number: WG269769-02
CAL ID: HPMS10-19-APR-08
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG269769-02	NA	NA	418037	779329	1029066
Upper Limit	NA	NA	836074	1558658	2058132
Lower Limit	NA	NA	209019	389665	514533
L08040523-01	1.00	01	355187	681318	902413
WG269770-01	1.00	01	362355	700654	938040
WG269770-02	1.00	01	414604	752552	992581

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: 1084728
Report generated 05/02/2008 16:15

Login Number:L08040523 CCV Number:WG269549-02
Instrument ID:HPMS6 CAL ID: HPMS6-17-APR-08
Workgroup (AAB#):WG269550 Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG269549-02	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
L08040523-03	1.00	01	18.86	15.3	10.83
WG269550-01	1.00	01	18.85	15.3	10.82
WG269550-02	1.00	01	18.86	15.3	10.82
WG269550-03	1.00	01	18.86	15.3	10.82
WG269550-04	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: 1084730
Report generated 05/02/2008 16:15

Login Number:L08040523 CCV Number:WG269630-02
Instrument ID:HPMS8 CAL ID: HPMS8-02-APR-08
Workgroup (AAB#):WG269631 Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG269630-02	NA	NA	17.89	14.87	10.99
Upper Limit	NA	NA	18.39	15.37	11.49
Lower Limit	NA	NA	17.39	14.37	10.49
L08040523-02	1.00	01	17.89	14.87	10.99
WG269631-01	1.00	01	17.89	14.87	10.99
WG269631-02	1.00	01	17.89	14.86	10.99
WG269631-03	1.00	01	17.89	14.86	10.99
WG269631-04	1.00	01	17.89	14.87	10.99
WG269631-05	1.00	01	17.88	14.86	10.99
WG269631-06	1.00	01	17.89	14.87	10.99

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: 1084730
Report generated 05/02/2008 16:15

Login Number:L08040523
Instrument ID:HPMS10
Workgroup (AAB#):WG269770

CCV Number:WG269769-02
CAL ID: HPMS10-19-APR-08
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG269769-02	NA	NA	17.73	14.72	10.84
Upper Limit	NA	NA	18.23	15.22	11.34
Lower Limit	NA	NA	17.23	14.22	10.34
L08040523-01	1.00	01	17.73	14.72	10.84
WG269770-01	1.00	01	17.73	14.71	10.84
WG269770-02	1.00	01	17.73	14.72	10.84

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: 1084730
Report generated 05/02/2008 16:15

2.2 General Chemistry Data

2.2.1 Perchlorate Data

2.2.1.1 Summary Data

LABORATORY REPORT

00090070

L08040523

05/02/08 16:28

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
MW19-041608	L08040523-01	314.0	10	17-APR-08
MW18-041608	L08040523-02	314.0	1	17-APR-08

Report Number: **L08040523**
Report Date : **May 2, 2008**

00090071

Sample Number: **L08040523-01**
Client ID: **MW19-041608**
Matrix: **Water**
Workgroup Number: **WG269159**
Collect Date: **04/16/2008 11:00**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **314.0**
Analytical Method: **314.0**
Analyst: **DSF**
Dilution: **10**
Units: **ug/L**

Instrument: **IC1**
Prep Date: **04/22/2008 12:54**
Cal Date: **04/22/2008 10:06**
Run Date: **04/22/2008 12:54**
File ID: **I10422081254.14**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**		**U**	**10.0**	**5.00**

U Not detected at or above adjusted sample detection limit

Report Number: **L08040523**
Report Date : **May 2, 2008**

00090072

Sample Number: **L08040523-02**
Client ID: **MW18-041608**
Matrix: **Water**
Workgroup Number: **WG269159**
Collect Date: **04/16/2008 14:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **314.0**
Analytical Method: **314.0**
Analyst: **DSF**
Dilution: **1**
Units: **ug/L**

Instrument: **IC1**
Prep Date: **04/22/2008 13:14**
Cal Date: **04/22/2008 10:06**
Run Date: **04/22/2008 13:14**
File ID: **I10422081314.15**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**		**U**	**1.00**	**0.500**

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)

Microbac Laboratories Inc.

Instrument Run Log

Instrument: IC1 Dataset: 040108 9056 CURVE IC1.S
Analyst1: DSF Analyst2: NA
Method: 300/9056 SOP: IC1 Rev: 7

Maintenance Log ID: 23492

Column 1 ID: AS14A-4MM Column 2 ID: NA

Workgroups: WG267030

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	I10401080833.01	WG267030-01 STD \#1	1	1		04/01/08 08:33
2	I10401080850.02	WG267030-02 STD \#2	1	1		04/01/08 08:50
3	I10401080908.03	WG267030-03 STD \#3	1	1		04/01/08 09:08
4	I10401080925.04	WG267030-04 STD \#4	1	1		04/01/08 09:25
5	I10401080942.05	WG267030-05 STD \#5	1	1		04/01/08 09:42
6	I10401081000.06	WG267030-06 STD \#6	1	1		04/01/08 10:00
7	I10401081017.07	WG267030-07 ALT STD	1	1		04/01/08 10:17

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Page: 1 Approved: 03-APR-08

Microbac Laboratories Inc.

Instrument Run Log

Instrument: IC1 Dataset: 042208 CLO4 IC1.SEQ
Analyst1: DSF Analyst2: NA
Method: CLO4 SOP: IC2 Rev: 4

Maintenance Log ID: 23799

Column 1 ID: AS16-4MM Column 2 ID: NA

Workgroups: WG269159

Internal STD: NA Surrogate STD: NA Calibration STD STD20008

Comments: All samples, except L08040523-02, were analyzed at a dilution only due to high conductivity readings.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I10422080824.01	CLO4 @ 100 ppb	1	1		04/22/08 08:24
2	I10422080844.02	CLO4 @ 50 ppb	1	1		04/22/08 08:44
3	I10422080904.03	CLO4 @ 25 ppb	1	1		04/22/08 09:04
4	I10422080925.04	CLO4 @ 10 ppb	1	1		04/22/08 09:25
5	I10422080945.05	CLO4 @ 4 ppb	1	1		04/22/08 09:45
6	I10422081006.06	CLO4 @ 1 ppb	1	1		04/22/08 10:06
7	I10422081031.07	CLO4 ALT @ 25 ppb	1	1		04/22/08 10:31
8	I10422081051.08	ELUENT	1	1		04/22/08 10:51
9	I10422081112.09	MCT 5 (@25 ppb)	1	1		04/22/08 11:12
10	I10422081132.10	MCT 6 (@25 ppb)	1	1		04/22/08 11:32
11	I10422081153.11	CCV (1 ppb) CLO4	1	1		04/22/08 11:53
12	I10422081213.12	WG269159-01 BLANK	1	1		04/22/08 12:13
13	I10422081233.13	WG269159-02 LCS (25 ppb)	1	1		04/22/08 12:33
14	I10422081254.14	L08040523-01 1/10	1	10		04/22/08 12:54
15	I10422081314.15	L08040523-02 REF	1	1		04/22/08 13:14
16	I10422081335.16	WG269159-04 DUP 523-02	1	1		04/22/08 13:35
17	I10422081355.17	WG269159-05 MS 523-02	1	1		04/22/08 13:55
18	I10422081415.18	WG269159-06 MSD 523-02	1	1		04/22/08 14:15
19	I10422081436.19	L08040540-01 1/3	1	3		04/22/08 14:36
20	I10422081456.20	L08040540-02 1/10	1	10		04/22/08 14:56
21	I10422081517.21	L08040540-03 1/3	1	3		04/22/08 15:17
22	I10422081537.22	CCV (25 ppb) CLO4	1	1		04/22/08 15:37
23	I10422081559.23	L08040541-01 1/3	1	3		04/22/08 15:59
24	I10422081620.24	L08040541-02 1/3	1	3		04/22/08 16:20
25	I10422081659.25	L08040540-02 RR 1/1000	1	1000		04/22/08 16:59
26	I10422081719.26	CCV (50 ppb) CLO4	1	1		04/22/08 17:19

Comments

Seq.	Rerun	Dil.	Reason	Analytes
20	X	1000	Over Calibration Range	Perchlorate

Page: 1 Approved: 23-APR-08

Microbac Laboratories Inc.

Data Checklist

Date: 01-APR-2008
Analyst: DSF
Analyst: NA
Method: 300/9056
Instrument: IC1
Curve Workgroup: NA
Runlog ID: 21398
Analytical Workgroups: THIS IS A METHOD 300/9056 CALIBRATION CURVE

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)	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	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	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:
01-APR-2008
Debra S. Frederick

Secondary Reviewer:
03-APR-2008

CHECKLIST1 - Modified 03/05/2008
Generated: APR-03-2008 08:58:53

Microbac Laboratories Inc.

Data Checklist

Date: 22-APR-2008
Analyst: DSF
Analyst: NA
Method: CLO4
Instrument: IC1
Curve Workgroup: NA
Runlog ID: 21759
Analytical Workgroups: L08040523, L08040540, L08040541

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)	NA
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	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:
23-APR-2008
Debra S. Frederick

Secondary Reviewer:
23-APR-2008
Michael Cochran

CHECKLIST1 - Modified 03/05/2008
Generated: APR-23-2008 08:47:59

Microbac Laboratories Inc.

HOLDING TIMES

EQUIVALENT TO AFCEE FORM 9

00090079

Analytical Method: 314.0 AAB#: WG269159

Login Number: L08040523

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
MW18-041608	04/16/08	04/17/08	04/22/08	28	5.97	04/22/08	28	5.97	
MW19-041608	04/16/08	04/17/08	04/22/08	28	6.08	04/22/08	28	6.08	

* EXT = SEE PROJECT QAPP REQUIREMENTS

*ANAL = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1072950
Report generated 04/23/2008 09:44

METHOD BLANK SUMMARY

Login Number:	L08040523	Work Group:	WG269159
Blank File ID:	I10422081213.12	Blank Sample ID:	WG269159-01
Prep Date:	04/22/08 12:13	Instrument ID:	IC1
Analyzed Date:	04/22/08 12:13	Method:	314.0
Analyst:	DSF		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG269159-02	I10422081233.13	04/22/08 12:33	01
MW19-041608	L08040523-01	I10422081254.14	04/22/08 12:54	DL01
MW18-041608	L08040523-02	I10422081314.15	04/22/08 13:14	01
DUP	WG269159-04	I10422081335.16	04/22/08 13:35	01

Report Name: BLANK_SUMMARY
PDF File ID: 1072951
Report generated 04/23/2008 09:44

Microbac Laboratories Inc.

METHOD BLANK REPORT

00090081

Login Number:L08040523 Prep Date:04/22/08 12:13 Sample ID:WG269159-01
Instrument ID:IC1 Run Date:04/22/08 12:13 Prep Method:314.0
File ID:I10422081213.12 Analyst:DSF Method:314.0
Workgroup (AAB#):WG269159 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID:IC1-01-APR-08

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	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: 1072952
23-APR-2008 09:44

Login Number: L08040523 Run Date: 04/22/2008 Sample ID: WG269159-02
Instrument ID: IC1 Run Time: 12:33 Prep Method: 314.0
File ID: I10422081233.13 Analyst: DSF Method: 314.0
Workgroup (AAB#): WG269159 Matrix: Water Units: ug/L
QC Key: STD Lot#: STD20008 Cal ID: IC1-01-APR-08

Analytes	Expected	Found	% Rec	LCS Limits	Q
Perchlorate	25.0	25.6	102	85 - 115	

LCS - Modified 03/06/2008
PDF File ID: 1072953
Report generated: 04/23/2008 09:44

Conductivity Probe Calibration Check: 1413 /1410 µs/cm

Perchlorate Conductivity Check

Working MCT Level: 1019 µs/cm

Sample	Conductivity (µs/cm)	Pretreatment or Dilution Needed
L08040523-01		Due to Conductivity
-02		
L08040540-01		Due to Conductivity
-02		" "
-03		" "
L08040541-01		" "
-02		" "

DSF
Analyst

4/22/08 09:00
Date/Time

DCN#75091

Sample Ref: L08040523-02 Cal ID: IC1-22-APR-2008 Worknum: WG269159
Instrument ID: IC1 Method: 314
Sample ID: WG269159-03 File ID: I10422081314.15 Dil: 1 Matrix: WATER
Duplicate ID: WG269159-04 File ID: I10422081335.16 Dil: 1 Units: ug/L

Analyte	Sample	Duplicate	RPD	RPD Limit	Q
Perchlorate	ND	ND	0	25	

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_DUP_DRYWT - Modified 03/06/2008
PDF File ID: 1072955
Report generated 04/23/2008 09:44

Loginnum:L08040523 Cal ID:IC1-22-APR-2008 Worknum:WG269159
Instrument ID:IC1 Contract #:DACA56-94-D-0020 Method:314.0
Parent ID:WG269159-03 File ID:I10422081314.15 Dil:1 Matrix:WATER
Sample ID:WG269159-05 MS File ID:I10422081355.17 Dil:1 Units:ug/L
Sample ID:WG269159-06 MSD File ID:I10422081415.18 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Perchlorate	ND	25.0	27.4	110	25.0	28.3	113	3.21	80 - 120	25	

* 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: 1072954
Report generated 04/23/2008 09:44

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
May 2, 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	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
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
May 02, 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. 10252

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.: 117591.0005B002 Project Contact: Scott Beesinger Project Telephone No.: 903-679-3448

Point of Contact: VAN VANGALA Project Manager/Supervisor: RAVEEN SRIVASTAV

Telephone No.: 713-996-4459

Item No.	Sample Number	Date	Time	Comp	Grab	Matrix	Sample Description, Location	Number of Containers	VOA	Perchlorate						Remarks
1	MW19-041608	4/16/08	11:00		✓	W	Groundwater, Site 18/24	3	2	1						
2	MW18-041608	4/16/08	2:00		✓	W	Groundwater, Site 18/24	3	2	1						
3	TRIP BLANK					W		2	2							
4																
5																
6																
7																
8																
9																
10																

Transfers Relinquished By (signature)	Date/Time	Transfers Accepted By (signature)	Date/Time	Special Instructions
Scott Beesinger	4/16/08 3:00			
				FedEx Airbill No.:
		Laboratory	4/17/08 915	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

00090090

Microbac Laboratories, Inc.

SAMPLE RECEIPT FORM

158 Starlite Drive
Marietta, OH 45750
(740) 373-4071

Client:	Shaw
Workorder Number:	B
Date Received:	4-17-08
Delivered by:	( ) Fedx ( ) UPS ( ) Client ( ) Courier **Time:** 915
Opened by:	RLK
IR Temp Gun:	(X) D ( ) G
Logged by:	EE/JKT/SM L 08040523

Cooler information

Cooler ID	Temp C	Airbill#	COC#	Other
435	2	12 661 725 01 9950 7637	10252	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: L08040523
Account: 2773
Project: 2773.025
Samples: 3
Due Date: 28-APR-2008

Samplenum	Container ID	Products
L08040523-01	448543	CLO4

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	17-APR-2008 15:39	ERE	
2	ANALYZ	W1	SEM	22-APR-2008 07:49	DSF	ERE
3	STORE	SEM	A1	23-APR-2008 11:19	ERE	DSF

Samplenum	Container ID	Products
L08040523-03	448546	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-APR-2008 15:39	ERE	
2	ANALYZ	V1	ORG4	18-APR-2008 09:34	MRT	JKT
3	STORE	ORG4	A1	01-MAY-2008 11:07	ERE	MRT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-APR-2008 15:39	ERE	
2	ANALYZ	V1	ORG4	18-APR-2008 09:34	MRT	JKT
3	STORE	ORG4	A1	01-MAY-2008 11:07	ERE	MRT

Samplenum	Container ID	Products
L08040523-02	448545	CLO4

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	17-APR-2008 15:39	ERE	
2	ANALYZ	W1	SEM	22-APR-2008 07:49	DSF	ERE
3	STORE	SEM	A1	23-APR-2008 11:19	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

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L08040523
Account: 2773
Project: 2773.025
Samples: 3
Due Date: 28-APR-2008

Samplenum	Container ID	Products
L08040523-01	448542	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-APR-2008 15:39	ERE	
2	ANALYZ	V1	ORG4	18-APR-2008 09:34	MRT	JKT
3	STORE	ORG4	A1	01-MAY-2008 11:07	ERE	MRT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-APR-2008 15:39	ERE	
2	ANALYZ	V1	ORG4	18-APR-2008 09:34	MRT	JKT
3	STORE	ORG4	A1	01-MAY-2008 11:07	ERE	MRT

Samplenum	Container ID	Products
L08040523-02	448544	826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-APR-2008 15:39	ERE	
2	ANALYZ	V1	ORG4	18-APR-2008 09:34	MRT	JKT
3	STORE	ORG4	A1	01-MAY-2008 11:07	ERE	MRT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	17-APR-2008 15:39	ERE	
2	ANALYZ	V1	ORG4	18-APR-2008 09:34	MRT	JKT
3	STORE	ORG4	A1	01-MAY-2008 11:07	ERE	MRT

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login